

*E Pluribus Unum:*  
**Bilingualism and Language Loss in the Second Generation**

by

**Alejandro Portes\***  
**Lingxin Hao\*\***

**Working Paper No. 229**

**March 1998**

Presented at the symposium on the second generation, sponsored by The Jerome Levy Economics Institute of Bard College, October 23-25, 1997.

The data on which this paper is based were collected by the *Children of Immigrants Longitudinal Study (CILS)*, A. Portes and R.G. Rumbaut, principal investigators. This project is supported by grants from the Spencer Foundation, Russell Sage Foundation, Andrew W. Mellon Foundation, and National Science Foundation. We thank anonymous reviewers of these journals for valuable comments on an earlier version. Responsibility for the contents is exclusively ours.

### *Abstract*

We examine patterns of language adaptation in a sample of over 5,000 second generation students in South Florida and Southern California. Knowledge of English is near universal and preference for that language is dominant among most immigrant nationalities. On the other hand, only a minority remain fluent in the parental languages and there are wide variations among immigrant groups in the extent of their parental linguistic retention. These variations are important for theory and policy because they affect the speed of acculturation and the extent to which sizable pools of fluent bilinguals will be created by today's second generation. We employ multivariate and multi-level analyses to identify the principal factors accounting for variation in foreign language maintenance and bilingualism. While a number of variables emerge as significant predictors, they do not account for differences across immigrant nationalities which become even more sharply delineated. A clear disjuncture exists between children of Asian and Hispanic backgrounds whose parental language maintenance and bilingual fluency vary significantly. Reasons for this divergence are explored and their policy implications are discussed.

The controversy surrounding contemporary immigration to the United States frequently centers on the effects that this mass of newcomers will have on the continuing dominance of English. From different ideological quarters, opponents of immigration have raised alarm about the “linguistic fragmentation” that the present migrant flow can create and the attendant dangers of increasing ethnic militant and conflict. A national movement, U.S. English, has championed a constitutional amendment to make English the official language of the land and has persuaded voters in several states to pass declarations to that effect (Crawford 1992). Yet, the question can be approached from another angle. As Lieberman and his collaborators have shown, the United States is a veritable cemetery of foreign languages, where mother tongues brought by hundreds of immigrant groups have rarely lasted past the third generation. In no other country studied by these authors has the process of language assimilation and shift to monolingualism been so swift (Lieberman, Dalto, and Johnston 1975).

Fishman (1966) and Veltman (1983) describe the structure of this linguistic shift as a three generational process: first the immigrant generation learns as much English as it can, but speaks the mother tongue at home; the second generation may speak that language with parents but shifts to unaccented English at school and in the workplace; by the third generation, English becomes the home language and effective knowledge of the parental tongue disappears. The pressure put by the native-born on children and grandchildren of immigrants to speak not just English, but English *only* is commonly seen as the key factor accounting for this loss. Yet, knowledge of a foreign language represents a valuable asset and its disappearance can be defined as a cost both to the individual and to society. The research literature (reviewed next) shows a consistent positive association between bilingual fluency and cognitive achievement. In addition, an increasingly global economy has expanded the demand in the United States for

personnel able to speak more than one language (Sassen 1992). There is irony in the fact that many Americans spend long years in school to satisfy this demand by acquiring the very languages that children of immigrants are pressured to forget (Portes and Rumbaut 1996: Ch. 6).

Viewed from this perspective, the main language problem associated with contemporary immigration may not be the threat that it poses to English dominance, but the rapid disappearance of fluent bilingualism among the second generation. In this paper, we present evidence from a large survey of second generation American youth that addresses directly these aspects of the language debate. As will be seen, results from the analysis indicate that: a) knowledge of English is near universal among today's children of immigrants and preference for that language is dominant; b) there has been a simultaneous rapid loss of fluency in parental languages; c) bilingualism varies significantly across second generation nationalities; and d) the school context which frames the acculturation process of second generation youth plays a significant role in their ability to achieve and retain bilingual fluency.

## **I. Bilingualism, Cognitive Development, and National Integration: An Overview**

Up to the 1960s, the established consensus in the linguistic and psychological literatures was that bilingualism and cognitive development were negatively associated. The matter was considered settled by the 1920s and the debate took place between hereditarians and eugenics advocates who considered foreign language retention and the lack of fluency in English as a further sign of the intellectual inferiority of immigrants and supporters of the "nurture" school who attributed to bilingualism itself the cause of immigrant children's mental retardation. Illustrative of the first school was Carl Brigham's (1923) analysis of I.Q. test scores among

foreign-born draftees during World War I. Without regard for the recent arrival of these immigrant soldiers, Brigham attributed their limited English vocabulary to the innate inferiority of southern and eastern Europeans concluding that, “the representatives of the Alpine and Mediterranean races in our immigration are intellectually inferior to the representatives of the Nordic race” (Brigham 1923: 197).

A prominent example of the second school was the work of Madorah Smith (1939) whose research on the speech patterns of pre-school Chinese, Filipino, Hawaiian, Japanese, Korean, and Portuguese children in Hawaii concluded that the attempt to use two languages simultaneously was an important factor in the retardation of speech found among these youngsters. Smith’s results reinforced the generalized view at the time that bilingual youth suffered from a “language handicap” and that bilingualism was a “hardship devoid of any apparent advantage” (Hakuta and Diaz 1985: 320-321).

These conclusions reflected the *zeitgeist* of the time which privileged unaccented English as a sign of full membership in the national community. Prominent political figures reinforced this view with forceful denunciations of foreign language use and multiculturalism in general as un-American. Theodore Roosevelt was such a figure; in his view: “we have room for but one language here, and that is the English language; for we intend to see that the crucible turns over people out as Americans, and not as dwellers in a polyglot boarding house” (Brumberg 1986: 7). The academic research backing this statement was flawed, however, on two counts: First, it failed to control for socio-economic status so that children of poor immigrant families were regularly compared with those of middle-class native households. Second, it failed to distinguish between fluent bilinguals who spoke both languages correctly and limited or quasi-bilinguals who spoke only one language fluently and had a poor and diminishing command of the second.

These limitations were finally addressed in a landmark study on the cognitive correlates of bilingualism in French-Canadian children conducted by Peal and Lambert (1962). These researchers compared a sample of fluent bilingual 10-year-olds with a sample of monolingual counterparts matched by sex, age, and family status. Contrary to the bulk of earlier findings, Peal and Lambert found that bilinguals outperformed monolingual students of the same socio-economic status in almost all cognitive tests. A factor analysis showed that bilinguals had superior performance in concept formation and, particularly, in tasks that required symbolic flexibility. Although the design of this study had certain shortcomings which partially biased results in favor of the bilingual sample, subsequent research consistently upheld its major findings (Hakuta 1986: Ch. 1).

Linguists have thus shown that bilinguals in a number of different language combinations, such as English-French, English-Chinese, German-French, and others, possess greater cognitive flexibility. Leopold (1961) concludes for example that this pattern is due to bilinguals' having more than one symbol for a concrete thing thus liberating them from the tyranny of words. For Cummins (1978:127), bilinguals are able "to look *at* language rather than *through* it to the intended meaning." Sociological studies based on larger samples confirmed the superior academic performance associated with bilingualism. Rumbaut, for example, compared fluent bilingual students with limited bilinguals of the same national origins and with English monolinguals in the entire San Diego school system in the late 1980s. Without exception, fluent bilinguals outperformed the other two categories in standardized academic tests and GPAs within each ethnic groups. On the average, first and second generation fluent bilinguals also had higher GPAs and achievement scores than their native-born monolingual peers (Rumbaut 1995; Portes and Rumbaut 1996:201-207).

The associations between bilingualism, cognitive flexibility, and academic performance have held consistently after controlling for socio-economic background and individual characteristics, but the question arises as to their causal order. Hence, though linguists vigorously argue that knowledge of two or more languages promotes cognitive development, it is also possible that causal effects run in the opposite direction. In this alternative version, fluent bilingualism would be a consequence of greater intellectual ability rather than the other way around. A pioneer study by Hakuta and Diaz (1985) addressed this issue by following samples of Spanish-speaking Puerto Rican students immersed in a bilingual education program in New Haven. Though the final usable sample was small, the study was able to show that bilingualism at a given time had the expected positive association with subsequent cognitive development. Furthermore, multivariate analyses indicated that bilingual ability was a superior predictor of subsequent academic performance, while the opposite causal sequence was much weaker.

Regardless of the exact causal order, the positive association of bilingualism with intellectual development has become a recognized fact in the contemporary research literature. This beneficial association for individuals is coupled with an increasing demand for language skills in the labor market. As Sassen (1984, 1991) notes, the rise of "global cities" where control and command functions for the international economy concentrate, has triggered a growing need for professionals and managers able to conduct business in more than one language. Among American cities, New York is the prime example of a global city and fluency in a number of languages has a major market there. Other cities concentrate more specialized global functions. Miami, for example, has become the administrative and marketing center of the nation's Latin American trade, being often dubbed the "capital" of Latin America (Portes and Stepick 1993). Business leaders in this city have recently started to complain about the dearth of fluent

bilinguals among second generation offspring of Latin immigrants. Although many retain some ability in the language, their Spanish is not fluent enough to be able to conduct business transactions.<sup>1</sup>

Yet despite the accumulating evidence on the personal and national benefits of bilingualism, a powerful country of nativist opinion continues to support Roosevelt's advocacy of monolingualism. The fervor of U.S. English and other nativist supporters is all the more curious because of the dearth of evidence of alleged "linguistic fragmentation" in the country.<sup>2</sup> As we will see next, the data point precisely in favor of the wishes of these militants.

## **II. Shadow Boxing: The Paradox of Linguistic Nativism**

Evaluated against the tide of alarm about the threat posed by foreign languages, results from our survey of second generation youth are surprising. The survey was conducted in 1992-93 among 5,266 eighth and ninth graders in the school systems of Miami/Ft. Lauderdale and San Diego, two of the metropolitan areas most heavily affected by contemporary immigration. Miami serves as the gateway and major place of settlement for Caribbean and South American migrants; San Diego plays a similar role for Mexican immigration and is also the destination of large groups of Asian immigrants. In both areas, all second generation students--defined as native-born children with at least one foreign-born parent or foreign-born children with at least five years of U.S. residence--were targeted for interview in the designated schools.<sup>3</sup> To increase representativeness, the research design called for data collection in both inner city schools and those in suburban areas, and in schools with heavy concentrations of second generation students as well as in those where they represented a minority. This sampling strategy allows for the analysis of variation in a number of adaptation outcomes, including



language knowledge and use, across widely different school contexts. In total, 42 schools in the two metropolitan areas were included in the first stage sample.

Within each school, all second generation students enrolled in the 8th and 9th grades fell into the sample. These grades were selected because of the relative dearth of school dropouts, which renders a school-based sample representative of the universe of interest. This is not the case in later grades because of a steeply rising rate of school attrition, particularly among certain ethnic minorities (Portes and Rumbaut 1996:206-207; Rumbaut 1990). Failure to secure parental consent forms reduced sample response by approximately 25 percent. Subsequent analyses of sampling bias indicated, however, that the pattern of parental non-response was essentially random. These results (not shown) allow us to consider sample findings as representative of the original target universe. In total, children from 77 different nationalities were included in the final sample, with predictable concentrations of Caribbean and Central and South American immigrants children in South Florida and those of Mexican and Asian backgrounds in Southern California.

The sample is evenly divided by sex and by place of birth (native vs. foreign-born), and it ranges in age from 12 to 17 years, with a median of 14. Additional details of data collection have been presented elsewhere (Portes and MacLeod 1996). To our knowledge, the study represents the major empirical effort to understand the adaptation process of the contemporary second generation to date. For our purposes, the initial results of interest are presented in Table 1. It shows that, knowledge of English is near universal in the sample and that this result is almost invariant across major nationalities. Less than 7 percent of second generation youth report themselves unable to speak, understand, read, and write English well. While language self-reports are considered reliable (Fishman 1969; Fishman and Terry 1969), this pattern is

supported by an objective test of English knowledge which indicated grade level proficiency in the large majority of the sample.

Furthermore, preference for English is dominant, with over two-thirds of respondents choosing it over their parents' language. With the exception of Mexican-Americans, among whom English preference drops to 45 percent, majorities of all other second generation nationalities have shifted their linguistic allegiance toward English. This majority is slim among some Asian nationalities, but is overwhelming among Latin-origin groups, such as Colombians, Cubans, and Nicaraguans.

The rapid process of language transition is given further credence by the loss of foreign language fluency. Although the average age of the sample is only 14, a majority cannot speak already their parents' tongue and just 16 percent report themselves fluent in it. The preceding pattern of lesser preference for English among Asian-origin children is reversed here since majorities of these youth report poorer retention of their parents' language. On the contrary, Spanish does better among Latin groups, most of whom retain at least some command of that language. This includes both respondents whose declared preferences for English is limited, like Mexican-Americans, and those for whom that preference is dominant, like Cuban-Americans.

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Table 1 about here  
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Results from this large sample thus safely put away nativist fears of linguistic fragmentation. Knowledge of English is almost universal and preference for it is dominant among this youth. In agreement with the wishes of U.S. English supporters, but contrary to the

long-term interests of both individuals and their communities, what is at risk is the preservation of *some* fluency in the immigrants' home languages. If this loss is viewed as a negative outcome for the reasons discussed previously, we are bound to ask what factors affect this outcome, accelerating it or slowing it down. Following the research literature, we approach the question from two related but distinct angles: determinants of parental language knowledge alone and determinants of fluent bilingualism, that is high competence in both languages.

### **III. Theoretical Predictors of Language Assimilation and Loss**

A series of individual and family factors can affect language assimilation and account for the observed differences among major nationalities in Table 1. It is also possible, however, that there is something unique in the character of different immigrant communities that continues to affect language patterns even after controlling for variables of an individual and family order. To examine this question, we selected a set of predictors with suitable indicators in the data. Among individual characteristics, age, sex, length of U.S. residence, and ethnicity of friends represent potentially important predictors. As seen already, the sample divides itself evenly between native-born and foreign-born respondents and the latter subdivide, in turn, between those with ten or more years of U.S. residence and those with less than nine years. The well-known positive correlation between time of U.S. residence and acculturation leads us to expect a strong association between this variable and foreign language fluency: the longer the child has lived in the United States, the weaker his or her command of a foreign language.

Age and sex are included as controls, though we advance no a priori prediction as to the direction of their effects. Co-ethnic friends, on the other hand, can be expected to have a positive influence on parental language retention by supporting use of that language at home and in

school. Family socio-economic status and family composition comprise another set of important predictors. Higher family status should be positively associated with bilingualism, insofar as better educated and wealthier parents have the motivation and resources to promote language fluency among their offspring. By the same token, intact families where both parents (in their first marriage) speak the same mother tongue should strongly promote language retention. Similarly, co-resident kin, such as foreign-born grandparents, should strengthen this parental effect by reinforcing a distinct cultural environment. To guard against the possibility that these family effects are neutralized by deliberate use of English among immigrant parents, we introduce a dummy variable indicating whether a foreign language is actually spoken at home.<sup>4</sup> This variable is also expected to exercise a significant positive effect on bilingualism.

These individual and family factors are used as predictors in their own right and also as potential sources of explanation for the observed differences in parental language retention among second generation nationalities. If such inter-ethnic differences remain after controlling for this array of predictors, we can conclude that factors of a different order, associated with the culture and origins of each immigrant community are at play. This is important because it would highlight the heterogeneity of contemporary immigration and the ways that specific national backgrounds affect the process of acculturation.

Finally, we also consider the school context as a potentially important influence on second generation acculturation and language. Aside from the family, schools are the institutional environment where children spend most of their waking hours, with major effects on different aspects of their development. We examine the extent to which school characteristics affect language outcomes, directly or interactively with individual and family predictors. Three such contextual factors are relevant: the location of schools in areas of dense *vs.* dispersed

immigrant concentration; the ethnic composition of the school, in particular the proportion of school peers who are co-ethnics; and the average socio-economic status of the school's student population.

Average school SES can affect patterns of acculturation. Specifically, we expect average school SES to be positively associated with bilingualism. The ethnic composition of the school's student population and the surrounding community can similarly reinforce or neutralize individual predictors of parental language knowledge. We expect more "foreign" school contexts to be positively related to language retention and to reinforce parental effects in this direction.

To summarize the discussion, we focus the analysis on differences in both parental language competence and in the achievement of full bilingualism. We assume that these two outcomes, although positively correlated, can have distinct causal patterns. Individual traits--in particular length of U.S. residence and ethnicity of friends are expected to have significant effects on both dependent variables. A second set of predictors includes parental socio-economic status and family characteristics. We assume that immigrant parents' SES will have a positive influence on the probability of fluent bilingualism, while family composition and language spoken at home will decisively affect the environment where second generation children grow and, hence, increase the likelihood of parental language retention. Characteristics of school contexts are introduced on the assumption that they can have an independent effect on language outcomes and interact with other predictors in affecting language outcomes. If differences in language skills continue to exist among children of different nationalities after controlling for individual and family predictors, we would like to know the extent to which school contexts help promote these effects.

#### **IV. The Effects of Individual and Family Variables**

This section focuses on the effects of individual and family variables on parental language retention and bilingual fluency of second generation youth. The zero-order correlation between the two dependent variables is .52 indicating a moderate but not perfect association and, hence, the probability that their respective determinants are not identical. We distinguished nationalities by using five Latin American groups (Colombian, Cuban, Mexican, Nicaraguan, and other Latin origin), five Asian groups (Cambodian, Filipino, Laotian, Vietnamese and other Asian origin), plus Haitian, West Indian, and a residual Other category formed mostly by children of Canadian, European, and Middle Eastern immigrants. Length of U.S. residence indicates the number of years a student has been living in the United States. Family socio-economic status is indexed by a unit-weighted combination of parents' education, income, occupation and home ownership. Since about 4 percent of students did not have sufficient information to give them a SES score, we used a dummy variable to flag them as missing cases and assigned their SES as 0. Interpretations of the SES effect for the non-missing cases will be based on the coefficient for the SES index, while interpretations of the effect for the missing cases will be based on the coefficient corresponding to this dummy variable (Donner 1982).

Intact family means that the parents of a student have remained in their first marriage. We further restricted the variable to both parents speaking the same foreign language. For example, if the father is Colombian and the mother is Cuban, we assign the value of 1. However, if the father is Colombian and the mother is American, we assign the value of 0. We defined kin co-residence as grandparents, uncles, and aunts lived in the same household of the student. Co-ethnic friends is a dummy variable measured by matching the student's nationality with the reported nationalities of his/her close friends. Thus a Vietnamese students with a close

Vietnamese friend is coded 1; otherwise, the case is coded 0. Home language environment is similarly coded 1 if a language other than English is spoken at home by any family members and 0 otherwise.

The first dependent variable, foreign language proficiency, was measured by a scale standardized to mean zero and standard deviation of one. We applied an equal weight to the 4-point scales of proficiency in speaking, understanding, reading and writing a foreign language, which resulted in a raw 4-16 point range. This was then transformed into a standardized and normalized distribution. The second dependent variable--full bilingualism--is a dichotomous measure, where 1 is restricted to students possessing a good command of a foreign language plus very good knowledge of English. The Appendix presents means and standard deviations of the two dependent variables plus individual and family predictors. The Appendix also shows the differential distribution of variables among Asian and Latin-American youth and the distribution of school-level contextual factors used in the following analysis.

We employed ordinary least square regression models to analyze our continuous measure of foreign language proficiency and logistic regression models to analyze our dichotomous measure of bilingualism. As noted previously, student samples in both Miami/Ft. Lauderdale and San Diego were drawn from schools in a two-stage probability sampling design. This design does not bias regression coefficients, but can affect their standard errors. For this reason, we used robust OLS and robust logistic estimations to take into account the possible correlation among individual students within a school and hence produce reliable estimates of standard errors. For each dependent variable, we estimated three nested models: effects of national background; these plus effects of individual traits; these plus effects of family traits. These nested models allow us to test the contribution of each set of explanatory variables and to assess

how much differences among nationalities can be explained by demographic, socio-economic, and social relations variables.<sup>5</sup>

Table 2 presents results for our first dependent variable, foreign language proficiency. When only nationalities are entered as predictors, we find that Latin groups are strongly, and positively associated to foreign language proficiency. Mexican second generation students are in the lead, followed by Nicaraguans, Colombians, and Cubans (Column 1 of Table 2). On the contrary, most Asian nationalities are uncorrelated with foreign language knowledge, except the Vietnamese for whom the effect is also positive and significant. West Indian origin has the only negative influence on foreign language knowledge, a result readily attributable to English monolingualism among most West Indians immigrants. These differences change notably when we introduce individual demographic and social variables (Column 2). In particular, all effects associated with Asian nationalities turn negative. Filipino, Laotian, and Cambodian backgrounds yield negative and highly significant effects on the dependent variable while the previous positive coefficient for the Vietnamese is reduced to near zero.<sup>6</sup>

Effects of demographic variables in this model are noteworthy: both age and sex significantly influence foreign language proficiency. In particular, female students have greater foreign language competence. Although not originally hypothesized, this effect is interpretable as reflecting the tendency of female children to spend more time at home and hence be more exposed to parental influences. This interpretation is in line with the theoretical argument about the role of distinct cultural environments in sustaining language skills. The argument is further buttressed by the strong positive effect of having co-ethnic friends. Yet, the most significant effect in the model (as indicated by the relevant t-ratio) is that of length of U.S. residence. As



expected, the longer the child has resided in the country, the weaker her or his command of the parental language regardless of nationality or individual traits.

Family predictors are added in the third model. Contrary to expectations, family socio-economic status does not have a significant influence on the dependent variable, nor does the presence of kin co-residents. Intact families with parents of same native language do have, however, the expected positive effect: When a foreign language is spoken at home and when it is used by both parents, the result is to strongly encourage language retention among children. Overall, results in this final model reflect the contest between two sets of forces: those promoting acculturation and monolingualism, as indexed by length of U.S. residence, and those furthering maintenance of a distinct cultural environment, as indexed by intact families and co-ethnic friends. Yet after controlling for these opposite sets of factors, observed differences among nationalities do not disappear but are, in fact, more sharply delineated.

Latin American students are, without exception, more likely to preserve their parents' language (overwhelmingly Spanish). Since these are net effects, they signal the greater ability of these immigrant groups to encourage language maintenance among their young. The opposite is the case for Asian students and for Haitians. Relative to the rest of the sample, Asian-American and Haitian-American students are much less likely to retain competence in their parents' languages. The data do not allow us to probe further into the source of this remarkable disjuncture between the Latin and Asian second generations. The data do allow us, however, to examine differences within each of these broad ethnic groupings. Results indicate that Mexican-American students have significantly stronger retention of Spanish than the other four Latin-American nationalities. Among Asians, Cambodian, Filipino, and Laotian origin students

share a common negative coefficient that is significantly stronger than that associated with Vietnamese origin.<sup>7</sup>

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Table 2 about here  
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Lastly, R-squares at the bottom of Table 2 show the goodness of fit of each model. They indicate that the final model does a good job in accounting for total variance (39%) and in improving that figure from the first (21%). This improvement is due both to the significant effects of individual and family variables and to the fact that their introduction defines more clearly effects associated with national origins.

It is still possible, however, that fluent bilingualism defined as the ability to speak well both languages has a different set of determinants. We examine this issue through nested robust logistic models, using the same set of predictors employed previously. Table 3 presents the findings. Odds ratios with values greater than 1.00 indicate positive effects and those with values lower than 1.00 indicate negative effects. The first model shows a significant positive influence on bilingualism of all Latin nationalities, except Mexicans and Nicaraguans. This indicates that while each of these national backgrounds facilitate retention of Spanish, they are not significantly associated with mastery of English. At the opposite end, West Indian and all Asian nationalities decrease the probability of bilingual fluency, primarily because of loss of parental languages.

Introduction of individual variables (Model II) does not much alter ethnic background effects, but it reveals three results of note. First, gender significantly affects bilingualism, with female students being more likely to have fluency in both languages. Second, co-ethnic

friendships also support bilingualism. Third, length of U.S. residence has no effect. This apparently surprising finding is due to the contradictory influences of U.S. residence on the two components of this dependent variable: it increases English proficiency, but it reduces fluency in the parental language.

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Table 3 about here

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The final model incorporates the effects of family variables. In this case, the predicted positive influence of family socio-economic status does materialize. Recall that family SES does not affect parental language retention. Hence, the underlying reasons for this positive effect lies more in high status parents' investing in their children's English than in their success in fostering their own language. This pattern is supported by prior research documenting the positive influence of parental SES on immigrant children's skills in English (Rumbaut and Ima 1988; Portes and MacLeod 1996). Co-resident adult kin do not affect bilingual fluency, but use of a foreign language at home and the presence of intact family with both parents who speak it do have the expected positive effects. Putting these results together, the best prognosis for achievement of bilingualism in the second generation is among children of high status parents who have stayed together and speak their language at home. Such parents simultaneously promote English skills while providing home foreign language environment and serving as role models of fluency in their own languages.

Controlling for these predictors, national background effects do not disappear and present the same pattern detected earlier. All Asian nationalities reduce the likelihood of bilingualism, in line with the lesser inclination shown by these children to preserve their parents' language. Lack

of knowledge of parental French or Creole leads to the same result among Haitian-Americans. Except Mexican, Latin American origin is associated with greater bilingualism but, in this case, only the coefficients for Cuban-Americans and other Latins (mainly smaller South American nationalities) are significant. Contrasting these results with those found earlier, we see that Mexican and, to a lesser extent, Nicaraguan immigrant communities are effective in promoting Spanish among their offspring, but not in their achieving bilingualism. Controlling for all other variables, second generation Mexicans are hence most prone to retain their parents' language as primary; Cubans and other Latins to become fully bilingual; and Asians to shift to English monolingualism.

Finally, we tested empirically whether there is a substantial difference in the process of parental language retention versus the process of achieving full bilingual fluency. Recall that the two variables are positively, but not perfectly correlated. For this purpose, we estimated a multinomial logit model with a four-category dependent variable: 1) poor at both languages; 2) poor at parental language only; 3) poor at English only; 4) fluent in both languages. Results (not shown) indicate that different mechanisms are at play in both processes, with differential effects of length of U.S. residence, parental SES, and certain nationalities on specific categories of the dependent variable. Results again highlight lesser parental language competence among Asian origin youth; greater resilience of Spanish among Mexican- and Nicaraguan-American children; and a net effect in favor of bilingualism among Cuban-Americans and other Latins.

## **V. School Contextual Effects**

In this section, we examine the extent to which differences in school contexts affect the preceding results. For this analysis, we shift to a hierarchical linear models (HLM) framework

where intercepts and slopes of the previous OLS regressions are entered as outcomes in second-level regressions with school characteristics as predictors. Average School SES (AVSES) is indexed by the percentage of students not eligible for the federally subsidized school lunch program. Co-ethnic school peers was built by matching individual student nationalities with the pan-ethnic groups reported by the school system (non-Hispanic White, Black, Asian, Hispanic) and taking the percentage of the respective ethnic category in the school. This contextual measure thus represents the extent to which school peers are of the same broad ethnicity as the student, regardless of his/her nationality.<sup>8</sup>

Location of the school in an area of immigrant concentration was established on the basis of census data. If foreign-born minorities are estimated to comprise more than 50 percent of the census tract where the school is located, this variable is coded 1. The bottom panel of the Appendix shows that among forty-two schools in the sample, the average percentage of students not in the school lunch program is 53; the average percentage of Hispanics is 39; the average percentage of Asians is 11; and 40 percent of schools are located in areas of high immigrant concentration.

It is not possible to examine variations in the effects of individual national origins across schools because there are too few schools with sufficient number of students from all nationalities to allow estimation of coefficients. However, results in the preceding section show that Latin American origin generally promote foreign language retention and that Asian background reduce it. Based on these findings, it appears justifiable to pool nationalities into these two broad categories that are represented in sufficient numbers in most schools. Since the linguistic disjuncture between second generation Asians and Hispanics is most clearly reflected in foreign language proficiency, we focus the analysis of contextual effects on this dependent

variable. However, since the observed pattern of individual-level effects is not identical for the two dependent variables, we also ran a parallel contextual analysis of bilingualism and summarize results at the end.

Multi-level models provide better estimates of contextual effects than conventional models that place contextual variables side-by-side with individual-level factors. In conventional models, homogeneity of schools is assumed. By contrast, multi-level models take into account the potential heterogeneity across schools. Using the HLM method, it is possible to answer the following questions: 1) Do average school SES, ethnic composition, and location predict the school's average foreign language proficiency? (2) Do these school-level variables affect differences in foreign language skills among students of various national backgrounds? (3) Do these school-level variables modify the effects of significant predictors, such as length of U.S. residence, family composition, and home language?

Let  $Y_{ij}$  be foreign language proficiency for student  $i$  in school  $j$ .  $X_{iqj}$  is a vector of individual-level variables including ethnic group, demographic characteristics, and other predictors.  $\beta_{0j}$  is the intercept,  $\beta_{qj}$  are the slopes of the explanatory variables, and  $\epsilon_{ij}$  is the independently, identically distributed disturbance term. The individual-level model is:

$$Y_{ij} = \beta_{0j} + \sum_q \beta_{qj} X_{iqj} + \epsilon_{ij} \quad (1)$$

At level 2, we model whether the intercept and slopes in equation (1) can be predicted by school contextual variables. Let  $W_{js}$  be the school predictors,  $\gamma_{q0}$  the intercept,  $\gamma_{qs}$  the parameters of the school-level variables, and  $\mu_{qj}$  the disturbance term. The contextual model is:

$$\beta_{0j} = \gamma_{00} + \sum_s \gamma_{0s} W_{js} + \mu_{0j} \quad (2)$$

$$\beta_{qj} = \gamma_{q0} + \sum_s \gamma_{qs} W_{js} + \mu_{qj} \quad (3)$$

First, we estimate a random coefficients model that includes no  $W$ 's. Results from this model indicate whether there is enough between-school variation in coefficients to justify further analysis. Coefficients with significant variation across schools are modeled as outcomes in equations (2) and (3). To aid interpretation of these results and increase the stability of parameter estimation, we centered the variables around the school mean in equation (1) and around the grand mean in equations (2) and (3) (Bryk and Raudenbush 1993).

Table 4 presents results of multi-level models for foreign language proficiency in schools with a sufficient number of Asian-origin students. Thirty-six out of 42 schools were included in this analysis. The top panel of table 4 presents results of the random coefficients model. It shows that the intercept--which represents average scores in each school--and the Asian origin, length of U.S. residence, and home language slopes vary sufficiently to merit further analysis. Equally important are the level-1 coefficients that do *not* vary. In the average school, for example, children who have co-ethnic friends and who come from intact, non-English speaking families are significantly more likely to retain their parental language. These findings are almost identical to those reported previously. The important new result is that these effects are nearly invariant across school contexts so that, regardless of the school's class or ethnic composition, a supportive peer and home environment yields greater retention of the parental language.

Arrayed against these effects are the influences of length of U.S. residence which, in the typical school, yield a significant loss of foreign language skills. These effects reproduce those seen previously, but the contextual analysis reveals that they vary significantly across schools.

The second panel of table 4 shows that the proportion of Asian students is the key contextual variable modifying these level-1 effects. The coefficient  $\gamma_{02}$  (-.80) shows that the greater the proportion of Asian students, the *lower* the knowledge of parental languages in the average school, an effect that runs contrary to conventional expectations concerning the influence of co-ethnic concentration. The coefficient  $\gamma_{12}$  (-1.07) indicates that the individual and contextual effects of Asian origin reinforce each other so that the negative individual Asian slope on knowledge of parental languages becomes steeper when the child is in the presence of peers from the same or other Asian nationalities. Finally, the effect of length of U.S. residence in favor of monolingualism is also reinforced by a large number of Asian origin students, as indicated by  $\gamma_{22}$  (-.15).

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Table 4 about here  
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Jointly, these contextual effects indicate a remarkable departure from generally held views about the slowing down of language assimilation with higher immigrant concentration.<sup>9</sup> In the case of the Asian second generation, the opposite happens, with Asian students seemingly encouraging each other in the direction of English monolingualism.<sup>10</sup> Compared to these findings, the remaining effects in the table are more predictable. The siting of a school in an area of high immigrant concentration does promote foreign language retention, partially neutralizing the effect of co-ethnic peers. Average SES reduces foreign language proficiency and the positive slope of home foreign language. However, in this sample, neither effect reaches statistical significance.



The story is quite different when we turn to school contextual effects on Latin-origin students. Forty out of 42 schools in the sample are eligible for this analysis. Results are presented in Table 5. There is a predictable overlap in the pattern of previous findings since most schools participate in both analyses. For this reason and in the interest of space, we focus on the individual effect of Latin origin and the contextual influence of co-ethnic peers which, in this case, refers to other Latin students. As seen previously, Latin background is associated strongly with preservation of the parental language. The HLM analysis reveals that this effect is not fixed, but varies across schools. A first contextual factor, location of the school, makes a difference. As shown by  $\gamma_{13}$  (.20), schools sited in areas of high immigrant concentration reinforce the positive influence of Latin origin on language maintenance.

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Table 5 about here  
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A high proportion of co-ethnic students also has a strong effect on the intercept. While in the typical school foreign language knowledge tends to decline, that effect is reversed in those with a high level of Latin American concentration. The corresponding coefficient,  $\gamma_{02}$  (.97), indicates a strong tendency toward Spanish maintenance in majority Latin schools. Similarly, these schools neutralize the acculturative effect of U.S. residence whose negative influence on foreign language retention, practically disappears in schools with a strong Latin presence, as shown by  $\gamma_{22}$  (.08). This seamless set of results is partially contradicted by the negative influence of proportion of co-ethnics on the Level-1 slope for Latin origin  $\gamma_{12}$  (-.85). This negative coefficient is attributable to a ceiling effect; that is, high levels of co-ethnic

concentration strongly promote maintenance of Spanish in school and, by the same token, reduce the significance of the effect of individual Latin backgrounds.<sup>11</sup>

Overall, HLM results for the Latin American sample agree with conventional expectations concerning effects of co-ethnic concentration. Unlike majority Asian schools where the shift to English monolingualism is dominant, those where Latin students predominate strongly encourage use and retention of Spanish. The fact that, unlike Asians, all Hispanics share a common language can contribute powerfully to this contextual effect. The effect is so sizable as to neutralize the anti-foreign language influence of length of U.S. residence and that of individual ethnic background.

Overall, the models presented in tables 4 and 5 do an acceptable job at explaining variance in level-I intercepts and in the effects of U.S. residence and home foreign language. Between 40 and 66 percent of between-school variance in students' foreign language proficiency ( $\beta_{0j}$ ) is accounted for by the three contextual variables included in equations (2) and (3). They also succeed in explaining up to 40 percent of variance in the home language slope ( $\beta_{6j}$ ) and up to 97 percent in that corresponding to length of U.S. residence ( $\beta_{2j}$ ). The main limitation of these models corresponds to the coefficients for Asian and Latin ethnic backgrounds where less than 20 percent of between-school variation are accounted for. This suggests the presence of other unidentified factors affecting these variables. Still, results show a resilient effect of presence of Asian students that reinforces English monolingualism among children from Chinese and Korean backgrounds and presence of Latin students that weakens Spanish maintenance among second generation Latin Americans.

Results of a parallel generalized HLM model with our second dependent variable--bilingual fluency--reveal little between-school variation in most level-1 slopes and an absence of contextual effects, except on the intercepts. These significant effects, presented in Table 6, are noteworthy because they indicate an increase in fluent bilingualism in schools with higher average student SES and higher co-ethnic percentage. Hence, while parental language retention alone is indifferent to the average SES of schools (Tables 4 and 5), fluent bilingualism is not. This final result accords with the effects of family SES, described previously, which are insignificant on parental language retention, but significant and positive on bilingualism. The SES effect on bilingual fluency, both at the family and school levels, clearly depends on acquisition of good English skills rather than on preservation of parental languages alone.

The influence of a strong co-ethnic presence among school peers are also at variance with those seen previously. While this presence encourages English monolingualism among Asians and Spanish retention among Latins, it leads in both cases to a higher proportion of fluent bilinguals. The effect of pan-ethnic presence on the two language outcomes for Asian-origin students seem contradictory. The paradox is resolved once it is observed that only 7 percent of Asian students in the sample are fluent bilinguals. Hence, while for the majority of Asian students a context dominated by other Asians leads to English monolingualism, for a small elite it actually contributes to good skills in both languages.

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Table 6 about here  
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## VI. Conclusions

English is alive and well among the new second generation, but the languages that immigrant parents brought along are not. Among Latin American students, the most prone to preserve their parents' linguistic heritage, less than half are fluent bilinguals. The figure declines to less than 10 percent among those of Asian background. The negative influence of American acculturation on foreign language maintenance is evident in the consistent effect of length of U.S. residence. Arrayed against this influence are the effects of a co-ethnic environment at home, among friends, and in schools. Controlling for national origins, homes where a foreign language is spoken, parents who share that language, and friends of the same national origin all linguistic preservation. The same variables plus a strong contextual presence of co-ethnics in school encourage bilingualism.

The analysis reveals a complex process of causation leading to either language assimilation or bilingualism. Aside from the expected opposite effects of time in the country and supportive ethnic networks, two sets of findings stand out. First, knowledge of a foreign language and achievement of fluent bilingualism, although related, are not determined by the same set of factors. Of particular significance is the influence of socio-economic status, insignificant on parental language proficiency alone, but positive and significant on bilingualism. These effects indicate that the acquisition of good skills in both languages simultaneously, an exceptional feat among second generation youth, is far more likely among those from high status families and those who attend high status schools.

Second, net effects of national origin do not disappear after controlling for other predictors but become, in fact, clearer. There is a major disjuncture at this point between the two continental groupings that have dominated immigration to the United States during the last

decades--Latin Americans and Asians. Latin students exhibit consistently higher levels of linguistic retention even when, as in the case of Mexicans and Nicaraguans, it is not accompanied by greater bilingualism. This effect carries to the contextual level where higher numbers of Latin American students in school lead to a sizable rise in foreign language knowledge. Precisely the opposite occurs with Asian youth who, relative to their second generation peers, are significantly more prone to abandon their parents' language.

We lack the necessary information to examine causes of this notable disjuncture in patterns of language adaptation, although it can be reasonably attributed to a combination of factors. First, there is the differential difficulty in foreign language retention: Spanish is a western language that shares linguistic roots and grammatical structure with English. On the contrary, Asian languages, especially those based on pictorial characters, are foreign to Western linguistic traditions, and, hence, require much additional effort to learn and to preserve. Although there may be nothing intrinsic in a language determining relative attachment to it, the differential difficulty of its retention in America is a potentially important factor affecting second generation bilingualism.

Second, and along the same lines, Spanish language use is more strongly supported in the United States than most foreign languages. The proliferation of Spanish-language media--from local newspapers to national television chains--and the presence of large Spanish-speaking populations in many cities tend to slow down the process of linguistic acculturation. Unlike Asian immigrants, divided by multiple language backgrounds, Latin American immigrants are united by fluency in a single tongue.<sup>12</sup>

Third, immigrant communities themselves may have different outlooks about the advisability of retaining their language past the first generation. Ethnographic accounts of Asian

immigrant communities tend to stress their strong achievement orientation and entrepreneurship, but not their language loyalty (Zhou 1992; Zhou and Bankston 1994; Kim 1981). To the contrary, attachment to Spanish remains strong both in working-class Latin immigrant communities and in entrepreneurial enclaves, such as that built by Cubans in Miami (Lopez 1982; Nelson and Tienda 1985; Perez 1992; Portes and Stepick 1993). The differential importance attributed to preservation of the home language by parents can be a significant factor accounting for distinctive patterns of language adaptation among second generation groups.

Despite differences across nationalities, the most general trend observed in these data is the near universal knowledge of English, the almost equally strong preference for that language, and the dearth of fluent bilinguals which, at the relatively early age of these respondents, already represent less than a third of the sample. Passage of time will further diminish this number by weakening fluency in most foreign languages. As seen previously, the research literature makes a strong case for the positive intellectual effects of bilingualism. This conclusion is supported by our own results where, after controlling for other predictors, fluent bilinguals retain a strong advantage in all measures of academic performance. Bilinguals, for example, have a net 8 percentile points advantage in standardized math and reading scores over their monolingual peers; their grade point averages are also significantly higher.<sup>13</sup> Given the youth of this sample, we do not have comparable evidence on labor market performance, yet it is reasonable to anticipate that fluent bilinguals will have a considerable advantage. This is especially true in the metropolitan areas of Miami and San Diego where these children are growing and where they will presumably begin their work lives.

Yet, as we have seen, the only forces supporting foreign language preservation are those of family and peers in the ethnic community. Those in the outside society strongly promote

English monolingualism and their influence grows with time. With some exceptions, schools in the United States further English knowledge, but not a fluent command of foreign languages. High school Spanish, French, or other foreign language courses seldom give native English speakers more than a rudimentary acquaintance with these languages. Foreign-born students, on the other hand, are pressured to join the mainstream as soon as possible. Bilingual programs, such as ESL (English as Second Language) are designed to be remedial, lasting only as long as needed to mainstream students into English-only instruction.

The specialized literature in linguistics makes an important distinction between “additive” bilingualism, where the child learns to speak fluently a second language while retaining the first, and “subtractive” bilingualism, where one language is dominant and the other is rapidly lost. Positive cognitive and educational effects are associated with additive bilingualism, but not with the subtractive kind (Cummins 1976; Hakuta 1986: Ch. 1). Unfortunately, the type of education imparted today in the United States promotes subtractive bilingualism by giving native speakers only an elementary command of foreign languages and by strongly encouraging immigrant children to lose their fluency in the languages that they bring from home. This policy is in agreement with nativist ideals of a uniform monolingual nation, but at odds with the interests of individuals and the needs of the national economy.

Of the two Latin pronouns that form the national motto--*e pluribus unum*--schools, by and large, focus on promoting the latter. The alternative vision of a society where English is dominant and the language of common discourse, but where sizable pluralities are able to communicate correctly in other languages is generally given short thrift. For this reason, rapid loss of the linguistic *pluribus* in the new second generation is the most likely outcome of present

policies as it has been in the country's past. This represents a net loss both for children of immigrants, for the communities where they grow, and for the nation as a whole.



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## ENDNOTES

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<sup>1</sup> A recent *Boston Globe* article reports that only 2 percent of Dade county (Miami) high school graduates are true bilinguals in English and Spanish. A local businesswoman summarized the situation as follows: “We have 600,000 Hispanics here and we cannot find qualified people to write a letter in Spanish.” (Mears 1997.)

<sup>2</sup> For a contemporary version of the anti-immigrant, anti-bilingual discourse, see Brimelow (1995.)

<sup>3</sup> The foreign-born who arrive before adolescence are commonly labeled the 1.5 generation (see Rumbaut 1994.) They are included in this survey, but differences with the native-born of foreign parentage—the second generation proper—are noted and entered into the following analysis as a predictor.

<sup>4</sup> The research literature asserts that immigrants tend to speak their original language at home, but that a minority does not do so and shifts promptly to English. This is particularly the case among immigrants from countries where English is a common means of communication among speakers of various local dialects. India, the Phillippines, and certain West Indian nationalities are the principal examples (see Wolf 1997; Waters 1994.)

<sup>5</sup> To obtain the adjusted standard errors of differences in nationality coefficients between nested models, we used the method suggested by Clogg et. al. (1995.)

<sup>6</sup> Controlling for the positive effect of co-ethnic friends appears as the key variable accounting for this shift. When uncontrolled, this effect conceals the negative effects of Asian nationalities.

<sup>7</sup> Inter-group differences were tested and found significant at the .05 level.

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<sup>8</sup> School systems do not collect data on specific nationalities and, hence, it is not possible to supplement this contextual variable with an indicator of the percent of school peers who are co-nationals.

<sup>9</sup> Both the scholarly and journalistic literatures converge on this point. In general, the expectation is that co-ethnic school peers, like co-ethnic friends and family, will reinforce retention of parental languages (Lopez 1992; Portes and Rumbaut 1996; Ch. 6.) Results of this analysis directly contradict that assumption.

<sup>10</sup> A partial explanation for this effect is that Asian students (except those of the same nationality) seldom speak the same language. Notice that while the label “Asian” is used, for purposes of this analysis, to denote Chinese- or Korean-origin students in the NELS sample, school systems classify under this label a far broader array of nationalities. It is possible that the need to use English as a common means of communication among students from different Asian origins neutralizes any positive effect in the direction of language preservation that a common “ethnicity” would have. This explanation, suggested to us by R. G. Rumbaut, would lead to the expectation of *no* contextual effect of Asian peers on the first-level Asian slope. The actual effect is negative and significant which is not fully explained by the absence of a common language of communication.

<sup>11</sup> To test this interpretation, we examined the second-level effect of percent Latin in school on students from the major Latin American nationalities. Results indicate that Mexican-American students experience both the strongest individual ethnic effect in favor of Spanish and the only significant countervailing effect from co-ethnic concentration in school. Students from other Latin nationalities do not experience this

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anomalous contextual influence, which is thus interpretable as a ceiling effect in ethnic schools where retention of Spanish is already the norm.

<sup>12</sup> The single exception are Brazilians whose home language is Portuguese. Brazilian-Americans are a numerically minor group among second generation youth at present.

<sup>13</sup> Results of ordinary least squares regression models of grade point average and Stanford math and reading scores on age, sex, family SES, family composition, and immigrant nationality. Because the data are cross-sectional, it is not possible to establish unambiguously whether bilingualism directly leads to higher academic performance or whether both reflect general ability. Nevertheless, results are in agreement with the past research literature by showing a strong association between both variables and, hence, the fact that bilingualism has positive intellectual correlates.





**Table 1**  
**Linguistic Profile of Second Generation Yo**

Nationality	Knows English:		Knows Foreign Language:	
	Well %	Very Well %	Well %	Very Well %
Latin American	94.7	65.1	60.6	21.4
Colombian	98.6	70.8	59.3	19.0
Cuban	97.9	75.0	61.3	15.5
Mexican	86.1	43.7	69.1	34.9
Nicaraguan	93.0	54.9	64.0	21.7
Other Latin American <sup>b</sup>	96.9	71.7	55.6	20.7
Asian	90.3	57.9	20.1	8.8
Cambodian	91.6	28.4	10.9	4.3
Filipino	96.9	74.6	19.8	8.3
Laotian	76.4	28.0	12.3	3.9
Vietnamese	79.3	40.6	29.1	14.3
Other Asian	93.6	60.2	16.7	7.6
Haitian	95.4	71.4	15.2	2.0
West Indian <sup>c</sup>	96.4	81.4	19.9	8.8
Other	99.0	84.2	33.7	7.8
Total <sup>d</sup>	93.6	64.1	44.3	16.1

a. Knows English very well and foreign language at least well.

b. Includes all other Spanish-speaking nationalities.

c. Includes Jamaicans, Trinidadians, and other Caribbean nationalities.

d. All cell and marginal figures adjusted to reflect the multi-stage design of the sample. Cases wi

**Table 2**  
**Determinants of Foreign Language Proficiency: Second Generation Youth**  
**(robust OLS regression)**

Variable	Model 1	Model II	Model III
<i>National Background:</i>			
Colombian	.78** (7.6)	.68* (6.8)	.47** (4.6)
Cuban	.74** (8.4)	.69** (7.2)	.50** (5.0)
Mexican	1.02** (9.2)	.85** (8.8)	.64** (7.2)
Nicaraguan	.89** (8.4)	.53** (5.4)	.32** (3.6)
Other Latin American	.76** (8.6)	.65** (6.7)	.45** (4.5)
Haitian	-.01 (.05)	-.15 (1.5)	-.33** (3.4)
West Indian	-.38* (2.2)	-.45** (2.8)	-.15 (1.0)
Cambodian	.06 (.49)	-.29* (2.6)	-.54** (4.8)
Filipino	-.14 (1.3)	-.34** (3.6)	-.51** (5.4)
Laotian	.08 (.72)	-.33** (3.3)	-.55** (5.4)
Vietnamese	.34** (3.2)	-.02 (.24)	-.25** (2.7)
Other Asian	-.09 (.72)	-.15 (1.5)	-.30** (3.4)
<i>Individual Characteristics:</i>			
Male	--	-.13** (3.3)	-.12** (3.4)
Age	--	.05* (2.7)	.05** (3.1)
Length of U.S. residence	--	-.09** (15.0)	-.09** (14.0)
Co-ethnic friend	--	.26** (8.0)	.21** (11.6)
<i>Family Characteristics:</i>			
Family SES	--	--	-.03 (1.2)
Missing SES	--	--	-.01 (.16)
Intact family with parents of same native language	--	--	.12** (5.1)
Co-resident kin	--	--	.02 (.93)
Home foreign language	--	--	.93** (7.1)
R <sup>2</sup>	.21	.34	.39
N=4914			

Note: t-ratios in parentheses. \*\* p<.01      \* p<.05

**Table 3**  
**Determinants of Bilingual Fluency: Second Generation Youth**  
**(robust logistic regression)**

Variable	Model 1	Model II	Model III
<i>National Background:</i>			
Colombian	1.96* (2.5)	1.86* (2.3)	1.56 (1.6)
Cuban	2.47** (4.1)	2.05** (3.3)	1.75** (2.7)
Mexican	.95 (.21)	.86 (.55)	.92 (.39)
Nicaraguan	1.46 (1.7)	1.49 (1.8)	1.25 (1.0)
Other Latin American	1.95** (3.3)	1.88** (3.0)	1.61* (2.2)
Haitian	.21 (4.6)	.19** (4.6)	.17** (5.4)
West Indian	.57* (2.0)	.56* (2.1)	.98 (.05)
Cambodian	.07** (3.9)	.06** (3.8)	.07** (3.6)
Filipino	.28** (5.5)	.25** (6.5)	.20** (7.1)
Laotian	.04** (5.5)	.04** (5.3)	.04** (5.1)
Vietnamese	.16** (4.5)	.15** (4.8)	.20** (6.6)
Other Asian	.23** (5.9)	.23** (5.8)	
<i>Individual Characteristics:</i>			
Male	--	.70** (3.0)	.67** (3.9)
Age	--	.90 (1.9)	.94 (1.3)
Length of U.S. residence	--	1.03 (1.8)	1.03 (1.9)
Co-ethnic friend	--	1.32* (2.5)	1.29* (2.2)
<i>Family Characteristics:</i>			
Family SES	--	--	1.31** (4.4)
Missing SES	--	--	.59 (1.5)
Intact family with parents of same native language	--	--	1.18** (2.8)
Co-resident kin	--	--	.89 (1.4)
Home foreign language	--	--	6.20** (6.4)
Model Improvement: chi Square (degrees of freedom) N=4914	--	27.3(4)**	79.3(5)**

Note: Figures are net effect on the odds ratio of being fully bilingual; t-values in parentheses.  
 \*\* p<.01      \* p<.05

**Table 4**  
**Hierarchical Linear Models of Foreign Language Proficiency in Schools with Sufficient Number of Asian-Origin Students**

	$\beta_{0j}$ (Mean Proficiency)	$\beta_{1j}$ (Asian)	$\beta_{2j}$ (US residence)	$\beta_{3j}$ (Co-ethnic friend)	$\beta_{4j}$ (Family SES)	$\beta_{5j}$ (Intact Family)	$\beta_{6j}$ (Home Foreign Language)
<b>RANDOM COEFFICIENTS MODEL:</b>							
$\gamma_{q0}$ (intercept)	-.02	-.72**	-.08**	.25**	-.06*	.13**	1.03**
t-ratio	(.39)	(11.1)	(14.4)	(8.3)	(2.6)	(4.8)	(13.7)
$\tau_{qq}$ (residual variance) <sup>a</sup>	.138**	.074**	.001**	.006	.007*	.005	.107**
Chi-square (df)	1047(35)	70(35)	107(35)	30(35)	52(35)	45(35)	80(35)
Reliability	.939	.403	.493	.149	.292	.172	.440
<b>INTERCEPTS-AND-SLOPES-AS OUTCOMES MODEL<sup>b</sup>:</b>							
$\gamma_{q0}$ (intercept)	-.08	-.62**	-.05**	..c	..c	..c	1.36**
t-ratio	(.63)	(2.9)	(4.9)				(7.3)
$\gamma_{q1}$ (AVSES)	-.09	.13	-.02	--	--	--	-.30
t-ratio	(.48)	(.43)	(1.6)				(1.1)
$\gamma_{q2}$ (CO-ETHNIC) <sup>d</sup>	-.80*	-1.07*	-.15**	--	--	--	-.85
t-ratio	(2.5)	(2.4)	(7.5)				(1.9)
$\gamma_{q3}$ (IMM AREA)	.46**	.06	.01	--	--	--	-.22
t-ratio	(4.9)	(.38)	(2.0)				(1.5)
$\tau_{qq}$ (residual variance) <sup>a</sup>	.081**	.064**	.000	--	--	--	.064**
Chi-square (df)	514(32)	88(32)	4180(32)				62(32)
Percent variance explained	41.5	13.3	96.8	--	--	--	39.5
N=36							

a. Null hypothesis:  $\tau_{qq} = 0$ .

b. Model controls for sex, age, SES, missing SES, intact families, co-resident kin, and co-ethnic friends. Coefficients for these variables are not shown.

c. Treated as fixed since between-school variance is insignificant.

d. Percent Asian students in school.

\*\*p<.01      \*p<.05

**Table 5**  
**Hierarchical Linear Models of Foreign Language Proficiency in Schools with Su**

	$\beta_{0j}$ (Mean Proficiency)	$\beta_{1j}$ (Latin)	$\beta_{2j}$ (US residence)	(Co-c
<b>RANDOM COEFFICIENTS MODEL</b>				
$\gamma_{q0}$ (intercept) t-ratio	-.02 (.39)	.69** (11.1)	-.08** (15.3)	
$\tau_{qq}$ (residual variance) <sup>a</sup> Chi-square (df)	.138** 1166(39)	.102** 107(39)	.001** 108(39)	
Reliability	.940	.589	.489	
<b>INTERCEPTS-AND-SLOPES-AS-OUTCOMES MODEL<sup>b</sup></b>				
$\gamma_{q0}$ (intercept) t-ratio	-.33** (3.4)	.86** (5.1)	-.09** (7.2)	
$\gamma_{q1}$ (AVSES) t-ratio	-.16 (1.1)	.14 (.55)	-.03 (1.8)	
$\gamma_{q2}$ (CO-ETHNIC) <sup>d</sup> t-ratio	.97** (6.0)	-.85** (3.1)	.08** (4.7)	
$\gamma_{q3}$ (IMM AREA) t-ratio	.01 (.06)	.20* (1.3)	-.02 (1.5)	
$\tau_{qq}$ (residual variance) <sup>a</sup> Chi-square (df)	.046** 329(36)	.090** 108(36)	.000* 57(36)	
Percent variance explained	66.5	11.5	66.7	
N=40				

a. Null hypothesis:  $\tau_{qq} = 0$ .

b. Model controls for sex, age, SES, missing SES, both parents of same native language, co-resident kin, and co-ethnic friend.

c. Treated as fixed since between-school variance is insignificant.

d. Percent Latin-origin students in school.

\*\*p<.01

\*p<.05

**Table 6. Hierarchical Generalized Linear Models for Bilingual Fluency: Second Generation Youth**

	$\beta_{ij}$
<b>RANDOM COEFFICIENTS MODEL:</b>	
$\gamma_{q0}$ (intercept)	.30**
t-ratio	(8.5)
$\tau_{qq}$ (residual variance)	.756**
Chi-squares(df)	793(41)
Reliability	.883
<b>INTERCEPTS-AS-OUTCOMES MODEL:</b>	
$\gamma_{q0}$ (intercept)	.27**
t-ratio	[.21] (16.1)
$\gamma_{q1}$ (AVSES)	2.23*
t-ratio	[.07] (2.4)
$\gamma_{q2}$ (CO-ETHNIC)	16.58**
t-ratio	[.09] (6.8)
$\gamma_{q3}$ (IMM AREA)	.68
t-ratio	(1.5)
$\tau_{qq}$ (residual variance) <sup>a</sup>	.29469**
Chi-square(df)	212(38)
% explained by level-2 predictors	60.5
N=42	

a. Null hypothesis:  $\tau_{qq} = 0$ .

Note: The model controls for Asian origin, Latin origin, sex, age, SES, missing SES, parents of same native language, co-resident kin, co-ethnic friends, and home language. Coefficients corresponding to these variables are omitted from the table. Coefficients represent net effects on the odds ratio of average bilingualism in each school. Associated probabilities are in brackets. \*\* $p < .01$  \* $p < .05$

**Appendix. Descriptive Statistics of Variables**

Variable	<u>Total</u>		<u>Asian</u>		<u>Hispanic</u>	
	Mean	SD	Mean	SD	Mean	SD
<i>Student-Level:</i>						
<u>Dependent Variable:</u>						
Foreign language proficiency	.00	1.00	-.44	.91	.38	.85
Bilingual fluency	.27	.44	.07	.26	.40	.49
<u>National Background:</u>						
Colombian	.04	.20				
Cuban	.23	.42				
Mexican	.14	.34				
Nicaraguan	.06	.24				
Other Latin American	.10	.30				
Haitian	.03	.16				
West Indian	.05	.22				
Cambodian	.02	.13				
Filipino	.15	.36				
Laotian	.03	.17				
Vietnamese	.07	.25				
Other Asian	.05	.22				
<u>Individual Characteristics:</u>						
Male	.49	.50	.49	.50	.50	.50
Age	14.23	.86	14.23	.86	14.22	.86
Length of U.S. residence	11.26	3.64	10.37	4.05	11.72	3.38
Co-ethnic friend	.76	.43	.77	.42	.81	.39
<u>Family Characteristics:</u>						
Socio-economic Status	-.01	.72	.04	.71	-.08	.73
Missing SES	.04	.19	.09	.29	.01	.09
Intact family with parents of same native language	.55	.50	.65	.48	.53	.50
Co-resident kin	.23	.42	.27	.45	.21	.41
Home foreign language	.93	.25	.95	.21	.97	.17
	N	4,924		1,594		2,771
<u>School-Level:</u>						
Average socio-economic status	.53	.25				
Percent Hispanic	.39	.31				
Percent Asian	.11	.14				
School sited in immigrant area	.40	.50				
	N	42				
				47		