Research Article

The Role of Socioeconomic Status in the Narrative Story Retells of School-Aged English Language Learners

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Purpose: We examined the relationship between maternal level of education as an index of socioeconomic status (SES) on the narrative story retells of school-aged children who are English language learners (ELLs) to guide interpretation of results.

Method: Using data available from the Systematic Analysis of Language Transcripts database (Miller & Iglesias, 2012), we were able to compare the language samples of 907 ELL students in kindergarten and 2nd grade whose parents had different levels of education. We used a simple linear regression to see if maternal level of education was predictive of measures of vocabulary, syntax, and narrative structure in Spanish and English narrative story retells.

Results: There were no differences in language measures between children from different SES backgrounds for the Spanish language samples. There were differences with the English language samples in four of the five measures for the kindergarten sample and only three of five measures for the older children, with a smaller percentage of the variance explained.

Conclusion: Despite common knowledge that SES has a negative influence on language, the actual influence on the narrative productions of school-aged ELLs was less than anticipated for English and absent for Spanish. The implications for assessment are discussed and concluded.

Studies on language development have long documented that the socioeconomic status (SES) of a child's family leads to differential trajectories in the development of monolingual, English-speaking children (e.g., Bradley & Corwyn, 2002; Hoff, 2013; Hoff & Tian, 2005; Rowe, Raudenbush, & Goldin-Meadow, 2012). However, there is less known about the specific effects of SES on the language development of bilingual children. Much of the work on SES and language performance has focused on very young children with an emphasis on standardized testing. This trend makes it difficult for clinicians to apply findings to school-aged bilingual children for whom the use of standardized tests is often not appropriate. Thus, this study aims to analyze the linguistic differences attributed to SES in Spanish–English bilingual, school-aged children by using a common clinical procedure, a narrative story retell task, so that clinicians can accurately interpret results from these measures.

In general, children from lower SES environments perform worse on tasks of language development in comparison to children from higher SES environments. An additional variable within this trend is language diversity, given that there is a higher occurrence of poverty among minority language communities (Ryan, 2013). The poverty rate for Hispanic children is 30.4% (U.S. Department of Health and Human Services, 2014), and there is a disproportionate prevalence of childhood poverty among Latino and English language learners (ELLs; Jackson, Schatschneider, & Leacox, 2014). Children from these communities may demonstrate potentially confusable weaknesses in English due to mixed effects of low SES and bilingualism that are separate from brain-based language disorders. Given this potential confusability, there is a need for more nuanced considerations of such bilingual populations.

Language Ability and SES

A child's socioeconomic context holistically influences his or her early language development on measures, such as lexical diversity, syntactic complexity, narrative and literacy development, and general processing skills (e.g., Hoff, 2013). The ubiquity of these linguistic disparities due to SES can

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be attributed to the multitude of environmental factors associated with SES, including prenatal factors and cognitive stimulation (Hackman, Farah, & Meaney, 2010). Measures of low SES, whether indexed through maternal education, occupational status, or income, have consistently been reported in the literature to predict cognitive and academic outcomes in both native English speakers and ELLs (Howard et al., 2014). However, documented trends seem to be more straightforward in monolingual than bilingual populations and have focused on language development in infants.

Lexical Diversity

Multiple studies of language development have measured effects of SES through lexical diversity. Indeed, SES seems to be most sensitive to lexical diversity (Hoff, 2013). Hart and Risley's exhaustive study (1995) supports this point, as it documented lexical gaps across multiple measures of vocabulary production among monolingual children and parents from four different SES contexts (as defined by maternal occupation). The study recorded 1-hr parent-child verbal interactions every month within a 2.5-year span. The results demonstrated a widening gap in the cumulative productive vocabulary of children between the ages of 10 months to 3 years such that children from higher SES families produced more words than those from middle or lower SES families, who, in turn, had a larger vocabulary size than the children from families on welfare. This gap emerged as early as 24 months. Hart and Risley also considered maternal vocabulary features. Parents occupying higher SES jobs produced more words, auxiliary-fronted yes/no questions, affirmatives, and verbal responses on average per hour than parents occupying middle or low positions or parents on welfare. In terms of vocabulary input, Hart and Risley estimated that by age 36 months, children from families on welfare heard 30 million fewer words from their parents than children from high SES families. This study posited that the two variables—child vocabulary size and maternal vocabulary input—are interrelated as a function of SES.

Recently, Fernald, Marchman, and Weisleder (2013) investigated English-learning children's vocabulary acquisition as a function of both processing skill and SES. Their study recruited 48 infants from high and low SES families, who were grouped by mother's level of education. The infants performed two tasks at both 18 and 24 months of age: the MacArthur-Bates Communicative Development Inventories: Words and Sentences and an experimenter-made looking-while-listening procedure. The MacArthur-Bates Communicative Development Inventories: Words and Sentences provided measures of expressive vocabulary size, whereas the looking-while-listening measured the children's accuracy and reaction time in real-time language processing. Fernald et al. replicated the finding that the children's growth in vocabulary size between 18 and 24 months significantly differed across SES groups. They also analyzed the interaction between processing efficiency (accuracy and

reaction time) and SES. At 24 months of age, children from lower SES communities demonstrated the same processing accuracy as 18-month-old children from higher SES communities. This early, 6-month gap prompted Fernald et al. to express concern for the long-term consequences of economically disadvantaged children's development in cognitive functioning (especially with working memory), later literacy, and overall academic success.

Together, these studies document a lexical deficit among economically disadvantaged monolingual children, crossing measures of vocabulary input, vocabulary size, and processing efficiency. This trend emerges consistently and significantly across literature on early language development. However, there remains a need to further explore SES-based lexical differences among school-age students.

Syntactic Diversity

In addition to (and also due to) lexical disparities, there is evidence that low SES has negative effects on syntactic diversity. Huttenlocher, Waterfall, Vasilyeva, Vevea, and Hedges (2010) considered both maternal level of education and income to account for variability within the lexical diversity and syntactic complexity of 47 English-dominant children between 14 and 46 months of age. The investigators recorded caregiver-child interactions for 90 min every 4 months, with a total of nine visits. They, then, coded for word type as an index of lexical diversity and clausal and constituent diversity as indices of syntactic diversity. The study modeled growth curves from the language sample data to determine how significantly different variables predicted the children's lexical and syntactic growth. SES, whether measured through income or maternal education, strongly predicted the growth of a child's lexical diversity, clausal, and constituent diversity between 14 and 46 months. When considered alongside the caregiver's input, the caregivers' constituent diversity completely accounted for the children's constituent diversity. These findings reinforce the idea that the caregiver's language input characterizes child's language production and that SES and caregiver's language often work in tandem—even along syntactic measures.

Despite this and similar studies (e.g., Vasilyeva, Waterfall, & Huttenlocher, 2008), there is a need for literature looking at the effect of SES on syntactic diversity in school-age children. Once children enter school, they are exposed to input from other educated adults. It is unclear how this input will affect growth trajectories in syntactic complexity or diversity.

Narrative and Discourse Skills

In pairing children's differences in language development with their disparities of access to literary resources, we can reasonably expect to find effects of SES on a global, narrative level. Indeed, researchers commonly extend the findings of early linguistic deficits in children from low SES communities to explain later academic achievement gaps,

which include literacy skills. However, few studies have detailed early narrative development as a function of SES. Hoff's (2013) review points to a few studies that establish that children from low SES environments have different narrative skills and reduced phonological awareness compared with peers from higher SES homes, but current literature reflects little beyond that knowledge. It would be advantageous for researchers and practitioners to have a more detailed account of narrative growth trajectories among children from different SES backgrounds, despite the general acceptance that such a disparity exists.

Bilingual Language Ability and SES

For children who are ELLs and from low SES homes, there is an additional source that could contribute to low academic achievement: limited English language skills. Although speech and language development of bilingual children is similar to monolingual children, it is not parallel (Genesee & Nicoladis, 2007); thus, we cannot assume that the findings will apply in the same way for bilingual children.

There are studies in the literature that examine SES and language in bilingual children that can begin to describe the complicated relationship among factors that influence language development. For example, a study by Jackson et al. (2014) looked at receptive vocabulary attainment in Spanish-speaking ELLs from migrant families. Jackson et al. recruited 64 ELL kindergartners from low SES migrant families and had participants complete standardized vocabulary tests every 6 months from kindergarten through second grade. Using growth curve models, they found that ELLs from low SES backgrounds had lower language skills than their monolingual English-speaking peers in kindergarten. The children in this study who were ELLs made significant gains from kindergarten to second grade in English vocabulary. Despite their vocabulary gains, the standard scores of many ELLs remained below the mean (more than 1.5 *SD* in some cases) of their monolingual peers. The results from this study highlight that although children who are ELLs demonstrate increased linguistic abilities given more input in the second language (e.g., school), their advances may still not be enough for them to reach levels of educational attainment (e.g., standardized tests) similar to their monolingual peers. Although the findings of Jackson et al. contribute to the literature, note that the study does not highlight the impact of different SES backgrounds on language, given that all children from the ELL group came from low SES backgrounds.

Hoff, Rumiche, Burridge, Ribot, and Welsh (2014) conducted a longitudinal study that looked at expressive vocabulary development in children aged 22–48 months who came from bilingual and monolingual homes. The participants were matched for SES between groups, and most of the participants had highly educated parents (i.e., college graduates). The researchers calculated vocabulary trajectories for each group and concluded that children learning two languages may lag behind monolingual peers in English vocabulary development as they approach the

school-age years, possibly putting their for school readiness at risk. However, Hoff et al. also state that some bilingual children may surpass their monolingual peers in the total language knowledge acquired. Although SES was also considered in this study, it was a controlled variable that was not used to determine how different SES groups would be affected in their language development.

These types of studies are representative of the literature. They point out the academic risks related to being an ELL, yet do not specify the role of SES. For this reason, we wanted to identify how SES impacts expressive language performance of bilingual, Spanish–English school-aged children in both languages. Without this information, it is difficult for speech-language pathologists to make informed decisions about the source of any potential language delays or deficits they might detect in ELLs. We used narrative language sample analysis as a means to discover where those differences may manifest. We chose to examine narratives because they are cross-culturally valid and provide a communicative context that is natural and more representative of children's skills (Heath, 1986; Rojas & Iglesias, 2009).

Although there are no available data on SES in narrative skills of bilingual children, all the evidence in the literature points to SES being likely to influence language across multiple domains, and SES should not be limited to a specific linguistic domain or certain language. Therefore, we predicted the following:

1. SES as indexed by maternal level of education would predict outcomes on measures of vocabulary, syntax, and narrative structure in both Spanish and English narrative story retells of school-aged bilingual children.
2. The amount of variance explained by SES would be equivalent across languages.

Although it may be tempting to compare performance on English narrative language measurements to Spanish narrative language measurements directly, this was not the purpose of this study.¹

Methods

We answered our research questions by using publicly available data from the Systematic Analysis of Language Transcripts (SALT) research software (Miller & Iglesias, 2012). We used two databases, Bilingual English Story Retell and Bilingual Spanish Story Retell, and focused on children's productions of retells of "Frog, where are you?" (Mayer, 1969). Prior to initiating analyses, we decided to compare children by grade level using maternal level of education as a proxy for SES status (Hauser, 1994). We chose

¹Given that the grammatical structures between Spanish and English are not all equivalent, direct comparison, particularly on measures such as conjunctions, might not even be appropriate.

grade level over the child's age, given that story grammar and language usage can be influenced by school experience more than chronological age.

Participants

The participants were the same for both the Spanish and English databases. There were 398 kindergarten children (mean age: 5;7 [years;months]) and 509 second-grade children (mean age: 7;7) included in the analysis.² SALT classifies children into groups on the basis of maternal level of education with ranges of 0 to 20 years of age. The Bilingual English Story Retell database snapshot from SALT specifies that this is a maternal level of education. The distribution of the sample by maternal education level can be found in Figure 1.

These databases consist of English and Spanish story-retell narratives from native Spanish-speaking (Spanish–English) bilingual children. According to SALT, the children were recruited through ELL classrooms in public schools in Texas and California. All children were reported as typically developing on the basis of absence of special education services and normal progress in school. Although we do not have details on the specifics of each child's classroom, according to the Texas Education Code (1995), bilingual education is provided to students in kindergarten through the elementary grades if children are classified as having limited English proficiency. However, for students in districts that do not require bilingual education, English as a second language programs are offered, which include English-only content-based and pull-out modalities. In California, ELLs are placed in either (a) structured English immersion, (b) English language mainstream, or (c) an alternative program. All of these programs are in the form of English-based instruction. Despite these potential differences in school-based language input, all children included in the database had to demonstrate the ability to produce both English and Spanish narratives containing at least one complete and intelligible verbal utterance in the target language.

SALT also provided us with information regarding language input and output on a subset of the children in the sample (kindergarten, $N = 288$; second grade, $N = 472$). This provided us with a general sense of input and output for children in each grade. The information included the language that the mother and father use to speak to the child, the language that other adults may use to speak to the child, the language that the siblings use to speak to the child, the language that the child uses to speak to the parents, other adults, and siblings, and the language the child uses to speak to friends or peers outside the home. Ratings of 1–5 were used for each response in which 1 = *only Spanish*, 2 = *mainly Spanish*, 3 = *in English and Spanish*, 4 = *mainly English*, 5 = *only English*.

²The SALT database had a significantly smaller number of samples available for first grade students ($N = 76$); thus, we chose not to include this grade in the analysis.

Figure 1. Distribution of maternal level of education by grade.

The primary input and output language for children in both grades was Spanish. In kindergarten, the mean score for input was 2.05 and for output was 2.31. For the second graders, the mean score for input was 2.03, and the mean score for output was 2.38. According to the scale mentioned previously, this demonstrates higher Spanish than English dominance for both groups of children.

Language Sampling Procedures

According to SALT, during the language sample collection, the examiner first provided directions to the child in the target language (English or Spanish). If the examiner was collecting an English sample, the examiner said,

Here is a book. I am going to tell you this story while we look at the book together. When we finish, I want you to tell the story back to me in English. Ok? Let's look at the book. This book tells a story about a boy, a dog, and a frog.

If the examiner was collecting a Spanish sample, the examiner provided the same directions in Spanish. The examiner then modeled the story for the child in the target language through use of a standard script provided by SALT. Upon finishing, examiners would then say, "Okay, now I would like you to tell me the story," in the elicited language. Examiners would begin recording when children started to tell the story. SALT specified that examiners were allowed to use minimal open-ended questions to elicit samples in various situations (e.g., when child is not speaking, says "I don't know," or starts listing words). SALT also provides a list of acceptable verbal prompts, including "Tell me more," "Just do your best," "Tell me about that," "You're doing great," "I'd like to hear more about that," "Keep going," and "What else?" Examiners were specifically trained to avoid asking *wh*-questions. This same procedure was followed to elicit the second language sample at a later time. All English language samples were transcribed by native English speakers, and all Spanish language samples were transcribed by native Spanish speakers. Heilmann et al. (2008) found high levels of accuracy across English and Spanish transcriptions.

across four domains: utterance segmentation, main body words and morphemes, words, morphemes, and mazes, and maze placement. Transcription accuracy in English ranged from 90% to 100% accuracy, while Spanish transcription accuracy ranged from 91% to 95% accuracy in these domains.

Measures

Given our hypotheses about where differences due to SES might occur, we focused on five language measures automatically available within the SALT database: Mean length of utterance in words (MLUw); number of different words (NDW); narrative scoring scheme (NSS); conjunctions-type (CT); and subordination index (SI). NDW allowed us to examine vocabulary, while the other four measures all looked at higher level language. In particular, the NSS permits the examination of a child's narrative macrostructure (Heilmann, Miller, Nockerts, & Dunaway, 2010) and has been used with bilingual children (Miller et al., 2006). MLUw allows for examination of morphosyntactic skills (Parker & Brorson, 2005) and general language abilities, especially for English (Bedore, Peña, Gillam, & Ho, 2010). MLUw may change with age in Spanish-speaking children (Bedore et al., 2010) but is characteristically used with preschool-aged children (e.g., Miller & Chapman, 1981). Thus, we wanted to have some measure(s) of syntactic complexity better suited for older children. Both CT and SI are measures of syntactic complexity. SI was specifically developed for this purpose, and CT is a proxy of the use of cohesion and the potential for conjoining or embedding clauses.

To obtain these measures, we used the Rectangular Data File tool within the SALT software. We chose *Tools*, then *Rectangular Data File*. We used the *Select Transcription* button and then chose *Browse for Database*. We, then, selected the appropriate database (English or Spanish story retell) for each data set. We, then, selected the measure of interest to us by using the *General Information, Plus Lines, Summary Measures Report, SI, NSS, + ESS Summaries*, and *Standard Word Lists* buttons. We, then, used the *Generate Data* button to create the data file.

Results

We analyzed all samples using simple linear regression. We aimed to determine whether SES, as indexed by maternal level of education, would predict performance on different measures of language within a narrative language sample. The language measures we analyzed included mean length of utterance in words (MLUw), number of different words (NDW), narrative scoring scheme (NSS), conjunctions-type (CT), and subordination index (SI). For all samples, we used simple linear regression to determine whether SES as indexed by maternal level of education would predict performance on different measures of language within a narrative language sample.

English Sample

For the kindergarteners, we found that SES predicted outcomes on four of the five measures, with the relationship in the expected direction: children of parents with less education had lower scores than children whose parents had more education. The results are described in Table 1. In all cases, the amount of variance explained was minimal. To give a sense of how large the differences are, Table 2 includes means and standard deviations for the entire kindergarten sample, as well as those for the top ($N = 137$) and bottom ($N = 134$) third of the sample.

For the second graders, we found that SES predicted outcomes on three of the five measures. For the second graders, MLUw was no longer predictive of outcome. The results are described in Table 3. Again, the amount of variance explained by SES was minimal. To give a sense of how large the differences are, Table 4 includes means and standard deviations for the entire second-grade sample, as well as those for the top ($N = 145$) and bottom ($N = 170$) third of the sample.

Spanish Sample

SES did not predict outcomes on any measure at any grade level. Details on results are described in Tables 5 and 7, with averages and standard deviations outlined in Tables 6 and 8. We have included sample scatter plots in the Appendix to demonstrate that there were no obvious nonlinear relationships that might explain the unexpected lack of effect of SES on language for Spanish.

Discussion

Our research question was whether SES, as indexed by parental level of education, would predict outcomes on measures of vocabulary, syntax, and narrative structure in both the Spanish and English narrative story retells of school-aged bilingual children. To answer this question, we needed to look at both of the children's languages. Although there was evidence that SES predicted outcomes on language measures, the influence was not uniform across

Table 1. Data for kindergarten students by maternal level of education for English story retell.

	<i>F</i> statistics	<i>R</i> ²	Correlation coefficient
			β
MLUw*	<i>F</i> (1, 396) = 10.34	.02	.15
NDW*	<i>F</i> (1, 396) = 23.37	.05	.23
NSS*	<i>F</i> (1, 396) = 17.48	.04	.20
CT*	<i>F</i> (1, 396) = 14.70	.03	.18
SI	<i>F</i> (1, 396) = 2.24	<.01	.07

Note. MLUw = mean length of utterance in words; NDW = number of different words; NSS = narrative scoring scheme; CT = conjunctions-type; SI = subordination index.

*Significant at $p < .001$.

Table 2. Means (standard deviations and ranges listed underneath) for kindergarten students by maternal level of education for English story retell.

	Entire group	Lower third (PLE 0–6)	Highest third (PLE 12–20)
MLUw ^a	5.66 (1.14) 1.65–9.03	5.39 (1.20) 1.65–9.00	5.88 (1.09) 2.83–9.03
NDW ^a	56.14 (22.77) 6–130	48.61 (21.51) 7–108	62.91 (22.62) 6–130
NSS ^a	14.41 (5.82) 1–31	13.09 (5.79) 1–26	16.00 (5.71) 1–31
CT ^a	2.30 (1.23) 0–7	1.98 (1.09) 0–5	2.58 (1.38) 0–7
SI	0.99 (.15) 0.25–1.43	0.96 (.18) 0.33–1.37	1.00 (.14) 0.25–1.43

Note. PLE = maternal level of education; MLUw = mean length of utterance in words; NDW = number of different words; NSS = narrative scoring scheme; CT = conjunctions–type; SI = subordination index.

^aSocioeconomic status was a significant predictor of this measure.

languages, and the degree of variance explained by SES was not what we might have predicted on the basis of previous literature. To reiterate, for this study, we did not seek to compare English narrative language development to Spanish narrative language development directly.

English Samples

We did find that SES was predictive of language measures for ELLs in English. These differences were largest for kindergarteners, with evidence of SES affecting vocabulary, narrative structure, conjunctions, and morphosyntax. On the basis of the literature, we would have predicted an increase in SES group differences with age. Instead, we found smaller differences for children in second grade. By second grade, MLUw was no longer affected by SES, while NDW, NSS, and CT continued to be. Although we had originally thought of CT as a proxy measure for syntactic complexity, it also has a clear vocabulary component as it is the measure of a single word (i.e., conjunctions). We evaluated a healthy number of participants for the second-grade sample, so the

Table 3. Data for second-grade students by maternal level of education for English story retell.

	<i>F</i> statistics	<i>R</i> ²	Correlation coefficient
			β
MLUw	<i>F</i> (1, 507) = 0.94	<.01	.04
NDW*	<i>F</i> (1, 507) = 17.88	.03	.18
NSS*	<i>F</i> (1, 507) = 6.11	.01	.10
CT*	<i>F</i> (1, 507) = 15.00	.02	.16
SI	<i>F</i> (1, 507) = 3.74	<.01	.08

Note. MLUw = mean length of utterance in words; NDW = number of different words; NSS = narrative scoring scheme; CT = conjunctions–type; SI = subordination index.

*Significant at $p < .001$.

Table 4. Means (standard deviations), with ranges listed underneath, for second-grade students by maternal level of education for English story retell.

	Entire group	Lower third (PLE 0–6)	Highest third (PLE 12–20)
MLUw	6.78 (0.82) 3.92–9.23	6.79 (0.84) 3.92–9.10	6.78 (0.86) 4.70–9.23
NDW ^a	79.88 (22.20) 21–157	76.71 (20.36) 24–128	87.28 (25.18) 29–157
NSS ^a	17.84 (4.09) 7–31	17.50 (3.98) 9–27	18.66 (4.44) 7–29
CT ^a	3.71 (1.55) 1–9	3.57 (1.43) 1–8	4.11 (1.68) 1–9
SI	1.10 (.10) 0.50–1.48	1.09 (.11) 0.50–1.42	1.11 (.10) 0.70–1.44

Note. PLE = maternal level of education; MLUw = mean length of utterance in words; NDW = number of different words; NSS = narrative scoring scheme; CT = conjunctions–type; SI = subordination index.

^aSocioeconomic status was a significant predictor of this measure.

lack of a significant effect of SES on MLUw, as well as the low R^2 , are likely accurate.

One interpretation of these findings is that we may be seeing the effect of educational opportunity equalizing language differences that might be expected due to SES as children progress through an English-based school system. The effect of SES as related to multiple linguistic measures when children start school is relatively small and decreases for children in second grade. Thus, one could surmise that the gap is slowly being closed for the lower SES students. On entry into kindergarten, the higher SES students have likely been receiving more language input, resulting in their improved language scores relative to the low SES students. However, the one thing all students have in common is experience in school, and this consistent English exposure may help typically developing bilingual children close the SES-based language gap that exists at the outset of schooling. Education allows the low SES students to have high-level input, which may accelerate their growth trajectory, narrowing, but not closing, the SES gap. This education effect might be even stronger in bilingual children than in

Table 5. Data for kindergarten students by maternal level of education for Spanish story retell.

	<i>F</i> statistics	<i>R</i> ²	Correlation coefficient
			β
MLUw	<i>F</i> (1, 396) = 0.22	<.01	.02
NDW	<i>F</i> (1, 396) = 0.25	<.01	.02
NSS	<i>F</i> (1, 396) = 0.05	<.01	–.01
CT	<i>F</i> (1, 396) = 2.39	<.01	.07
SI	<i>F</i> (1, 396) = 0.06	<.01	.01

Note. MLUw = mean length of utterance in words; NDW = number of different words; NSS = narrative scoring scheme; CT = conjunctions–type; SI = subordination index. Socioeconomic status was not a significant predictor of any measure.

Table 6. Means (standard deviations) with ranges listed underneath for kindergarten students by maternal level of education for Spanish story retell.

	Entire group	Lower third (PLE 0–6)	Highest third (PLE 12–20)
MLUw	5.62 (0.95) 2.20–8.93	5.59 (0.99) 2.70–8.93	5.63 (0.92) 2.50–8.34
NDW	60.56 (20.62) 8–119	59.26 (19.13) 8–108	60.33 (21.47) 12–119
NSS	15.64 (4.65) 7–29	15.84 (4.39) 7–25	15.36 (4.60) 7–27
CT	0.02 (0.17) 0–2	0.01 (0.12) 0–1	0.05 (0.25) 0–2
SI	1.10 (.09) 1.00–1.54	1.10 (.09) 1.00–1.45	1.10 (.09) 1.00–1.47

Note. PLE = maternal level of education; MLUw = mean length of utterance in words; NDW = number of different words; NSS = narrative scoring scheme; CT = conjunctions–type; SI = subordination index.

monolingual children given that school may be their main source of English input.

These findings are in contrast to the monolingual data that show a lexical gap that increases with age in the monolingual population (Bradley, Corwyn, Burchinal, McAdoo, & Coll, 2001). In our study, SES was most strongly associated with NDW, a vocabulary measure. However, the apparent narrowing of the SES-based language gap is not expected due to work showing different language trajectories for children from low SES homes that extend through high school (see Hoff, 2013, for a review). There are several possible reasons for this difference. To be fair, Hoff (2013) does note that vocabulary is the most sensitive feature to SES; thus, our findings may be generally in line with those gross differences. However, the overall trend is clearly not one of an increasing gap.

The first explanation for this is that some of those trajectories plot academic achievement. We have no measures of academic achievement for our sample. It is possible that differences in academics are evident, and we simply could not measure them. In other words, differences in SES may not manifest as strongly in oral language measures,

Table 7. Data for second-grade students by maternal level of education for Spanish story retell.

		Correlation coefficient	
	F statistics	R ²	β
MLUw	$F(1, 507) = 0.14$	<.01	.01
NDW	$F(1, 507) = 0.41$	<.01	–.02
NSS	$F(1, 507) = 0.38$	<.01	.02
CT	$F(1, 507) = 0.20$	<.01	.02
SI	$F(1, 507) = 0.18$	<.01	.01

Note. MLUw = mean length of utterance in words; NDW = number of different words; NSS = narrative scoring scheme; CT = conjunctions–type; SI = subordination index. Socioeconomic status was not a significant predictor of any measure.

Table 8. Means (standard deviations and ranges listed underneath means) for second-grade students by maternal level of education for Spanish story retell.

	Entire group	Lower third (PLE 0–6)	Highest third (PLE 12–20)
MLUw	6.32 (0.96) 3.25–12.50	6.28 (0.91) 3.92–8.11	6.26 (0.98) 3.25–9.15
NDW	82.18 (18.48) 14–132	82.16 (15.99) 37–119	81.32 (21.00) 14–126
NSS	20.45 (5.36) 5–35	20.30 (5.12) 7–35	21.04 (5.61) 7–34
CT	0.02 (0.16) 0–2	0.01 (0.10) 0–1	0.02 (0.16) 0–1
SI	1.17 (.09) 1.00–1.51	1.17 (.08) 1.00–1.50	1.16 (.10) 1.00–1.51

Note. PLE = maternal level of education; MLUw = mean length of utterance in words; NDW = number of different words; NSS = narrative scoring scheme; CT = conjunctions–type; SI = subordination index.

such as story retells, as they do in measures that are supported by oral language, such as reading or written language. Miller et al. (2006) found that oral narrative skills predicted reading skills for bilingual children in kindergarten through third grade. Thus, if we expected to find differences in reading, we would expect to see those SES-related differences in oral language. Still, that study used standardized measures of reading and not in-class academic performance or performance on high-stakes educational assessments. Deficits related to SES might show up in those arenas that have more complex factors influencing them (e.g., attendance) rather than on discrete, standardized measures.

Other possibilities are that the differences that are reported in the literature related to, for example, syntax, do not extend beyond the age ranges studied. For example, work is often cited showing that children from low SES homes have lower levels of syntactic complexity in their speech (e.g., Huttenlocher et al., 2010; Vasilyeva et al., 2008). The children studied are less than 4 years of age. Thus, these SES-based syntactic differences may not persist for school-aged children. Another explanation may be that many documented linguistic differences associated with SES are based on standardized tests. Narrative story retell is a distinctly different task and may be able to allow students from low SES homes to demonstrate linguistic competence in a way that they cannot with other standardized measures.

Spanish Samples

In contrast to our findings for the English samples and to the expectations we would have on the basis of the literature, there were no measurable effects of SES at any grade level for any of the measures for the Spanish sample. Recall that there are real differences related to SES for this same group of children in English. Therefore, we must entertain multiple possibilities to explain these surprising findings. First, SES may not affect language in Spanish-speaking children. This is unlikely, given that there have

been findings of SES differences worldwide (e.g., Bradley & Corwyn, 2002). At first, it seems promising to examine the differential growth trajectories of narrative development in ELLs. For example, both Rojas and Iglesias (2013) and Uccelli and Pérez (2007) have found that children develop narrative skills at different rates in Spanish and English. Might the differences in the role of SES be related to children's skills across languages not being equivalent? The problem with this interpretation is twofold. First, we are not directly comparing Spanish to English samples. We are examining the role of SES in each language, separately, by using the same group of children. If SES affects language, there is no suggestion in the literature that it does so only at one point in development or only in one language; SES should affect either language. Second, for the effects of SES to be neutralized, something would need to disproportionately affect one end of the SES spectrum but not the other. The data for Spanish narrative development do not provide evidence that this is the case; the evidence is that there are differences across languages, not within Spanish. Thus, simply having different growth trajectories across languages cannot easily account for the lack of an effect of SES on language in Spanish.

Another possible option is that we are seeing the effect of language attrition. That is, any effects of SES that we might have seen are being washed out by the children from the higher SES homes losing some of their proficiency in Spanish. Attrition is a common process that many children experience when learning their second language (Anderson, 2012). ELLs from higher SES families are more likely to hear more English at home and have more opportunities to hear and use English in the community. The result of this is that they are also likely hearing less Spanish outside of the home. As we can see from their English language samples, there are differences in language measures on the basis of SES. Those children from higher SES families may have had stronger Spanish skills at one time (e.g., before learning English), but as a result of increased English exposure and proficiency, Spanish language skills may have been lost to become equal to their peers from lower SES backgrounds.

The problem with this explanation is that the children from this sample, according to parent report, are not significantly increasing their English language usage in the second grade. On the contrary, the children in both kindergarten and second grade were mostly spoken to in Spanish by others and also used mostly Spanish to converse with others outside of school. Thus, either the reports of the amount of English that children are using is inaccurate or attrition is not a viable explanation for the outcome. Future studies should look at differences in monolingual Spanish-speaking children coming from different SES backgrounds to determine whether there are true differences in Spanish narrative language on the basis of SES before English is learned (e.g., preschool).

One explanation that works logically, but will need to be proved empirically, relates to where the parents of the children in this study were born. Consider the differences in educational opportunities in the United States compared

with Mexico. In the United States, the three most common levels of educational attainment among Hispanic adults are high school, followed by some college, and then a bachelor's degree (U.S. Census Bureau, 2010). In contrast, most of the children in these samples came from families in which the majority of mothers had completed between 5 to 12 years of schooling (sixth grade, followed by 12th grade, followed by ninth grade). Many of the children in this sample had immigrant parents. Thus, the parents may not have had similar access to educational experiences as those who are born in the United States. Our sample is representative of educational experiences in Mexico. For example, 64% of Mexicans have attained some high school or less. In particular, more than 60% of women aged 15–29 years in Mexico were not enrolled in school in 2014 (Organisation for Economic Co-operation and Development, 2014). In comparison, only 10.8% of Hispanic 16- to 24-year-old women dropped out of high school in the United States in the year 2013, according to the U.S. Department of Education, National Center for Education Statistics (2015).

The implications for this could explain the unexpected findings in our sample. Suppose that the sample was composed of U.S.-born and Mexican-born parents, who had corresponding educational levels. In our study, education was the proxy for SES. U.S.-born parents would be more likely to use more English in the home than Mexican-born parents. Thus, their children would come to school with a higher SES and higher starting levels of English, but with relatively lower levels of Spanish, due to their increased English input. In contrast, the children of Mexican-born parents would likely start school with lower SES, and lower levels of English, but higher levels of Spanish. However, given that both groups receive instruction in English, we would still observe SES differences on language measures in English. Therefore, we would have an interaction between education and language exposure upon starting school that could neutralize the predicted effects of SES on language, particularly in Spanish.

Recall that our data pertaining to the amount of Spanish spoken to or by the children in the sample (a) is a partial representation of the entire sample and (b) does not break these data down according to parental place of birth. Therefore, we cannot test this interpretation of the findings in this study. However, this account could theoretically explain these unexpected findings.

Limitations

This was a broad brushstrokes examination of the effect of SES on narrative language skills in a group of bilingual children. Given that we used data that were readily available in a commercial product, we do not have detailed information on individuals relative to measures other than those provided. Thus, we cannot relate the findings from narrative samples to other academic records, nor can we confirm our hypothesis about the role of parents' country of birth or the amount of English a parent speaks with his or her child. Note that although these results may

be accurate for children who come from homes of primarily low to moderate parental levels of education, they may not be representative of ELL children from families with higher levels of maternal education. This is a cross-sectional design, so it is possible that there is something unique about the children in each grade that accounts for the diminishing between-group differences rather than an effect of schooling. Additional research will be necessary to see whether these hypotheses are supported or not.

Clinical Implications

These findings highlight the importance of assessing and evaluating bilingual students in both of their languages. One cannot assume that performance in English will equate to performance in Spanish or vice versa. On the basis of the literature, we would expect that differences in language development as it relates to SES would be present in both of a bilingual child's languages. Our findings suggest that this is not the case. Precisely because these results are counter to what is expected, one needs to carefully examine a bilingual child's language comprehensively across both languages. These data also point to the potential benefits of using a narrative story retell as a relatively unbiased measure of language assessment for bilingual children, given that there are fewer instances of performance differences on the basis of SES than expected. Thus, it may be somewhat easier to identify potential true language weaknesses in bilingual children on the narrative story retell task, having data that rule out potential SES differences for several important measures. There were differences for vocabulary, narrative structure, and conjunction use on the basis of SES up to second grade for English samples. However, when analyzing Spanish samples, maternal level of education is not predictive of language performance. When comparing a child's English sample to the SALT normative database, clinicians might choose to select the option to compare a child from a lower SES home to other children from the same background. However, they could forgo this limitation when comparing a child on a Spanish sample and thus have a larger number of children to whom they could compare their client.

Conclusions

Although there are clear effects of SES on language documented in the literature, the effects of SES on language in English-learning elementary children is not as straightforward as the literature might suggest. Differences on the basis of SES were apparent across language categories (e.g., MLUw, NDW, NSS, and conjunctions) in English narrative story retell samples, with only MLUw equalizing by second grade. The amount of variance explained by SES was smaller than might be expected from the literature. There were no differences in a narrative story retell task related to SES for the same group of children when the task was in Spanish. The small size of the effects in English might be related to English-based education, and the lack of effect in Spanish has the potential to be related to an

interaction between parents' place of birth, language use, and SES on the basis of maternal level of education. These hypotheses need to be empirically tested. Regardless, there are clinical implications for how SES is used when interpreting the narrative samples of ELLs.

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References

- Anderson, R. T. (2012). First language loss in Spanish-speaking children. In B. A. Goldstein (Ed.), *Bilingual language development and disorders in Spanish-English speakers* (2nd ed., pp. 193–212). Baltimore, MD: Brookes.
- Bedore, L. M., Peña, E. D., Gillam, R. B., & Ho, T. H. (2010). Language sample measures and language ability in Spanish-English bilingual kindergarteners. *Journal of Communication Disorders*, 43, 498–510.
- Bradley, R. H., & Corwyn, R. F. (2002). Socioeconomic status and child development. *Annual Review of Psychology*, 53(1), 371–399.
- Bradley, R., Corwyn, R., Burchinal, M., McAdoo, H., & Coll, C. (2001). The home environments of children in the United States Part II: Relations with behavioral development through age thirteen. *Child Development*, 72(6), 1868–1886.
- Fernald, A., Marchman, V. A., & Weisleder, A. (2013). SES differences in language processing skill and vocabulary are evident at 18 months. *Developmental Science*, 16, 234–248.
- Genesee, F., & Nicoladis, E. (2007). Bilingual first language acquisition. In E. Hoff & M. Shatz (Eds.), *Blackwell Handbook of Language Development* (pp. 324–342). Oxford, United Kingdom: Blackwell.
- Hackman, D. A., Farah, M. J., & Meaney, M. J. (2010). Socioeconomic status and the brain: Mechanistic insights from human and animal research. *Neuroscience*, 11, 651–659.
- Hart, B., & Risley, T. R. (1995). *Meaningful differences in the everyday experiences of young children*. Baltimore, MD: Brookes.
- Hauser, R. M. (1994). Measuring socioeconomic status in studies of child development. *Child Development*, 65, 1541–1545.
- Heath, S. (1986). Taking a cross-cultural look at narratives. *Topics in Language Disorders*, 7(1), 84–94.
- Heilmann, J., Miller, J. F., Iglesias, A., Fabiano-Smith, L., Nockerts, A., & Andriacchi, K. D. (2008). Narrative transcription accuracy and reliability in two languages. *Topics in Language Disorders*, 28, 178–188.

- Heilmann, J., Miller, J. F., Nockerts, A., & Dunaway, C. (2010). Properties of the narrative scoring scheme using narrative retells in young school-age children. *American Journal of Speech-Language Pathology*, 19, 154–166.
- Hoff, E. (2013). Interpreting the early language trajectories of children from low-SES and language minority homes: Implications for closing achievement gaps. *Developmental Psychology*, 49, 4–14.
- Hoff, E., Rumiche, R., Burridge, A., Ribot, K. M., & Welsh, S. N. (2014). Expressive vocabulary development in children from bilingual and monolingual homes: A longitudinal study from two to four years. *Early Childhood Research Quarterly*, 29, 433–444.
- Hoff, E., & Tian, C. (2005). Socioeconomic status and cultural influences on language. *Journal of Communication Disorders*, 38, 271–278.
- Howard, E. R., Pérez, M. M., August, D. L., Barr, C. D., Kenyon, D., & Malabonga, V. (2014). The importance of SES, home and school language and literacy practices, and oral vocabulary in bilingual children's English reading development. *Bilingual Research Journal*, 37, 120–141.
- Huttenlocher, J., Waterfall, H., Vasilyeva, M., Vevea, J., & Hedges, L. V. (2010). Sources of variability in children's language growth. *Cognitive Psychology*, 61, 343–365.
- Jackson, C. W., Schatschneider, C., & Leacock, L. (2014). Longitudinal analysis of receptive vocabulary growth in young Spanish English-speaking children from migrant families. *Language, Speech, and Hearing Services in Schools*, 45, 40–51.
- Mayer, M. (1969). *Frog, where are you?* New York, NY: Dial Books.
- Miller, J. F., & Chapman, R. S. (1981). The relation between age and mean length of utterance in morphemes. *Journal of Speech, Language, and Hearing Research*, 24, 154–161.
- Miller, J. F., Heilmann, J., Nockerts, A., Iglesias, A., Fabiano, L., & Francis, D. J. (2006). Oral language and reading in bilingual children. *Learning Disabilities Research & Practice*, 21, 30–43.
- Miller, J. F., & Iglesias, A. (2012). *SALT: Systematic Analysis of Language Transcripts. Software for the analysis of oral language* [Computer software]. Middleton, WI: SALT Software.
- Organisation for Economic Co-operation and Development. (2014). *Mexico education at a glance 2014: OECD Indicators* (pp. 2–3). OECD Publishing, Paris, France. Retrieved from <http://www.oecd.org/edu/Mexico-EAG2014-Country-Note.pdf>
- Parker, M. D., & Brorson, K. (2005). A comparative study between mean length of utterance in morphemes (MLUm) and mean length of utterance in words (MLUw). *First Language*, 25, 365–376.
- Rojas, R., & Iglesias, A. (2009). Making a case for language sampling: Assessment and intervention with (Spanish-English) second language learners. *The ASHA Leader*, 14(3), 10–11.
- Rojas, R., & Iglesias, A. (2013). The language growth of Spanish-speaking English language learners. *Child Development*, 84, 630–646.
- Rowe, M. L., Raudenbush, S. W., & Goldin-Meadow, S. (2012). The pace of vocabulary growth helps predict later vocabulary skill. *Child Development*, 83, 508–525.
- Ryan, C. (2013). *Language use in the United States: 2011*. (Report ACS 22. 29, May 2015). Retrieved from U.S. Census Bureau, American Community Survey website <http://www.census.gov/prod/2013pubs/acs-22.pdf>
- Texas Education Code, 74th Leg., § 29.051–29.064 (1995).
- Uccelli, P., & Pérez, M. M. (2007). Narrative and vocabulary development of bilingual children from kindergarten to first grade: Developmental changes and associations among English and Spanish skills. *Language, Speech, and Hearing Services in Schools*, 38, 225–236.
- U.S. Census Bureau. 2010. *Educational attainment in the United States: 2010 detailed tables*. Retrieved from <https://www.census.gov/hhes/socdemo/education/data/cps/2010/tables.html>
- U.S. Department of Education, National Center for Education Statistics. (2015). *The condition of education 2015*. Retrieved from https://nces.ed.gov/programs/coe/indicator_coj.asp
- U.S. Department of Health and Human Services. (2014). *Information on poverty and income statistics: A summary of 2014 current population survey data*. Retrieved from http://aspe.hhs.gov/hsp/14/povertyandincomeest/ib_poverty2014.pdf
- Vasilyeva, M., Waterfall, H., & Huttenlocher, J. (2008). Emergence of syntax: commonalities and differences across children. *Developmental Science*, 11, 84–97.

Appendix

Scatter Plots for Number of Different Words for English and Spanish Story Retells for Kindergarten and Second Graders

English Kindergarten

Spanish Kindergarten

English 2nd Grade

Spanish 2nd Grade