



## Dual Language Proficiency and the Educational Attainment of Latinos

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### ABSTRACT

The relationship between Spanish maintenance and the educational attainment of English-speaking Latino students in the United States is investigated using data from the National Education Longitudinal Survey. The analysis indicates that biliterate students are significantly more likely to complete high school compared to their monolingual peers. Those with oral proficiency in Spanish and English are not significantly different in terms of their likelihood of high school completion than were those who spoke only English. Biliterate students are also significantly more likely to enter college than those who speak only English. Overall, this research indicates that bilingualism, offers Latino students an advantage in terms of educational attainment.

*Keywords:* 1. international migration, 2. bilingualism, 3. Spanish, 4. Latinos, 5. United States.

### RESUMEN

Usando datos de la Encuesta Logitudinal sobre Educación Nacional, se investiga la relación entre la conservación del español y los logros educativos de los estudiantes latinos en Estados Unidos que hablan inglés. El análisis indica que los estudiantes bilingües significativamente tienen más probabilidad de completar el bachillerato (*high school*) en comparación con sus compañeros monolingües. Aquellos estudiantes con la habilidad de hablar bien español e inglés no son significativamente diferentes –en términos de probabilidad– de terminar el bachillerato y tienen significativamente más probabilidad de entrar a la universidad que aquellos que solamente hablan inglés. En conclusión, esta investigación muestra que el bilingüismo ofrece a los estudiantes latinos una ventaja en términos de logros educativos.

*Keywords:* 1. migración internacional, 2. bilingüismo, 3. español, 4. latinos, 5. Estados Unidos.

Fueled by high levels of immigration, Latino students have become a substantial part of the U.S. school population. Thus, the educational attainment of U.S. Latino students, which is considerably lower than that of their European American and Asian American peers, is a pressing contemporary educational issue. This article addresses the effect of dual language proficiency on the educational attainment of fully English-proficient Latino students. The results indicate that among Latinos who are fluent in English, Spanish retention, particularly in the form of Spanish literacy, has a positive impact on high school completion, entry into any college, and entry into an accredited bachelor's degree program.\*

A great deal of research and attention has focused on the academic problems facing students with limited English proficiency, such as low levels of achievement, placement into lower grade levels or educational tracks, and high dropout levels (Bean and Tienda, 1987; Clifton *et al.*, 1986; Donato, Menchaca, and Valencia, 1991; Ekstrom, Goertze, and Pollack, 1986; Fligstein and Fernández, 1985; Ready, 1991; Roscigno, Vélez, and Ainsworth-Darnell, 2001; Rumbaut, 1997; Warren, 1996). However, little research has addressed the impact of the level of proficiency in Spanish *in addition to* English proficiency on educational attainment, even though depressed educational attainment for English-speaking Latinos continues to be a concern.

Further, research on the impact of bilingualism on academic outcomes has primarily focused on aspects of educational achievement, such as achievement test scores and grades.<sup>1</sup> The question of the effect of language on educational attainment, addressed in this article, is significant because educational credentials have a great impact on life chances and social mobility. A traditional route to socioeconomic mobility in the United States is through educational attainment or perseverance in the educational system. Alternative routes, such as ethnic networks, can link one to occupational opportunities in ethnic niches or enclaves (Zhou, 1992). However, throughout much of the United States (with a few exceptions, such as in Miami, see for example Portes and Manning,

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<sup>1</sup> "Achievement" generally refers to a child's competency in the material taught in school, as measured by grade point average or achievement test scores. "Attainment" refers to a child's progression through the school system to higher levels of education and the obtaining of educational credentials.

1986), these networks operate by linking co-ethnics with occupations in the mainstream economy, which may provide social mobility but also typically require educational credentials.

### *Bilingual Proficiencies and Educational Outcomes*

Scholarly research about the effect of the persistence of an ethnic mother tongue for educational outcomes has generated mixed results. Increasingly, researchers are finding that the maintenance of an ethnic mother tongue in addition to English is associated with enhanced educational achievement (Bankston and Zhou, 1995; Fernández and Nielson, 1986; Nielson and Lerner, 1986; Peal and Lambert, 1962; Portes and Rumbaut, 2001; Rumberger and Larson, 1998; Zhou and Bankston, 1998). They also associate language loss with the phenomenon of “second-generation decline,” that is, lower academic performance of U.S.-born students compared to their immigrant co-ethnics (Baral, 1979; Gans, 1992; Baral, 1979; Matute-Bianchi, 1991; Suárez-Orozco, 1991; Valverde, 1987; Matute-Bianchi, 1986; Valverde, 1987; Zhou, 1997). However, Francis Evans and James Anderson (1973) find that when achievement is measured using standardized tests, Mexican American students who speak Spanish at home score lower than both Anglos and Mexican Americans who speak English at home, but when achievement is measured using course grades, the researchers find that home language has no effect. Alejandro Portes and Rubén Rumbaut (1990), using samples of school children in San Diego and Miami, find that bilingualism is positively associated with higher course grades for Asian and Cuban but not Mexican students. Jennifer Glick and Michael White (2003) find that compared to living in an English monolingual household, living in a non-English-language household is associated with lower test scores, while living in an English-dominant bilingual household is associated with higher test scores. Eugene Kennedy and Hae-Seong Park (1994) find that speaking a language other than English at home is positively associated with higher grades but negatively associated with standardized achievement scores for students from Asian ethnic groups. For Mexican-American children, however, language was found to have no effect when socioeconomic background, hours of homework, self-concept, sense of control over life, and educational expectations were included in the regression models. In their research on Asian students, Ted Mouw and Yu Xie (1999) find that bilingualism offers no educational advantage per se. Rather, use of an immigrant mother tongue enhances educational achievement only for those whose parents do not speak English.

Regarding educational attainment, Charles Hirschman (1996) finds that longer duration in the United States is associated with greater school enrollment. However, in a later study utilizing the same data, Hirschman (2001) finds that immigrant adolescents are at least as likely as their native-born peers to be enrolled in high school, although he does not distinguish between the language characteristics of the immigrants and native born. White and Glick (2000) find that students from bilingual homes are significantly more likely to remain in high school until the senior year than are those from homes where only one language is used, and among dropouts, bilinguals are more likely to continue some other type of training. However, in later work, Glick and White (2003) find some relatively minor, but significant, differences in the effect of home language by student cohorts across a ten-year period, although they note that there are few differences across language backgrounds when controlling for socioeconomic status.

*Theoretical Perspectives on the Role  
of Language in Educational Attainment*

Four theoretical models address educational effects of language for Latino children: assimilation, multiculturalism, the cognitive perspective, and segmented assimilation. Assimilation theory posits that speaking “only English” is positively associated with educational attainment. Multicultural and cognitive models theorize that dual language proficiency, rather than English monolingualism, is positively associated with educational success. Segmented assimilation theory implies that the effects of language on subsequent educational attainment vary by individual, family, and neighborhood characteristics, but that the maintenance of an ethnic mother tongue is generally associated with greater academic performance.

*Assimilation*

Assimilation theory anticipates a “payoff from acculturation” for immigrants in American institutions (Logan and Alba, 1993:252), positively associating English monolingualism with educational attainment. Despite variation in progression through the stages of acculturation, particularly regarding language (Fishman, 1972; Stevens, 1986), assimilation theory assumes a transition over generations to only English, which is generally considered to be a step toward increased acceptance and

full participation in all areas of society, including the educational system (Gans, 1979/1996). The assimilation approach posits knowledge of English as the key to academic success in the U.S. educational context, and educational success is linked to future career and socioeconomic success.

### *Multiculturalism*

Multiculturalism reflects a variety of theoretical perspectives united by a vision of U.S. society as an array of various ethnic cultures. Multiculturalism rejects the notion of assimilation to a Eurocentric monoculture (Goldberg, 1994) or a unified core (Zhou, 1997), and it values retention of an ethnic mother tongue, which it associates with increased educational attainment and achievement. Horace Kallen's (1915/1996) early formulations of cultural pluralism contained explicit references to the importance of literacy in an ethnic mother tongue. More contemporary varieties of multiculturalism, such as cosmopolitanism (Hollinger, 1995), associate fluency in foreign languages with globalism and an acceptance of diversity. As fluency in two languages is increasingly coveted in a global economy, instruction in non-English languages is coming to be seen as an important part of educational curriculums (see U.S. Department of Education, 1998). When language skills are part of formal or informal academic evaluations of students, bilingualism can help students toward the route of higher education. As such, biliteracy may be an indicator of cultural capital, subtly conveying that the student possesses specialized knowledge associated with a well-rounded academic preparation (Bourdieu, 2000). In a cosmopolitan, multicultural context, a student's interest in languages may be viewed by teachers as a cultural indicator of someone who will succeed academically and move toward college. Based on their findings that studying a foreign language in the ninth grade is a significant factor for placement into a college-track program in high school, Karl Alexander and Martha Cook theorize that "foreign language represents one of the few avenues for implementing one's preference for an academically rigorous program of study" (1982:633). Because educators associate knowledge of two languages with academically focused students who have high attainment goals, bilingual students' interest in language prior to high school may make them more likely than other students to be placed in college-track programs when they enter high school. Thus, from a multicultural perspective, retention of Spanish is hypothesized as having a positive effect on educational outcomes.

*Cognitive Perspectives*

Several researchers argue that high-level bilingualism is beneficial to cognitive development (Bain, 1974; Bialystok, 1988; Cummins, 1976; Duncan and De Ávila, 1979; Peal and Lambert, 1962; Willig, 1985). In this line of research, the cognitive advantages associated with bilingualism are related to having two or more codes for every concept, allowing for greater mental flexibility. As such, cognitive benefits associated with “multicompetence” (Cook, 1992) may extend into other academic pursuits. István Kecskés (1998), for example, argues that intensive learning of a second language can enhance development of the first language (see also Kecskés and Papp, 2000). Building on Vygotsky’s (1962) work, Kecskés argues that the study of grammar and writing is “crucial for the mental development of the child because these two help children rise to a higher level of speech development by making them become aware of what they are doing with language” (1998:324). Kecskés finds that the process of mental development associated with gaining literacy in the first language extends to the study of a second language, which, in turn, facilitates greater capacity in the first language. Such enhanced mental development may give students an advantage in other academic subjects, ultimately leading biliterate students to higher levels of educational attainment. Along similar lines, Lily Wong Fillmore (1991) argues that loss of a first language among young children can also result in parents’ inability to teach their children lessons appropriate for their developmental stages.

*Segmented Assimilation*

Segmented assimilation theory suggests that there are three different routes of incorporation available to children of immigrants: assimilation into the middle class, assimilation into an “underclass,” or preservation of an ethnic identity within the immigrant community (Portes and Zhou, 1993; Portes and Rumbaut, 2001). This implies that the effects of language on subsequent educational and occupational attainment vary by individual, family, and neighborhood characteristics (Portes, 1995; Rumbaut, 1996). What is novel about segmented assimilation theory is the notion that assimilation can have negative consequences for immigrant children because assimilation into an underclass is seen to restrict social mobility for those children (Portes, 1995; Zhou and Bankston, 1998).

Segmented assimilation theory focuses on the integration of first- and second-generation children into inner-city cultural norms that are said

to devalue educational success as a route to social mobility (Fernández-Kelly, 1995; Fernández-Kelly, 1998; Portes and Zhou, 1993; Zhou, 1997). In this view, educational success is associated with “acting white,” something their peers reject (Fordham and Ogbu, 1986), and the children cannot reconcile parental expectations regarding education with the desire to fit into their peer culture. They are, in short, “both more aware of the existence of discrimination and more dubious about their chances to overcome it” (Portes, 1995:265). Therefore, segmented assimilation theorists believe that these children risk falling into an underclass. This theory suggests that for poor and urban immigrants and their descendants, shifting to “only English” results in blocked social mobility.

Segmented assimilation theory hypothesizes that ethnic families and communities use language to influence younger members to strive for educational success. Bilingualism in the younger generation can allow parents to retain authority that can be lost without effective communication with their English-speaking children (García-Coll and Magnuson, 1997). Bilingualism can also allow elder family and community members, who may not know English well, to exert social control aimed at ensuring that children succeed academically and persevere in the education system so they can live out their parents’ hopes for social mobility (Portes and Zhou, 1993; Portes, 1995; Zhou and Bankston, 1998). Given the risks of assimilation into an urban underclass, the segmented assimilation perspective seems to imply that retention of an ethnic language has a protective function, which is more pronounced for those living in poor and urban areas.

The segmented assimilation perspective emphasizes the importance of social capital networks, maintained through the ethnic mother tongue, in fostering students’ perseverance in the educational system (Fernández-Kelly, 1998; Zhou and Bankston, 1996). Because oral rather than written communication sustains social networks, one might anticipate that attainment associated with dual language skills would accrue to both those with substantial oral proficiency and those who are literate in Spanish. In short, students with high levels of oral proficiency and biliterate students should both benefit from co-ethnic social pressures to persevere in their studies and to enter college.

In summary, the cognitive, the multicultural, and the segmented assimilation perspectives all anticipate that Spanish maintenance, in addition to English-language fluency, enhances educational attainment, albeit based on different criteria. In contrast, the assimilation perspective anticipates that English monolingualism is associated with enhanced educational attainment.

### *Data and Methods*

The data used in this research are from the restricted-use version of the National Education Longitudinal Survey (NELS:88). To date, NELS:88 is the only longitudinal, nationally representative dataset that follows the academic trajectories of youth from their pre-high school years through their mid-twenties. It includes rich data on home language use and multiple indicators of proficiency in English and Spanish, as well as social, demographic, and education-related information. NELS:88 was administered in 1988 to 25,000 eighth graders and to their parents, teachers, and principals, and it provides individual, family, and school-level data. Surveys were again administered to the same students in 1990, 1992, 1994, and 2000. Hispanic students were over-sampled. The research reported on in this article used a sample of students who remained in the study from 1988 to 1994. Those records were linked to 1990 U.S. Census data, at the zip-code level, to provide contextual data on the neighborhoods in which the children lived.

### *Dependent Variables*

*High School Completion*, a dichotomous variable, indicates whether a student had completed high school or the equivalent (GED or high school certificate) by 1994 (completed=1/not completed=0).

*College Enrollment*, a dichotomous variable, measures whether a student was enrolled in an associate's degree or bachelor's degree program, based on the student's self-report in 1994 (enrolled=1/not enrolled=0).

*Bachelor's Degree Program Enrollment*, a dichotomous variable, measures whether a student was enrolled in an accredited bachelor's degree program based on the student's self-report in 1994 (enrolled=1/not enrolled=0).

### *Primary Independent Variable*

*Dual Language Proficiency* variables reflect the student's overall language proficiency in speaking, understanding, reading, and writing in English and Spanish in the eighth grade. Four categories were created from student's responses to nine questions for self-rating of proficiency in English and Spanish: English only, English dominant, oral bilingual, and biliterate.<sup>2</sup> Using these categories frees the research from what

<sup>2</sup> For the English proficiency measures, students were asked four questions: How well do you do the following? How well do you...a. Understand spoken English? b. Speak English?

Alejandro Portes and Lingxin Hao have described as “a dualistic framework [in much of the research on bilingualism] where foreign monolingualism is opposed to full assimilation into English” (2002, 891). A typology for the various measures of language proficiency was built from the student self-reports: *English Only*: an individual who speaks, reads, and writes only in English. *English Dominant*: an individual who has high proficiency in English, limited oral proficiency in Spanish, and is not literate in Spanish. *Oral Bilingual*: an individual who has high proficiency in English and high oral proficiency in Spanish, but who has limited reading and writing abilities in Spanish. *Biliterate*: an individual who is both highly proficient in English and highly literate in Spanish.

The categories of “oral bilingual” and “biliterate,” which are similar to the notion of folk versus fluent bilingualism (Portes and Rumbaut, 1996), are useful because they distinguish between different language-skill dimensions, namely oral proficiency and literacy. Except for a very few cases, those students classified as biliterate were also highly proficient in oral Spanish. Because this research focuses on the impact of Spanish retention in addition to high overall English-language proficiency, those with limited English were omitted. Among English-proficient Latino students, 21.2% spoke only English, 20.7% were English dominant, 20.6% were oral bilinguals, and 37.5% were biliterate. (See table 1 for means and standard deviations for all variables used in the multivariate analysis.)

c. Read English? d. Write English? Students could respond very well, pretty well, well, or not very well. Items were coded as follows: Very well=4, Pretty well=3, Well=2, Not very well=1. In the NELS:88 survey, these questions were asked of students who responded “yes” to the question “Is any language other than English spoken in your home?” The value assigned to the response “very well” is imputed for monolingual English speakers.

Spanish proficiency is measured using NELS:88 survey questions: To determine Spanish proficiency, the following questions were used: With regard to THAT LANGUAGE, how well do you do the following? How well do you... a. Understand that language when people speak it? b. Speak that language? c. Read that language? d. Write that language? This time students could respond very well, pretty well, well, not very well, or not at all. The responses are coded as follows: Very Well=4, Pretty Well=3, Well=2, Not very well=1, Not at all=0. Students were asked these four questions if they answered “yes” to the screening question, “Is any language other than English spoken in your home?” Only those who responded “Spanish” to the follow-up question “What language, other than English, do you currently use most often?” were selected for inclusion in this analysis. A score of “0” reflecting a response of “not at all” on the home language proficiency measure was assigned to those who indicated that only English is used in their home.

Those who report high overall English proficiency and some limited oral proficiency in Spanish, but no reading or writing abilities are categorized as English dominant. Those who report high overall English proficiency, high oral proficiency in Spanish, but low proficiency in reading and writing (less than “well”) in Spanish are categorized as bilingual. Those who have high overall proficiency in English and can also read and write well in Spanish (at least “well”) are categorized as biliterate. Those who report low levels of English proficiency are not included in this analysis.

Table 1. Descriptive statistics for variables used in the regression analysis (N = 1616).

<i>Educational attainment</i>			
High school completion	0.816	0.016	0.387
College entry	0.383	0.016	0.486
Entry into bachelor's degree program	0.200	0.013	0.400
<i>Dual language proficiency</i>			
English dominant	0.207	0.014	0.405
Bilingual	0.206	0.017	0.405
Biliterate	0.375	0.022	0.484
<i>Ethnicity</i>			
Cuban	0.044	0.012	0.205
Puerto Rican	0.104	0.014	0.306
Other Hispanic	0.193	0.016	0.395
<i>Race</i>			
Black	0.044	0.007	0.204
White	0.603	0.021	0.489
<i>Generation</i>			
Second generation	0.362	0.025	0.481
First generation	0.156	0.017	0.363
Unknown generation	0.128	0.014	0.334
<i>Religion</i>			
Catholic	0.477	0.019	0.499
<i>Sex</i>			
Male	0.651	0.019	0.477
<i>Time spent on homework</i>			
	6.454	0.188	5.417
<i>Family variables</i>			
Single parent	0.173	0.014	0.373
Number of siblings	2.788	0.071	1.672
Socioeconomic status	-0.618	0.038	0.748
<i>School type</i>			
Catholic school	0.056	0.012	0.229
Private school	0.018	0.008	0.134
<i>Neighborhood and geographic variables</i>			
Percent urban	74.179	4.198	41.566
Percent Hispanic	42.649	2.734	31.281
Neighborhood median household income	27.278	0.719	11.201

Source: National Educational Longitudinal Survey.

### Control Variables

*Ethnicity* is measured by a series of dummy variables based on the student's response to the question, "Which of these best categorizes

your background?" There are four possible responses: (1) Mexican, Mexican-American, or Chicano, (2) Cuban, (3) Puerto Rican, or (4) Other Hispanic. "Mexican, Mexican-American, or Chicano" is the omitted category.

*Race* is measured by a series of dummy variables based on the student's response to the question, "What is your race?" There are three possible Latino responses: Black, White, and Other. "Other" is the omitted category.

*Gender* is a dichotomous variable measured by the student's self-report of sex, either male or female (male=1/female=0).

*Generation* is measured by a series of dummy variables constructed from questions on student and parent birthplaces for the base year (eighth grade):<sup>3</sup> first generation (children born outside of the United States), second generation (U.S.-born children with at least one foreign-born parent), third and later generations (U.S.-born children of native-born parents), and unknown generation. "Third and later generations" is the omitted category. "Unknown generation" is included because nearly 13% of the English-proficient Latino sample is missing data only on generation status. Although there are some indications that the group missing generation-status data is comprised mostly of first- and second-generation children, the evidence is not compelling enough to warrant an imputation of data on this variable.

*Religion* is a dichotomous variable that indicates whether the student is Catholic or belongs to another religion (Catholic=1/non-Catholic=0). Retention of the Catholic religion is often an indicator of retention of ethnic cultural ties, possibly including attendance at religious services in Spanish (see also Alba, 1985; Byun, 1990).

*Time Spent on Homework* is a variable derived from two ordinal scales indicating the child's self report of the number of hours spent on homework per week, at home and school. The scales were recoded to their midpoints and added together.

*Single-Parent Status* is a dichotomous variable which indicates if the child's parents are not married or married (or in a marriage-like relationship): Not married=1/Married=0.

*Number of Siblings* is a variable measuring the student's or parent's base-year report of the number of brothers and sisters the student has, including any stepbrothers or stepsisters who live in the same home. Values range from "0" to "6 and above."

*Socioeconomic Status* is measured using a standardized scale created by the National Center for Education Statistics (NCES), which includes parents' income, occupation, and education. The range for the variable is -2.97 through 2.56.

<sup>3</sup> See Oropesa and Landale (1997) for a similar identification of immigrant generation.

*School Type* is a series of dichotomous variables indicating whether the student attends a public, Catholic, or private high school.

*Neighborhood Context* is measured by three variables created by linking the NELS:88 data to 1990 U.S. Census data using zip-code identifiers: average household income, urbanism (percentage of the zip-code area defined by the Census as urban), and percentage of residents who are Hispanic.<sup>4</sup>

#### *Analytic Strategy*

Selecting only those students who speak English well (N=1616) regardless of Spanish ability, descriptive statistics and logistic regression were used to examine the impact of various dual-language proficiencies (and the control variables) on the likelihood that students will graduate from high school (or receive a GED), attend any college, or attend a bachelor's degree program. A distinction is drawn between "any college program" (community college two-year programs and four-year programs) and an accredited bachelor's degree program because the latter generally has more rigorous admission's criteria. A series of regression models were estimated for each of the dependent variables in order to determine whether the various language abilities have an effect over and above the control variables. Given that the segmented assimilation perspective anticipates variation in outcomes based on ethnicity and settlement context, I also included interaction terms to test for variation in the impact of language by ethnicity, socioeconomic status, and neighborhood characteristics. All analyses were weighted and the standard errors were adjusted for clustering, using AM Statistical Software.<sup>5</sup>

#### *Findings*

High school completion was highest for biliterate students (86.1%) and English monolinguals (85%) (table 2), and it was somewhat lower for English-dominant (80%) and oral-bilingual (74%) students. Enrollment in a college program was also highest for biliterate (41%) and English-dominant (40%) students, followed closely by oral bilingual students (39%), and then by English monolinguals (33%). Biliterates had higher levels of enrollment in a bachelor's degree programs—about one-quarter were enrolled—compared to slightly less than one-fifth of the students from the other high-English-proficiency groups.

<sup>4</sup> I use the term "Hispanic" in reference to the NELS:88 variables because this is the term used in the survey. Elsewhere, I used the term "Latino," as it is the preferred term among those of Latin American ancestry in the United States (Oboler, 1992).

<sup>5</sup> More information is available on this software at the American Institutes for Research web site, <http://am.air.org>.

Table 2. Effect of language use on educational attainment.

	<i>English Only</i>	<i>English Dominant</i>	<i>Bilingual</i>	<i>Biliterate</i>
Dropped out (at any time)	23.0%	30.1%	39.3%	24.8%
Completed high school	85.0%	80.0%	73.8%	86.1%
Entered an associate's or bachelor's degree program	33.2%	39.9%	38.8%	41.4%
Entered a bachelor's degree program	17.6%	17.9%	19.30%	24.3%

Source: National Educational Longitudinal Survey.

### *Multivariate Analysis*

The results of five logistic regression models address the impact of dual language proficiency on high school completion (table 3). These regression models include only Latino students who are English proficient and who may or may not have additional proficiency in Spanish. At the bivariate level, no significant association between dual language proficiency and high school completion appears to exist. The baseline model (Model 1) includes individual-level characteristics, while the other models add to the baseline family structure (Model 2), socioeconomic status (Model 3), school type (Model 4), and neighborhood characteristics (Model 5). Models 1 and 2 indicate that dual language proficiency has no significant impact on high school graduation, but there are significant effects of ethnicity, race, and family structure. However, when controlling for family socioeconomic status (Model 3), biliterate students appear to be significantly more likely to complete high school compared to those who speak English only. However, in terms of completing high school, those with oral proficiency in Spanish (English-dominant and bilingual students) do not appear to be significantly different from those who speak only English. Net of the effects of the control variables in Model 3, biliterate students are more than twice as likely to complete high school compared to those who speak only English ( $2.32 = \exp(.843)$ ). When socioeconomic status is entered into the model (see Model 3), the effects of family structure fall from significance, and the effect of race falls just short of significance, although it reemerges in Models 4 and 5. It is not entirely surprising that biliteracy emerges as a significant predictor of high school completion once socioeconomic status is controlled. Vincent Roscigno, María Vélez, and James Ainsworth-Darnell note that language-minority students are about "50% more likely to live in poverty," and overall, their research seems to indicate that "the obstacles language-minority students face have as

Table 3. Effects of Dual Language Proficiencies on High School Completion.

	Bivariate		Model 1		Model 2		Model 3		Model 4		Model 5	
	Esti- mate	SE										
<i>Dual language proficiency</i>												
English only (omitted)												
English dominant	-0.566	0.303	0.045	0.293	0.036	0.306	0.189	0.313	0.148	0.299	0.153	0.307
Bilingual	0.237	0.280	-0.298	0.263	-0.269	0.258	0.011	0.276	-0.043	0.275	-0.005	0.276
Biliterate	0.821*	0.402	0.561	0.295	0.566	0.295	0.843**	0.290	0.811**	0.283	0.846**	0.292
<i>Ethnicity</i>												
Mexican (omitted)												
Cuban	-0.247	0.263	0.632	0.403	0.483	0.392	0.003	0.388	0.023	0.413	0.030	0.408
Puerto Rican	1.388***	0.406	-0.193	0.248	-0.168	0.241	-0.317	0.273	-0.470	0.269	-0.388	0.306
Other Hispanic	-0.029	0.495	1.439***	0.417	1.448***	0.426	1.242**	0.432	1.216**	0.434	1.222**	0.447
<i>Race</i>												
Black	0.659**	0.235	-0.078	0.499	-0.009	0.466	0.060	0.444	0.049	0.446	0.076	0.457
White	-0.037	0.265	0.630**	0.245	0.579*	0.244	0.485	0.253	0.547*	0.255	0.529*	0.250
Other race (omitted)												
<i>Generation</i>												
Third generation (omitted)												
Second generation	-0.104	0.324	-0.207	0.263	-0.149	0.253	0.127	0.268	0.181	0.273	0.165	0.269
First generation	-0.756**	0.289	-0.280	0.325	-0.178	0.330	0.239	0.338	0.319	0.342	0.346	0.336
Unknown generation	0.07	0.213	-0.521	0.311	-0.586	0.310	-0.366	0.328	-0.389	0.308	-0.417	0.320
<i>Sex</i>												
Male	0.386	0.223	0.146	0.209	0.115	0.216	0.087	0.215	0.041	0.210	0.025	0.214

Table 3. Continuation.

	Bivariate		Model 1		Model 2		Model 3		Model 4		Model 5	
	Esti- mate	SE										
<i>Religion</i>												
Catholic	0.033	0.027	0.392	0.236	0.416	0.237	0.373	0.253	0.256	0.245	0.238	0.254
<i>Time spent on homework</i>												
	-0.561*	0.255	0.034	0.026	0.034	0.027	0.017	0.029	0.013	0.028	0.012	0.028
<i>Family variables</i>												
Single parent	-0.164**	0.052			-0.643**	0.250	-0.373	0.253	-0.375	0.253	-0.339	0.254
Number of siblings	1.026***	0.169			-0.138**	0.052	-0.067	0.056	-0.071	0.056	-0.067	0.055
Socioeconomic status	2.602*	1.036					0.969***	0.178	0.991***	0.176	0.956***	0.171
<i>School type</i>												
Public school (omitted)									2.041	1.081	2.040	1.079
Catholic school	-0.820	0.94							-2.157*	0.883	-2.204**	0.829
Private school	0.000	0.002										
<i>Neighborhood and geography variables</i>												
Percent urban	-0.005	0.003									-0.003	0.002
Percent Hispanic	0.034***	0.01									0.001	0.003
Neighborhood median household income											0.017	0.013
Constant			0.503	0.385	1.031**	0.466	1.405*	0.554	1.557***	0.438	1.242*	0.528
Log Likelihood			-708.200		-695.414		-663.962		-649.034		-646.433	

Source: National Educational Longitudinal Survey (N = 1616).  
 \*\*\*p < .001, \*\*p < .01, \*p < .05 (standard errors are robust).

Table 4. Effects of Dual Language Proficiencies on College Entry.

	Bivariate		Model 1		Model 2		Model 3		Model 4		Model 5	
	Esti- mate	SE										
<i>Dual language proficiency</i>												
English only (omitted)												
English dominant	0.426*	0.214	0.606*	0.247	0.621*	0.245	0.700**	0.249	0.671**	0.246	0.645**	0.244
Bilingual	0.362*	0.182	0.550**	0.209	0.597***	0.214	0.786***	0.216	0.741***	0.218	0.727***	0.220
Biliterate	0.449*	0.185	0.592**	0.225	0.608***	0.228	0.795***	0.226	0.807***	0.218	0.781***	0.225
<i>Ethnicity</i>												
Mexican (omitted)												
Cuban	0.943**	0.363	0.867*	0.359	0.679	0.373	0.297	0.362	0.140	0.356	0.154	0.364
Puerto Rican	0.095	0.256	0.200	0.230	0.172	0.233	-0.001	0.221	-0.170	0.221	-0.102	0.230
Other Hispanic	0.768***	0.187	1.015***	0.194	0.964***	0.201	0.720***	0.213	0.696***	0.197	0.741***	0.203
<i>Race</i>												
Black	-0.034	0.348	0.055	0.358	0.081	0.362	0.163	0.351	0.170	0.353	0.216	0.355
White	0.477***	0.162	0.515**	0.181	0.460*	0.185	0.344	0.193	0.399*	0.191	0.377*	0.192
<i>Generation</i>												
Third generation (omitted)												
Second generation	0.171	0.177	-0.069	0.193	-0.021	0.183	0.177	0.186	0.220	0.181	0.142	0.181
First generation	0.248	0.188	0.118	0.203	0.247	0.202	0.506*	0.212	0.583**	0.208	0.508*	0.210
Unknown generation	-0.24	0.229	-0.015	0.283	-0.025	0.281	0.146	0.278	0.079	0.265	-0.018	0.268
<i>Sex</i>												
Male	0.052	0.141	0.045	0.136	0.017	0.135	-0.010	0.141	-0.045	0.139	-0.042	0.139

Table 4. Continuation.

	<i>Bivariate</i>		<i>Model 1</i>		<i>Model 2</i>		<i>Model 3</i>		<i>Model 4</i>		<i>Model 5</i>	
	<i>Esti- mate</i>	<i>SE</i>										
<i>Religion</i>												
Catholic	0.460**	0.167	0.490*	0.218	0.488*	0.216	0.425	0.224	0.309	0.217	0.258	0.216
<i>Time spent on homework</i>												
	0.051***	0.012	0.055***	0.012	0.055***	0.012	0.043***	0.012	0.041***	0.012	0.041***	0.013
<i>Family variables</i>												
Single parent	-0.322	0.184			-0.336	0.190	-0.136	0.184	-0.129	0.184	-0.124	0.186
Number of siblings	-0.164***	0.042			-0.153***	0.041	-0.103*	0.041	-0.107**	0.041	-0.103*	0.041
Socioeconomic status	0.697***	0.095					0.634***	0.100	0.591***	0.104	0.556***	0.108
<i>School type</i>												
Public school (omitted)												
Catholic school	2.149***	0.269							1.718***	0.299	1.655***	0.298
Private school	-0.557	0.746							-1.321	0.962	-1.509	1.043
<i>Neighborhood and geography variables</i>												
Percent urban	0.005**	0.002									0.001	0.002
Percent Hispanic	-0.002	0.002									0.004	0.003
Neighborhood median household income	0.028***	0.007									0.014	0.007
Constant			-2.231***	0.285	-1.742***	0.330	-1.514***	0.337	-1.496***	0.331	-2.052***	0.407
Log Likelihood			-1006.580		-993.900		-968.334		-943.497		-940.310	

Source: National Educational Longitudinal Survey (N = 1616).  
 \*\*\*p < .001, \*\*p < .01, \*p < .05 (standard errors are robust).

much or more to do with their family background status than with the languages they speak” (2001:70; see also Bean and Tienda, 1987; Fernández, Paulsen, and Hirano-Nakanishi, 1989; Portes and Truelove, 1987; Valenzuela and Dornbusch, 1994; Vélez, 1989; Warren, 1996). The strong and significant positive effect of biliteracy on high school completion, net of the effects of the control variables, persists when school type and neighborhood characteristics are included in Models 4 and 5. Thus, in terms of high school completion, when controlling for socioeconomic status, biliterate students appear to have an advantage over students who are proficient in English only.

The effect of dual language proficiency on college entry (defined here as entry into an associate’s degree or bachelor’s degree program) appears to be even stronger. The results of five logistic-regression models address this (table 4). At the bivariate level, dual language proficiency is significantly associated with college entry. In the five models, all Spanish-maintaining groups—including English-dominant, oral bilingual, and biliterate students—have a significantly greater likelihood of entering college than do those students who speak only English, net of the effects of the control variables. Similar to the previous case, the coefficients for all the Spanish-maintaining groups increased when socioeconomic status was entered as a control variable. Net of the effect of the control variables in Model 3—including socioeconomic status—compared to those who speak only English, English-dominant students are 2.01 times as likely to enter college ( $2.01=\exp(.700)$ ), oral bilingual students are 2.19 times as likely to enter college ( $2.19=\exp(.786)$ ), and biliterate students are 2.21 times as likely to enter college ( $2.21=\exp(.795)$ ). When all the control variables are included in the model, as in Model 5, English-dominant Latinos are 1.91 times as likely to enter college ( $1.91=\exp(.645)$ ), oral bilinguals are 2.07 times as likely to enter college ( $2.07=\exp(.727)$ ), and biliterates are 2.18 times as likely to enter college, compared to those who speak only English ( $2.18=\exp(.781)$ ). Thus, in terms of college entry, biliteracy and oral proficiency in Spanish (including limited oral proficiency) in addition to English appear to give Latino students an advantage relative to English monolingualism.

When we examine entry into a bachelor’s degree program as opposed to entry into any college, a somewhat different story emerges (table 5). At the bivariate level, biliteracy is significantly associated with entry into a bachelor’s degree program, but neither of the Spanish oral-proficiency categories, English-dominant or oral bilingual, is significant at the bivariate level. When individual-level controls are included (Model 1), biliterate students are significantly more likely to enter bachelor’s degree programs compared to their peers who speak only English. The effect of biliteracy remains positive and significant, net of the effects of

Table 5. Effects of Dual Language Proficiencies on Entry into a Bachelor's Degree Program.

	Bivariate		Model 1		Model 2		Model 3		Model 4		Model 5	
	Esti- mate	SE										
<i>Dual language proficiency</i>												
English only (omitted)												
English dominant	0.208	0.244	0.407	0.283	0.424	0.281	0.494	0.290	0.441	0.284	0.395	0.284
Bilingual	0.094	0.235	0.322	0.292	0.366	0.305	0.572	0.307	0.491	0.298	0.436	0.300
Biliterate	0.459*	0.212	0.742**	0.259	0.755**	0.261	0.994***	0.268	0.989***	0.267	0.923***	0.272
<i>Ethnicity</i>												
Mexican (omitted)												
Cuban	0.677*	0.316	0.569*	0.288	0.375	0.303	-0.160	0.278	-0.361	0.318	-0.295	0.333
Puerto Rican	0.242	0.317	0.310	0.283	0.294	0.288	0.018	0.289	-0.195	0.280	0.021	0.283
Other Hispanic	0.736***	0.195	0.950***	0.209	0.894***	0.209	0.543*	0.237	0.484*	0.230	0.546*	0.233
<i>Race</i>												
Black	-0.178	0.470	-0.127	0.458	-0.093	0.460	0.027	0.469	0.016	0.430	0.041	0.432
White	0.387*	0.180	0.352**	0.195	0.286	0.199	0.099	0.216	0.123	0.214	0.126	0.215
<i>Other race (omitted)</i>												
<i>Generation</i>												
Third generation (omitted)												
Second generation	0.143	0.189	-0.140	0.183	-0.097	0.181	0.136	0.182	0.139	0.181	0.173	0.188
First generation	-0.090	0.240	-0.323	0.280	-0.195	0.278	0.076	0.308	0.112	0.314	0.142	0.306
Unknown generation	-0.390	0.246	-0.248	0.294	-0.269	0.295	-0.051	0.293	-0.139	0.289	-0.121	0.302
<i>Sex</i>												
Male	0.077	0.156	0.124	0.162	0.099	0.162	0.062	0.165	0.032	0.164	0.010	0.167

Table 5. Continuation.

	Bivariate		Model 1		Model 2		Model 3		Model 4		Model 5	
	Esti- mate	SE										
<i>Religion</i>												
Catholic	0.347	0.191	0.337	0.241	0.328	0.243	0.237	0.248	0.136	0.248	0.137	0.251
Time spent on homework	0.069***	0.012	0.073***	0.012	0.072***	0.012	0.058***	0.013	0.058***	0.013	0.058***	0.012
<i>Family variables</i>												
Single parent	-0.394	0.227			-0.424	0.259	-0.189	0.272	-0.203	0.284	-0.195	0.284
Number of siblings	-0.180***	0.048			-0.156***	0.046	-0.087	0.045	-0.090	0.046	-0.090	0.046
Socioeconomic status	0.865***	0.117			0.807***	0.132	0.807***	0.132	0.751***	0.139	0.803***	0.143
<i>School type</i>												
Public school (omitted)												
Catholic school	1.551***	0.406							1.057**	0.388	1.120**	0.377
Private school	0.170	0.704							-0.442	0.893	-0.392	0.865
<i>Neighborhood and geography variables</i>												
Percent urban	0.001	0.002									-0.002	0.002
Percent Hispanic	-0.003	0.003									0.003	0.003
Neighborhood median household income	0.019*	0.007									-0.003	0.010
Constant			-2.292***	0.344	-2.481***	0.372	-2.184***	0.381	-2.133***	0.377	-2.033***	0.457
Log Likelihood			-755.453		-745.974		-715.696		-706.151		-704.269	

Source: National Educational Longitudinal Survey (N = 1616).  
 \*\*\*p < .001, \*\*p < .01, \*p < .05 (standard errors are robust).

family structure, socioeconomic status, school type, and neighborhood characteristics. Net of the effects of the other variables (Model 5), biliterate students are more than two-and-a-half times as likely to enter a bachelor's degree program than are students who are proficient in English only ( $2.52 = \exp(.923)$ ), whereas students who are English-dominant or oral bilinguals (both categories indicating oral proficiency in Spanish, but not literacy) are not significantly different in their likelihood of entering a bachelor's degree program than are those who speak only English.

In additional analysis, not shown here, multiplicative terms were added to the models in tables 3, 4, and 5 to determine whether dual language proficiency interacts with socioeconomic status, ethnicity, and urbanism to produce significant differences in the likelihood of high school completion, college entry, or entry into a bachelor's degree program, as suggested by the segmented assimilation perspective. However, these interaction terms did not add significantly to the models.

### *Discussion*

Although Latino students face barriers to educational attainment compared to the majority group, the relative success of biliterate students, compared to those who speak only English, does not support the hypothesis suggested by the assimilation perspective, which would predict that "only English" offers the greatest educational advantage. Instead, in terms of educational attainment, the ability to read and write in both English and Spanish appears to offer biliterate students a significant advantage over their peers who are proficient only in English. Net of the effects of the controls, particularly socioeconomic status, biliterate students are significantly more likely to complete high school compared to their monolingual peers, whereas those with oral proficiency in Spanish (whether limited or substantial) in addition to English did not have significantly different outcomes from those who spoke only English. Biliterate students are also significantly more likely to enter college, and particularly, a bachelor's degree program, than are their peers who speak only English.

In terms of entry into any college program, oral proficiency in Spanish (whether limited or substantial) provides students with a greater likelihood of college entry compared to their English monolingual peers. Perhaps social networks, maintained in Spanish within families or neighborhoods, are conducive to communicating the importance of college entry to students. However, in terms of entering a bachelor's degree program, as opposed to any college program, biliteracy, but not oral

proficiency, offers Latino students a significant advantage relative to their English-monolingual co-ethnics.

Overall, this research indicates that bilingualism, particularly in the form of biliteracy, offers Latino students an advantage in terms of educational attainment. These findings suggest that compared to the assimilation perspective, greater explanatory power exists in theoretical models—such as the cognitive, multicultural, or segmented assimilation perspectives—that anticipate that maintenance of an ethnic language in addition to English enhances educational attainment. The findings in this article cannot definitively reveal the *ways* in which language operates to enhance educational attainment (that is, through social control of co-ethnics, cultural capital that places students on the college track, or cognitive advantages related to learning two language systems). However, the effect of oral proficiency on college entry hints that communication among co-ethnics may be relevant to promoting attainment aspirations among students, as suggested by the segmented assimilation theory. Nevertheless, oral proficiency alone is not significant in terms of students entering a bachelor's degree program, which suggests that efforts among co-ethnics to communicate attainment aspirations are not enough to significantly enhance Latino students' participation in those programs. The significance of biliteracy for entrance into bachelor's degree programs may suggest that biliterate students gain greater attainment than do students who do not maintain Spanish through higher levels of achievement, as suggested by the cognitive perspective, or because of a greater level of participation in college-track curricula, as suggested by the multicultural perspective.

#### *Future Research*

To better distinguish among the aspects of language emphasized in each of the theoretical perspectives, further research might look at not only whether bilingual proficiency offers students an advantage in terms of educational attainment but also the nature of that advantage. Although the research reported here indicates that biliterate students, proficient in both English and Spanish, have a significant educational advantage over those who are proficient in English only, the nature of this advantage requires more research.

Additional research might determine whether this advantage is a result of cognitive benefits associated with early language learning or of cultural or social capital. Given that other studies have shown higher levels of achievement associated with bilingualism (including, but not specifying biliteracy), some scholars question the causal effect of language proficiency on educational outcomes. For example, some wonder

whether early bilingualism/biliteracy produces enhanced cognitive capabilities, or whether those with higher cognitive capabilities are more likely to have strong dual language abilities (see for example MacNamara, 1966). It may be the case that biliteracy is maintained only among the most diligent students, or students with high aptitudes for language. Such students would also be likely to do well in academic pursuits. Similarly, in other work, I have found that the maintenance of biliteracy requires significant investments of time and effort by both children and their parents, and therefore, students may benefit from unusually high levels of parental involvement (Lutz, 2003).

The role of coursework in establishing dual language proficiency is an element that might be included in future biliteracy research (see Alexander and Cook, 1982). Perhaps students with early biliteracy gain an advantage in their pursuit of college entry in that they may be more likely than other students to take foreign-language coursework, a prerequisite for admission to many colleges and universities.

For research to progress in this field, however, additional data collection is warranted. The greatest obstacle to research on the impact of language on educational outcomes is the paucity of survey data, particularly nationally representative survey data that can address these issues. It is critical that new sources of survey data include measures of proficiency in both English and Spanish (and/or other languages).

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