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The role of home literacy and language environment on bilinguals' English and Spanish vocabulary development

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ABSTRACT
For the monolingual population, research has shown that vocabulary knowledge is closely related to reading achievement. However, the role of vocabulary has not been studied as extensively in the bilingual population. It is important to look at vocabulary to better understand reading achievement in the bilingual population in the United States. This study investigated the predictors of Spanish and English vocabulary for 96 fifth-grade Latino English language learners. Our results suggest that becoming or staying proficient in English did not require parental use of English in the home. However, proficiency in Spanish required both instructional support at school and social support at home; it is likely that the low social status of Spanish is related to its greater dependence on home support.

In recent years, the proportion of immigrant students, in particular Latino students, in US schools has increased dramatically. In 2001, Latinos represented 14.9% of total enrollment in elementary school and 16.7% in kindergarten (Honor, 2001). Latino students are the largest non-English speaking group in US schools (Tabors, Páez, & López, 2003), and have the lowest attainment and achievement rates of all ethnic and racial groups in the United States (Roderick, 2000). It has been well documented that poor, minority, urban, and non-English-speaking children and

immigrant children in general have more difficulty in learning to read than the average student (Gauvain, Savage, & McCollum, 2000; Snow, 2002). National Assessment of Educational Progress results from 2003 showed that Latino students' reading achievement in the fourth and eighth grades was below the national mean, and that the gap was larger in the eighth grade (National Assessment of Educational Progress, 2003). The poor performance of Latinos or native Spanish speakers is widely acknowledged; however, researchers have not yet fully explained the reasons why these Latino children struggle with reading. For the monolingual population, research has shown that reading achievement is closely related to vocabulary knowledge (Freebody & Anderson, 1983; Qian, 2002; Stahl, Chou Hare, Sinatra, & Gregory, 1991). Successful reading comprehension depends on the amount of known vocabulary in the text, its importance to the overall meaning, support of immediate context, past knowledge, and density of the passage (Harmon, 1999). Although research on the connection between vocabulary and reading comprehension among second language (L2) readers has been limited, there is no indication that the frequently replicated links between vocabulary and reading achievement among first language (L1) speakers are not also relevant to L2 reading (Stoller & Grabe, 1993).

In understanding the reading development of bilingual children, then, a key question is what predicts vocabulary, both in the first and in the L2. Bilingual populations are unique by virtue of needing exposure to language and literacy experiences in both their languages, if they are to achieve high levels of bilingualism and biliteracy. As Pearson (2002) has pointed out, a false belief exists that children will become bilingual just by being in any bilingual setting, and that no special support needs to be implemented. She found that, for bilingual children, a 30/70% split in language exposure was sufficient to support conversational proficiency in both languages, but that the amount of exposure to a particular language was related to vocabulary growth in that specific language (Pearson, 2002).

It is a common belief that native language use at home interferes with the acquisition of L2 learning at school (Suárez-Orozco & Suárez-Orozco 2001, p. 138), even though positive transfer from L1 to L2 skills has also been documented (Durgunoglu, 1997; Durgunoglu, Nagy, & Hancin-Bhatt, 1993; Hancin-Bhatt & Nagy, 1994; Nagy, Garcia, Durgunoglu, & Hancin-Bhatt, 1993). This study, however, aims to establish specifically what predicts Spanish and English vocabulary for a population of Spanish–English bilingual students in the context of US schooling, and will not focus on the vocabulary transfer from L1 to L2. When children have received some instruction in L1 and then transition to L2 language and reading instruction, transfer is expected to increase (August, Calderón, & Carlo, 2001), and future studies of reading achievement for Spanish–English bilingual students should investigate the impact of possible vocabulary transfer as well as the impact of other reading skills such as phonological awareness (Lindsey, Manis, & Bailey, 2003).

The age of first exposure to the second, majority, language also seems to affect L1 skills. Cobo-Lewis, Pearson, Eilers, and Umbel (2002) report that children who were only exposed to Spanish during their first 5 years of life had better Spanish skills at age 10 than those who were introduced to English as early as age 2. However, the specific relationship between the preferred language in the

home and the language in which early instruction is received and children's later language proficiency in L1 and L2 remains to be investigated.

Hypotheses about factors that support vocabulary development in bilinguals can benefit from evidence about what facilitates vocabulary development for monolingual children. Predictors of vocabulary for English-speaking children in the United States include family socioeconomic status (SES) and the frequency with which parents talk to their children as well as literacy practices in the home (Cipielewski & Stanovich, 1992; Hart & Risley, 1995; Neuman & Cleano, 2001; Payne, Whitehurst, & Angell, 1994). In a longitudinal study of Spanish-speaking children living in the United States, Reese, Garnier, Gallimore, and Goldenberg (2000) found that family SES (a composite of parents' education and occupation) significantly predicted family literacy practices, which in turn, predicted early Spanish literacy and later English achievement. Although research in this area has been limited, there are some indications that these same factors likely affect outcomes for both monolingual and bilingual children.

The development of vocabulary has been linked to various individual and family literacy practices that vary across social class and that might be particularly important in the context of growing up in a language minority household. Hart and Risley (1995) found large social class differences in home literacy practices and access to printed materials in the home. These variations might have an effect on low-income children's language development, particularly in vocabulary, and their later reading achievement (Neuman & Cleano, 2001; Payne et al., 1994). Monolinguals' vocabulary development is also related to the frequency of parent–child storybook reading (Bus, van Ijzendoorn, & Pellegrini, 1995; Scarborough, Dobrich, & Hager, 1991), which should also be addressed in the bilingual context. Other preliteracy activities, such as writing and story telling, might also increase the vocabulary development of both monolingual and bilingual children.

More research is necessary to better understand the influence of language and literacy practices in bilingual households on the vocabulary development as well as the overall reading achievement of English language learners. In this study we examined factors related to home language use and literacy practices of fifth-grade English language learners' families, and their influence on these students' vocabulary skills in both their languages. Controlling for SES, we investigated how home literacy practices and initial literacy instruction in school in both languages supported dual language vocabulary development. We hypothesized that the amount of exposure in English and Spanish at home and whether or not children received initial reading instruction in Spanish would be related to their performance in English and Spanish vocabulary.

METHODS

Participants

The participants were recruited from four schools: one in Boston, MA, two in El Paso, TX, and one in Chicago, IL. All schools used the Success for All (SFA)/*Éxito para Todos* curriculum. SFA schools were selected because of the consistent curriculum across the sites and the existence of parallel versions in Spanish (Éxito

Table 1. *Demographic and socioeconomic indicator in percentages by participating schools*

	Boston	Chicago	El Paso
Total enrollment	741.0	948.0	655.0
Limited English proficient	48.3	46.5	69.2
Free and reduced lunch	87.9	97.9	84.7
Anglo	3.5	3.8	0.9
African American	19.4	7.1	0.0
Latino	76.1	89.1	99.1
Asian	0.7	0.0	0.0

para Todos) and English. SFA is a research-based reading program that teaches all component skills of literacy. At the heart of the program is a 90-min period of uninterrupted daily reading instruction that emphasizes a balance between phonics and meaning, using both phonetically regular student text and children's literature. When SFA instruction in Spanish was used at these three schools, the English language learners were initially instructed exclusively in Spanish before being transitioned into English reading instruction. All schools had been implementing the SFA curriculum for at least 2 years to make sure the sample would include children who had received Spanish reading instruction from first through second grade (August, Calderón, & Carlo, 2002).

This study of fifth-grade children is part of a larger longitudinal study in which children were followed from second until fifth grade. Two hundred forty-four children participated in the first wave of the study. For our analyses we examined parental reports on language use and literacy practices in the homes of 96 fifth-grade English language learners,[1] 61 males and 35 females who participated in the study. Sixty-one of these children had received their initial literacy instruction in Spanish before transitioning into English literacy instruction and 35 children received literacy instruction only in English. Among the children who received their initial literacy instruction in Spanish, there was variation in when they transitioned into English literacy instruction, with some children transitioning at the end of second grade and others at the end of third or fourth grade. However, in this paper our focus is on the language of their initial literacy instruction. As shown in Table 1, at all four of the participating schools half of the children were labeled as limited English proficient, most of them received free or reduced lunch, and were of Latino origin.

Measures: Parent interview

During the last wave of data collection, when the children were in fifth grade, the Parent Interview Response was administered to the children's parents or guardians upon their agreement to participate in this part of the study. The questionnaires were available in both Spanish and English. The parents of the El Paso students filled out the questionnaires after attending a related meeting at school. Bilingual research assistants contacted the Chicago and Boston parents by phone and read the questions and available answers in the parents' language of preference. The questionnaire was developed collaboratively by the NICHD and Center for

Applied Linguistics researchers. (See Appendix A for information on validity and reliability of the Parent Interview Response Questionnaire.) For the current study we examined only vocabulary outcomes from measures administered to the children in the same year of the study as the parent questionnaire. Even though the use of self-reports has been criticized in the past for imprecision of estimates and the impact of the social desirability bias, researchers have found that survey reports correlate with observational and diary assessments and with parental knowledge of children's story books and adult books (Burgess, 2002).

Sections of the Parent Interview elicited information about demographic variables and SES, language use and exposure at home, literacy practices and support in the home in Spanish and English. In the Parent Interview parents were asked to indicate their income range. To calculate the income per capita, we obtained the mean of the range selected and divided it by the number of family members that were reported to live in the household. The reported income per capita ranged from \$625 to \$22,500, with a mean of approximately \$5,500. Based on the Department of Health and Human Services 2001 Poverty Guidelines, we found that almost half of the sample, 45% of the households, was below the poverty line (Health and Human Services, 2001).

Parents were asked to indicate how many years of education the mother had. The information on fathers' education was also obtained, but was not considered in the analysis because it was not available in about a third of the cases. Because maternal and paternal education levels tend to be highly correlated (Entwisle & Astone, 1994), mother's education is frequently used in the research literature, as we decided to do in the analysis, as a proxy for parental educational levels. The mean for mother's education in this sample was 10.8 years, with a standard deviation (*SD*) of 3. Although there was considerable variation, 50% of the mothers in the sample had at least a high school education.

The various language use and language exposure variables from the questionnaire were represented on a 5-point scale, where 5 = *only English*, 4 = *mostly English*, 3 = *equal amounts of English and Spanish*, 2 = *mostly Spanish*, and 1 = *only Spanish*. Thus, in this data set, high values represented a preference for using English and low values represented a preference for using Spanish. Mean values (around three points) represented balanced preference for both languages, which could be interpreted as balanced bilingual use. At home, children tended to speak with their parents mostly in Spanish, and with their siblings using a combination of both languages but with some preference for English. Almost half the parents reported preferring to read in Spanish, and the other half in English.

In the questionnaire the parents were asked whether they were born in the United States and if not to indicate their approximate age on arrival to the United States. Parents' "exposure to the US culture" was calculated based on these ranges: 6 = *born in the US*, 5 = *less than 5 years old on arrival*, 4 = *between 5 and 11*, 3 = *between 12 and 14*, 2 = *between 15 and 18*, and 1 = *after 18*. The average parent in the sample arrived in the United States between the ages of 12 and 14 years, but the observed range included all of these possibilities.

Parents were also asked to estimate the number of books for adults and books for children at home from possible ranges of 1–10, 11–20, 21–30, 31–40, 41–50, and more than 50. The measure used in the analysis was obtained by adding the estimate of the average number of adult and children books reported in each

household. On average, families reported having around 60 books; however, the standard deviation was very high ($SD = 33$), with the number of books ranging from 5 to 110 in the sample. No information was available on the language of books in the home. However, parents were asked about their frequency of reading to the child in Spanish and English separately as well as the language in which they themselves preferred to read.

When parents were asked about the frequency with which they read, answers were coded as follows: 30 = *daily*, 12 = *three times a week*, 8 = *twice a week*, 0 = *never*. The mean for reported frequency of reading for both parents was very similar. The mean frequency of reading was about every other day; however, there was a wide variation ($SD = 12$ for mothers, $SD = 13$ for fathers); some parents read every day and others almost never or never.

Parents provided information about the frequency and kind of literacy support in both English and Spanish offered to the child at home. On average, children received more literacy support in English than in Spanish. The literacy support activity most frequently reported was helping the child with learning or homework in English, followed by reading with the child in English. Storytelling in both English and Spanish was the least frequent activity for these fifth-grade students. There was, again, a wide variation across the households: in some households several of these activities never occurred and in some they occurred every day.

Spanish instruction information

Spanish instruction information was obtained from the longitudinal study files. Children in Spanish instruction were taught to read in Spanish before they learned how to read in English. Two-thirds of the students in the sample received initial Spanish reading instruction and one-third received initial instruction in English. In all of the following analyses the variable Spanish instruction was coded as a dichotomous variable: 1 if they received their initial reading instruction in Spanish and 0 if their initial reading instruction was in English.

Vocabulary measure

Vocabulary was measured using the picture vocabulary subtest of the Woodcock Language Proficiency Battery—Revised for English and Spanish (Woodcock, 1991a). In this test children had to provide orally the vocabulary item represented by a picture. The internal consistency reliability coefficient for the picture vocabulary subtest for 9-year-olds is 0.883 and the standard error of measurement is 5.8 (Woodcock, 1991b).

In the sample, the observed mean for the standardized vocabulary score was 88.5 ($SD = 29.4$) in Spanish and 91 ($SD = 12.2$) in English. This indicated that, on average, children had age-appropriate proficiency in both languages, as the population mean is 100 with a *SD* of 15 points. However, the variation in Spanish test scores was greater than the variation in English test scores. Only two-thirds (66%) of the children in the sample had average or above average Spanish vocabulary scores when compared to the national norms, whereas for English, almost 75% did. This indicates that English was the stronger language for children in this sample.

Table 2. *Loadings, eigenvalues, and Cronbach alphas for the obtained components*

	Component (Eigenvalue) Loadings	
Variables	Maternal Preference for English (5.23)	Paternal Preference for English (1.08)
Language		
Mother to child	**.854**	.400
Father to child	.363	**.774**
Child to mother	**.664**	.594
Child to father	.234	**.886**
Mother reads	**.906**	.151
Father reads	.182	**.865**
Exposure to US culture		
Maternal	**.854**	.291
Paternal	.504	**.618**
	Sibling Preference for English (1.71)	
Language		
Siblings to child	.924	
Child to siblings	.924	
	Environmental Supports (1.52)	
Frequency of		
Mothers' reading	.718	
Fathers' reading	.649	
Total no. of books at home	.761	
	Personal Supports Spanish (1.91)	
Helping with homework	.654	
Reading or looking at books	.906	
Telling stories to the student	.816	
	Personal Supports English (1.95)	
Helping with homework	.632	
Reading or looking at books	.894	
Telling stories to the student	.868	

Note: Variables in bold were used in the reliability analysis.

RESULTS

Principal component analysis

Principal component analysis with varimax rotation reduced the number of variables and led to the extraction of seven components for the parent interview: SES, maternal language preference for English, paternal language preference for English, sibling preference for English, environmental literacy supports, personal literacy support English, and personal literacy support Spanish (Table 2). Once the factors were identified, the components were used as variables to predict vocabulary in both Spanish and English.

The composite for SES included the education of the mother in years and the income per capita in the household, each with a loading of .819. Income per capita had an eigenvalue of 1.3 and explained 67% of the variance. Mother's education had an eigenvalue of .66 and explained 33% of the variance. The internal reliability for this factor was .51.

Environmental supports for literacy was a composite of the number of books in the household and the frequency with which mothers and fathers read. It had an eigenvalue of 1.52 and explained 51% of the variance. The internal reliability for the factor environmental supports for literacy was .51. Personal literacy supports was a language-specific measure that included help with homework, reading with the child, and telling stories to the child. The eigenvalue for this one component was 1.9, and it explained 65% of the variance. The Spanish measure had an eigenvalue of 1.91 and explained 64% of the variance. The English measure had an eigenvalue of 2.0 and explained 65% of the variance. The internal reliability for personal supports in Spanish was .71 and the internal reliability for English was .72.

Principal component analysis of the parental language use preference yielded two factors. The first factor can be considered an index of maternal preference for and exposure to English (maternal preference for English). This factor had an eigenvalue of 5.23 and explained almost 59% of the variance. The internal reliability for this factor was .90. The second factor can be considered an index of paternal preference for and exposure to English (paternal preference for English). This factor had an eigenvalue of 1.08 and explained almost 13% of the variance. The internal reliability for this factor was .85.

Principal component analysis of the sibling language use preference yielded one factor: the sibling preference for English. This factor had an eigenvalue of 1.71 and explained 85% of the variance. The internal reliability for this factor was .83.

Correlations

Table 3 presents the bivariate correlations between the predictor variables and the outcome variables of vocabulary. Of particular interest for this analysis were the high correlations found between the outcome measures in both languages and predictors describing home and school language use. Spanish vocabulary showed the highest correlations with Spanish instruction ($r = .60$, $p < .01$), where the students who had received their initial literacy in Spanish had higher Spanish vocabulary scores on average. Students also tended to receive higher scores on Spanish vocabulary if their mothers ($r = -.38$, $p < .01$), fathers ($r = -.31$, $p < .01$), and siblings ($r = -.42$, $p < .01$) spoke more Spanish at home.

Conversely, students who scored higher on English vocabulary were the ones who received their initial literacy instruction in English ($r = -.46$, $p < .01$). Students who were exposed to and who used more English at home with their mothers ($r = .25$, $p < .01$), fathers ($r = .35$, $p < .01$), and siblings ($r = .29$, $p < .01$), also tended to have higher English vocabulary scores.

Of interest, both Spanish and English vocabulary scores were related to SES and environmental literacy supports, where students in families with higher SES

Table 3. *Bivariate correlations between variables (n = 96)*

	1	2	3	4	5	6	7	8	9	10
1. Spanish instruction										
2. Gender	−.08									
3. SES	−.16	.01								
4. Environmental supports	−.34**	−.07	.29*							
5. Personal supports English	−.16	.01	.19	.24*						
6. Personal supports Spanish	.30**	−.06	−.11	.09	.43**					
7. Maternal preference for English	−.41**	.06	.39**	.10	.44**	−.20				
8. Paternal preference for English	−.51**	.10	.21	.29	−.03	−.32**	0			
9. Sibling preference for English	−.49**	.05	.14	.21	.13	−.31**	.31**	.47**		
10. English vocabulary	−.46**	−.19	.28**	.37**	.25*	−.10	.25*	.35*	.29**	
11. Spanish vocabulary	.60**	−.21	−.32**	−.27*	−.17	.14	−.38**	−.31**	−.42**	−.19

*$p < .05$. **$p < .01$.

and more literacy support tended to have higher English ($r = .37$, $p < .01$; $r = .28$, $p < .01$, respectively) and lower Spanish vocabulary ($r = -.32$, $p < .01$; $r = -.27$, $p < .01$, respectively). However, SES and environmental literacy supports are related ($r = .29$, $p < .05$), indicating that families with higher incomes and in which mothers are more highly educated have more books at home and the parents read more frequently.

Separation of the English- and Spanish-instructed student populations

Based on our examination of the correlations between variables, we decided to test whether it would be more appropriate to consider the students who had had initial literacy instruction in Spanish and those who had had their initial literacy instruction in English as two subsets of our data set and consequently create separate regression models for these subgroups.

The students with initial Spanish instruction had significantly higher Spanish vocabulary scores ($M = 99.31$, $SD = 18.00$) than those who had only English instruction ($M = 59.86$, $SD = 34.98$), $t\ (78) = -6.68$, $p < .01$. The students with English-only instruction similarly received higher scores on English vocabulary ($M = 98.24$, $SD = 10.13$), than their Spanish-instructed peers ($M = 86.81$, $SD = 11.31$), $t\ (90) = 4.86$, $p < .01$.

Although there were no statistically significant differences between the two groups on our index of SES, $t\ (91) = 1.58$, *ns*, probably due to the fact that most students attended schools where almost 90% or more of the school population received free or reduced lunch, the two groups had significantly different home language environments. The households that had their children in initial literacy instruction in Spanish, were also the households where the mother, $t\ (79) = 4.00$, $p < .01$, father, $t\ (79) = 5.21$, $p < .01$, and siblings, $t\ (94) = 5.52$, $p < .01$, used more Spanish.

Regression analysis: What predicts English *vocabulary?*

Hierarchical nested multiple regression was used to predict both English and then Spanish vocabulary. As described above, models predicting vocabulary in each language were constructed separately for the group of students who had received their initial literacy instruction in English and those who had received their initial literacy instruction in Spanish.

The demographic control variables gender and the SES component were entered first in the regression models, followed by the environmental and personal literacy support components. Next, we added the maternal and paternal preference for English and sibling preference for English as predictors. Last, interactions between all the predictors and gender were tested. Throughout the model-building process attention was paid to statistical significance of predictors and the overall fit of the model.

We were able to account for 14% of variation in English vocabulary for students with initial English instruction. We arrived at a model containing personal literacy supports in English as the only significant predictor (see Table 4). The students who received more literacy support in English tended to score higher on the English vocabulary test.

Table 4. *Fitted regression equations predicting English vocabulary for students with initial instruction in English (n = 34)*

Variable	*B*	*SE B*	*β*
Intercept	97.22***	1.69	
Personal literacy support in English	4.05*	1.75	0.38*

Note: $R^2 = .14$, $F(1, 32) = 5.35$*.
*$p < .05$. ***$p < .001$.

Table 5. *Fitted regression equations predicting English vocabulary for students with initial instruction in Spanish (n = 58)*

Variable	*B*	*SE B*	*β*
Intercept	93.79***	2.20	
Gender	−8.72**	2.66	−0.41**
Paternal preference for English	4.82**	1.61	0.37**

Note: $R^2 = .30$, $F(2, 45) = 9.42$***.
**$p < .01$. ***$p < .001$.

Our final regression model for students with initial Spanish instruction accounted for 30% of variation in English vocabulary, and included gender and paternal preference for English as the only significant predictors (see Table 5). Controlling for gender, students whose fathers spoke more English scored higher on the measure of vocabulary. Controlling for the other predictors, girls outperformed boys by almost nine points.

Regression analysis: What predicts Spanish *vocabulary?*

We were able to account for 59% of variation in Spanish vocabulary for students with initial English instruction. We arrived at a model containing maternal preference for English and paternal preference for English as statistically significant predictors (see Table 6). The students who tended to use more Spanish when speaking with both of their parents scored higher on the Spanish vocabulary test.

Our final regression model for students with initial Spanish instruction accounted for 7% of variation in Spanish vocabulary, and included sibling preference for English as the only significant predictor (see Table 7). Students who used more English when speaking with their siblings scored lower on the measure of Spanish.

In sum, for children who received their initial instruction in English, English vocabulary was best predicted by personal literacy support in English whereas for children receiving instruction in Spanish, gender and paternal preference for English were the best predictors. The latter model was able to explain more than twice as much variance as the former model (30 vs. 14%). Of interest, the predictor paternal preference for English was again significant; however, this time together

Table 6. *Fitted regression equations predicting Spanish vocabulary for students with initial instruction in English (n = 22)*

Variable	*B*	*SE B*	*β*
Intercept	73.62***	5.79	
Preference for English			
Maternal	−17.96**	5.05	−0.60**
Paternal	−25.37***	5.72	−0.75***

Note: $R^2 = .59$, $F(2, 17) = 11.99$**.
**$p < .01$. ***$p < .001$.

Table 7. *Fitted regression equations predicting Spanish vocabulary for students with initial instruction in Spanish (n = 58)*

Variable	*B*	*SE B*	*β*
Intercept	97.11***	2.55	
Sibling preference for English	−5.39*	2.66	−0.26*

Note: $R^2 = .07$, $F(1, 56) = 4.10$*.
*$p < .05$. ***$p < .001$.

with maternal preference for English when predicting Spanish vocabulary for students with initial literacy instruction in English. Instead of parental preference for English, sibling preference for English was the only significant predictor when predicting Spanish vocabulary for students with initial instruction in Spanish. This last model, however, was only able to predict 7% of the variance, although the former predicted almost eight times as much variance (59%). These results will be discussed in the next section.

DISCUSSION

Previous research on bilingual children's' reading achievement has concentrated on the influence of school literacy instruction on English reading proficiency. In this study, we examined factors related to home language use and literacy practices of bilingual children and their influence on vocabulary skills in both English and Spanish. This analysis showed that different supports were required for proficiency in Spanish and in English—a particularly interesting finding in light of the different status attributed to these two languages in the United States.

Households with English- and Spanish-instructed children

When predicting vocabulary skills in Spanish and English, a stark contrast emerged between the families that had their children instructed in English and the families

whose children received their initial literacy in Spanish, signaling other possible social differences between these families. Grosjean (1982) has described the linguistic patterns of immigrant families across generations. He suggests that most first generation immigrants in the United States, especially if they are young, learned English as an L2 in an effort to attain greater social mobility, which frequently results in L1 attrition. He argues that second-generation immigrants regularly grow up in more complex linguistic environments. Some children, despite the fact that they are born to bilingual parents, end up speaking only English. Others, who live in homes where the L1 is used exclusively or is greatly valued and used for social purposes with family and friends, are more likely to develop bilingual abilities (Grosjean, 1982). Factors such as educational level, social class, age at immigration, and contact with other immigrants from the same language community also have an effect on language use and preferences for bilingual individuals (Padilla et al., 1991).

In stark contrast to many other countries, natural bilingualism in the United States is often viewed as a stigma (Grosjean, 1982). English, a language that has gained global importance, is paradoxically perceived in the United States as endangered by those who worry about the impact of immigration, and immigrants who are not fluent English speakers are seen as not integrated into the US society. Furthermore, in societies with diverse populations such as the United States, children from linguistic minority families must learn the language of the society to take full advantage of educational opportunities. The timing and the conditions under which they come into contact with English, however, can have a profound effect on the retention and continued use of their primary language as well as the development of their L2. In addition, the continued use and development of literacy skills in the L1 can be adversely affected by the perceived low status of many minority languages and/or immigrant groups in the United States (Grosjean, 1982).

This study also looked at predictors that might have had a language-specific effect on vocabulary for English (high status) and Spanish (low status). We found that the language preferences at home were related to children's linguistic proficiency in both languages. This echoes previous research findings that native language maintenance across generations is influenced by the language used at home (Pearson, 2002), among other sociocultural and individual factors (Padilla et al., 1991). In the current study, on average, children from families who preferred to use English at home tended to have higher English proficiency, and children from families with a preference for Spanish at home tended to have higher Spanish proficiency scores. A recent study conducted by Reese et al. (2000) found a series of sociocultural variables predicting early Spanish literacy and later English literacy for Spanish–English bilingual children. Similar to our findings, their study found that parental exposure to English predicted English literacy, and girls did better in both Spanish and English literacy (Reese et al., 2000).

Parental language preference

Of interest, paternal preference for English was one of the few significant predictors in predicting both English and Spanish vocabulary. Students who received their

initial literacy instruction in Spanish and whose father preferred to speak English tended, on average, to have higher scores on English vocabulary. Although it is not surprising in itself that language preference of parents predicts children's proficiency in a particular language, it is interesting that only father's language preference played a role in this model, not mother's. It is possible that fathers who prefer to speak English rather than Spanish at home have higher levels of education and hold jobs that require them to speak English on a daily basis. Families where fathers prefer to speak English might differ from Spanish-speaking families in whether or not both or one of the parents was born in the United States. This might also influence educational expectations parents have for their children.

When predicting Spanish vocabulary for students with initial instruction in English, both paternal and maternal language preference were significant predictors. When both parents preferred to speak Spanish at home, children had higher scores on Spanish vocabulary, even though they received their initial literacy instruction in English. As mentioned previously, families where parents prefer to speak Spanish might only recently have moved to the United States or find it important to maintain the native language, in particular, when their children received instruction at school in English. These findings suggest parental language preferences at home were related to children's linguistic proficiency in both languages. This echoes previous research findings that native language maintenance across generations is influenced by the language used at home (Pearson, 2002), among other sociocultural and individual factors (Padilla et al., 1991). A recent study conducted by Reese et al. (2000) found a series of sociocultural variables predicting early Spanish literacy and later English literacy for Spanish–English bilingual children. Similar to our findings, their study found that when parents preferred to speak English, children had better English language skills (Reese et al., 2000).

Personal literacy supports

Personal literacy support in English was the only significant predictor of English vocabulary for students with initial literacy instruction in English. Minority parents and children, particularly Latinos, have positive attitudes toward education (Suárez-Orozco & Suárez-Orozco, 2001) and tend to hold higher educational expectations than the mainstream population (Fisher, 1999; Garg, Kauppi, Lewko, & Urajnik, 2002). It is therefore possible that parents provide their children literacy support in the language of the dominant (school) culture.

Families that have recently moved to the United States are often not aware of what schools expect of children. Tabors and Snow (2001) found that parents of bilingual children often experience conflicts with US teachers regarding the expectations schools have of parents. García (2000) noted that Mexican immigrant families did not understand why teachers in the United States wanted their children to learn the alphabet, because in Mexican reading instruction it is more important to learn the sounds of key syllables than the names of the letters. Book reading is also often not a common practice in Hispanic families, to prepare children for school (Valdés, 1996). Parents might also think that speaking English at home is the best way for their children to learn the language of the dominant culture and

to do well in school. However, these positive attitudes toward education may be paired with forms of support for educational achievement that do not match the expectations of the mainstream public education (Ferdman & Weber, 1994; Gee, 2002).

Sibling language preference

In the current study, we found that the language preferred for interaction with siblings had a much larger effect on English proficiency than the language preferred by the parents. As Gutierrez-Clellen and Kreiter (2003) propose, there seems to be little support for the claims that there is a direct relationship between the amount of input in one language and that child's proficiency in that language. They suggest that even bilingual children with no English input at home can reach appropriate English skills, whereas maintenance and support for Spanish at home appear essential to children's Spanish proficiency (Gutierrez-Clellen & Kreiter, 2003). The reverse was true for Spanish, where the language preferred by the parents had a larger effect on Spanish proficiency than the language preferred between the student and his/her siblings. This could indicate a greater need for family and home support to achieve or retain proficiency in Spanish. The results from Gutierrez-Clellan and Kreiter (2003) suggest that children highly proficient in Spanish might come from households where parent–child communication takes place mostly in Spanish. In contrast, the children who are highly proficient in English tend to come from households where child–child communication occurs in English, and parent–child communication can occur in either English or Spanish. It is likely that the support system for Spanish is more fragile and sensitive to family, school, and community influences.

Gender

Although we did not anticipate gender differences, we found a gender effect on English vocabulary scores, where the girls tended to outperform the boys. The importance of gender in predicting vocabulary outcomes has been investigated in research of the monolingual English-speaking population, where girls often outperform boys in language skills, in particular on vocabulary measures starting at an early age (Bauer, Goldfield, & Reznick, 2002). It is possible that some of these differences are due to out of school activities such as girls spending more time on reading for pleasure than boys.

On the other hand the difference might be explained by other social factors. Research on immigrant (pre)adolescents has shown that many immigrant girls are more restricted by their parents than boys, and they perceive their time at school as a precious period. Immigrant girls often hold more positive attitudes toward school and are more engaged in learning, outperforming immigrant boys, whereas teachers often perceive immigrant boys as threatening (Suárez-Orozco & Suárez-Orozco, 2001). In addition, immigrant girls tend to hold very high aspirations for school achievement, while at the same time valuing relations with their families highly (Portes & Hao, 2002). Thus, they are motivated to maintain Spanish for familial purposes, but also to acquire English for school achievement.

Implications

Understanding the factors that contribute to vocabulary development for Spanish and English for both girls and boys might shed light on circumstances and practices that can lead to balanced bilingualism and high levels of language and literacy skills in both of the children's languages. The results of this study suggest that Spanish and not English is the at-risk language for children of Hispanic heritage living in the United States. To become and remain proficient in Spanish, they need to have early instruction in Spanish and home support in that language. Many researchers have pointed out the beneficial effects of growing up bilingually: Bilingual children not only have better metalinguistic skills than monolingual children but they are also more sensitive to structural differences between languages, leading to more attention to the systematic features of a language (Bialystok, 1991, 2001). Bilingualism can also have a positive effect on children's cognitive development, in particular when both languages are supported "academically and emotionally by both community and society at large" (Malakoff & Hakuta, 1991). Most of the world speech communities use more than one language; multilingualism appears to be the norm and monolingualism the exception (Mackey, 1968). Therefore, the apparent negative connotation associated with bilingualism in the context of English Language Learners is clearly unwarranted.

Limitations

Future studies would benefit from a longitudinal design, which could examine the influence of the constantly changing school and home language and literacy environments on children's literacy outcomes across time. In addition, of course, the selection of initial Spanish or English literacy instruction for the children of this study was probably confounded with parents' and children's Spanish proficiency at school entry. Furthermore, parent questionnaires have their limitations and more accurate information on children's home literacy activities could be gathered by adding observations within the home or by longer and detailed interviews.

We did not have information available on the initial language levels for all of the children in our sample. Future studies should, however, include preexisting language levels to control for preliminary differences between children.

APPENDIX A

VALIDITY OF PARENT QUESTIONNAIRE: CORRELATION TABLES OF PARENT QUESTIONNAIRE SCALES AND WLPB-R LETTER WORD IDENTIFICATION AND PICTURE VOCABULARY SUBTESTS

The literature indicates that parental background such as income and education affect children's literacy (Hart & Risley, 1995). Likewise, the literature amply demonstrates that parents' literacy activities with children, such as reading with them or helping them with homework affect their literacy outcomes (Feitelson & Goldstein, 1986; Goldenberg, Reese, & Gallimore, 1992; Sénéchal, Lefevre, & Thomas, 1998). We developed the Parent Questionnaire precisely to include these parental factors as covariates in our study of children's literacy development.

Table A.1. Correlation of home language (HL), parental help (PH), parent education (PE), parent income (PI), parent reading (PR), and Books in the Home (BH) with English WLPB-R letter word identification (LWI) and picture vocabulary (PV) standard scores

	PQ HL	PQ PH	PQ PE	PQ PI	PQ PR	PQ BH	WLPB-R LWI	WLPB-R PV
PQ HL	1.0							
PQ PH	.099	1.0						
PQ PE	.549**	−.095	1.0					
PQ PI	.565**	−.125*	.695**	1.0				
PQ PR	.488**	−.194**	.549**	.483**	1.0			
PQ BH	.436**	−.196**	.498**	.479**	.587**	1.0		
WLPB-R LWI	.361**	−.134**	.371**	.481**	.258**	.365**	1.0	.611**
WLPB-R PV	.656**	−.137**	.487**	.566**	.356**	.499**	.611**	1.0

1. The Home Language (HL) Scale was a composite of the following questions:
   a. What language does the MOTHER use when she speaks to this child?
   b. What language does the FATHER use when he speaks to this child?
   c. What language do other adults (aside from mother and father) use when they speak to your child?
   d. What language do children in this household use when they speak to your child?
   e. What language does your child use when he/she speaks to his/her MOTHER at home?
   f. What language does your child use when he/she speaks to his/her FATHER at home?
   g. What language does your child use when he/she speaks to other adults (not the mother and father) in the household?
   h. What language does your child use when he/she speaks to his/her friends outside of the home?
2. The Parental Help (PH) Scale was a composite of the following questions:
   a. How often does an adult/older sibling read or look at books (not related to homework) with your child in ENGLISH?
   b. How often does an adult/older sibling tell your child a story (not related to homework) in ENGLISH?
   c. How often does an adult/older sibling help your child with learning (e.g., numbers, letters, words) or homework in SPANISH
   d. How often does an adult/older sibling read or look at books (not related to homework) with your child in SPANISH?
   e. How often does an adult/older sibling tell your child a story (not related to homework) in SPANISH?
   f. How often does someone from your family or household go to the library with your child?
   g. How often does your child read or look at books at home on his/her own?
3. The Parent Education (PE) variable was a composite of these two questions:
   a. What is the highest grade or year of school the MOTHER has completed?
   b. What is the highest grade or year of school the FATHER has completed?
4. The Parent Income (PI) variable asked this question: Which of the following ranges best describes the current annual income in your household?
5. The Parent Reading (PR) variable was a composite of these two questions:
   a. How often does the MOTHER read a book, magazine or newspaper?
   b. How often does the FATHER read a book, magazine or newspaper?
6. The Books at Home (BH) variable asked this question: How many books for children are there in your home?

*$p < .05$. **$p < .01$ (two tailed).

To investigate the reliability of the Parent Questionnaire, we did a factor analysis of all the items in the Parent Questionnaire. Most of the items loaded on two factors. We called these factors "home language" and "parental help." Certain questions were highly correlated to these two factors so we developed Home Language and Parental Help Scales from these questions. See the footnote to Table A.1 for the specific questions in each scale. The Cronbach α (a measure of reliability) for the Home Language Scale was .93, whereas the Cronbach α for the Parental Help Scale was .68.

To examine the validity of the Parent Questionnaire, we looked at the correlation of scales and specific questions in the Parent Questionnaire versus the children's scores on the English WLPB-R letter word identification and picture vocabulary for all the children in the three subprojects of the Acquiring Literacy in English Program. We found low to moderate correlations between the Parent Questionnaire and the WLPB-R letter word identification and picture vocabulary subtests (see Table A.1). Parent Income had the highest correlation with WLPB-R letter word identification, followed by books in the home and home language (with children speaking English in the home doing the best). Similarly, English as home language had the highest correlation with the WLPB-R picture vocabulary, followed by parent income and books in the home. This investigation demonstrates that the Parent Questionnaire is a valid instrument for investigating the influence of parental background and parental activities with children.

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NOTES

1. This term will be used to refer to students who have varied proficiency in Spanish and English, but for whom both languages are spoken at home.

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