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Role of Oral Proficiency on Reading Comprehension: Within-Language and Cross-Language Relationships

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Abstract

This longitudinal study examined the role of oral proficiency, as measured with elicited narratives using a wordless picture book, *Frog Where are You?* (Meyer, 1969/1994), on English reading comprehension with a total of 102 English Language Learners (ELLs), including both Spanish and Cantonese speakers. Narrative samples were collected in the winter of first grade and reading skills were assessed on the same children one year later in second grade. Children were enrolled in either bilingual programs or mainstream programs. Multiple regression results show it was not the quantity and variety of words used in the narratives that predicted English reading comprehension one year later. Instead, the ability to produce a coherent oral narrative, in either the home language or English, explained a small variance in English reading comprehension for both English learner groups. These findings highlight the importance of examining narrative skills, especially as measured by narrative structure. Implications for parents and educators are discussed.

Introduction

The National Literacy Panel on Language-Minority Children and Youth found students living in households where languages other than English are spoken tend to be less proficient in oral language skills than their monolingual peers, despite having similar decoding and word recognition ability (August & Shanahan, 2006). More recent research has also shown bilinguals tend to lag behind their monolingual peers on vocabulary (Hammer, Lawrence, & Miccio, 2008; Uchikoshi, 2014). Furthermore, evidence overwhelmingly supports a positive relationship between oral proficiency and reading achievement both for monolinguals (Dickinson & Tabors, 2001; Pearson, Hiebert, & Kamil, 2007) and bilinguals (August & Shanahan, 2006; Leider, Proctor, Silverman, & Haring, 2013), confirming that children with better oral language skills make earlier and faster progress in acquiring literacy skills through the elementary school years.

Among the various facets of oral language proficiency, vocabulary knowledge (Hemphill & Tivnan, 2008; Tannenbaum, Torgesen, & Wagner, 2006) and narrative ability (e.g., Dickinson & Tabors, 2001; Griffin, Hemphill, Camp, & Wolf, 2004; Reese, Suggate, Long & Schaughency, 2010) show exceptional promise as precursors to literacy for monolingual children. Previous studies documented drastic differences in English vocabulary between some bilingual and monolingual children emerging as early as age three and persisting through second grade (Cobo-Lewis, Pearson, Eilers, & Umbel, 2002; Hammer et al., 2008;

Oller & Eilers, 2002; Paez, Tabors, & Lopez, 2007; Uchikoshi, 2006). However, few studies adequately capture the full range of oral proficiency, often relying on a single measure of decontextualized skills (Branum-Martin et al., 2009). In fact, researchers have argued the ability to produce oral language in a communicative context (such as narratives) should be considered the standard for assessing language knowledge (Braisby & Dockrell, 1999; Dockrell & Messer, 2004; Miller et al., 2006). It is only with spontaneous oral narratives that words, sentences, and narrative structures can be evaluated within and across languages.

Since 2000, more studies have been conducted on the oral narrative abilities of bilingual children (Gutiérrez-Clellen, 2002; Hipfner-Boucher et al., 2014; Miller et al., 2006; Muñoz, Gillam, Peña, & Gulley-Faehnle, 2003; Uccelli & Paéz, 2007; Uchikoshi, 2005). However, most have been with children whose first language is Spanish. While looking at Spanish-English bilinguals is useful in that Spanish speakers constitute the largest non-English speaking language users in the U.S. (Pew Research, 2013), there is a paucity of studies focused on bilingual children, such as Chinese-English bilinguals, whose two languages do not share a writing system.

To extend the research on oral narratives and address the lack of research on Chinese-English bilinguals, the goals of the current longitudinal study were to (a) examine the oral proficiency levels of Spanish-speaking and Cantonese-speaking ELLs in both their first/home language (L1) and second language (L2), English; (b) examine their English reading achievement one year later in the spring of second grade; and (c) explore the relations between L1 or L2 narrative skills and English reading comprehension. Understanding the importance of oral proficiency in English reading comprehension can have practical and political implications for language use and instruction in the home and in early childhood settings. Moreover, understanding how similar or different the effects of oral proficiency on English reading comprehension are between Spanish-speaking and Cantonese-speaking ELLs can directly inform curriculum and instruction.

Development of Narrative Skills in Bilinguals

Similar to monolinguals, bilinguals' abilities to produce narratives in both L1 and L2 develop from preschool to school age (Chen & Yan, 2011; Fiestas & Peña, 2004; Gutiérrez-Clellen, 2002; Squires et al., 2013; Uccelli & Paéz, 2007). Narratives have been analyzed in various ways, including language productivity, such as mean length of utterance (MLU), number of different words (NDW), and words per minute (WPM). Other researchers examine story structure and syntactic accuracy. Past research demonstrates positive growth in narrative skills as measured by MLU, NDW, and WPM in both Spanish and English narratives produced by Spanish-English bilinguals from kindergarten through second grade (Rojas & Iglesias, 2012). Using a wordless picture book, *Frog, Where are You?* (Meyer, 1969/1994), Muñoz and colleagues (2003) found older Latino preschool children's narratives consisted of longer, more grammatically correct sentences with a more complete story structure than those produced by younger children. These researchers noted syntactic accuracy and story structure might be better indicators of developmental changes in Latino children's narrative abilities than language productivity measures such as total number of words and number of different words.

Studies have found that controlling for age and memory, on average, English monolinguals and ELLs who use English at home produce statistically significantly longer narratives, more different words and more grammatically correct utterances in their English narratives than ELLs who do not use English at home (Hipfner-Boucher et al., 2014). There appears to be no significant group differences on the number of utterances and story grammar, as measured by mentioning specific characters and events in the story.

In addition, there appears to be cross-language relationships between the narrative skills in the two languages where L1 Spanish narratives predict L2 English narratives (Squires et al., 2013 Uccelli & Paez, 2007). Squires and colleagues found that macrostructure narrative scores (e.g., character, setting, initiating event, plan, action, consequence and internal response) in Spanish during kindergarten predicted those in English in first grade. Uccelli and Paez also found Spanish-English bilinguals' abilities to organize a story in Spanish in kindergarten predicted English narrative quality one year later in first grade.

Narrative Skills and Reading Achievement

Narrative skills are strong predictors of literacy achievement in monolingual children (Catts, Fey, Zhang, & Tomblin, 1999, Dickinson & Tabors, 2001; Griffin et al., 2004; Reese et al., 2010). Griffin and colleagues found narrative quality, specifically the use of evaluative words and words that portray a character's physical, cognitive and emotional states produced by English-speaking children at age five, predicted third grade reading comprehension. Building on Griffin's work, Reese and colleagues found narrative quality demonstrated a positive correlation to reading skills with 61 monolingual English-speaking children in New Zealand. They also found narrative quality predicted 7-year-olds' reading skills concurrently and one year later, even after accounting for their receptive vocabulary and decoding skills. With 604 students, Catts and colleagues (1999) found English oral language proficiency in kindergarten, measured by the ability to comprehend, organize and retell a story, along with vocabulary and grammar, uniquely explained the variances in English reading comprehension and English word recognition in second grade.

One longitudinal study of 626 students from low-income households suggests a cyclical relationship between reading and oral language (Storch & Whitehurst, 2002). Although they found a significant relationship between oral language abilities, as measured by vocabulary and narrative recall measures and literacy in preschool, it dissipated by the time students reached kindergarten and the connection was found to be irrelevant through second grade. However, as the children reached third and fourth grades, their oral language abilities once again had a strong and direct link to reading comprehension.

Positive relationships between narrative and reading skills were not only observed in monolingual children, but in Spanish-English bilingual children. Miller et al. (2006) investigated the relationships between narratives and reading comprehension for Spanish-speaking bilingual students. In a cross-sectional study of 1531 students in kindergarten through third grade, Miller and colleagues analyzed narratives elicited using *Frog, Where are You?* (Mayer 1969) for both narrative productivity (MLU, NDW, WPM), and narrative quality using the Narrative Scoring Scheme (NSS), which is an index of participants'

abilities to produce a coherent narrative. Multiple regression results show these four English narrative measures explained 22% of the variance in English reading comprehension. Regression analysis also revealed significant, though moderate, cross-language transfer effects: Spanish oral narrative measures explained 2% of the variance in English reading comprehension, controlling for grade and English oral language measures; Spanish oral narrative measures also explained 1% of the variance in English word reading.

Cantonese Narratives

Research on narratives skills of young Cantonese-speaking ELLs from low-socio-economic status (SES) families in the U.S. is limited (Chen & Lei, 2012; Chen & Pan, 2009; Chen & Yan, 2011; Leung, 2012; Leung & Uchikoshi, 2012). The few studies that have examined narrative abilities in this population suggest some interesting directions for inquiry and highlight the need for additional research. The majority of studies have examined the language/lexical expressions in children's narratives in both English (Chen & Pan, 2009; Chen & Yan, 2011) and Cantonese (Leung, 2012). More studies are needed that examine not only the grammatical elements of Cantonese and English narratives produced by Cantonese-English bilinguals in the U.S., but also vocabulary diversity, structure, and relationships to reading comprehension.

The Present Study

The critical role of oral proficiency on reading comprehension and the limited number of studies that have investigated ELLs' narrative performance, particularly Cantonese-English bilingual students, motivated the present study. ELL children from Spanish and Chinese-speaking homes were selected as participants because (a) they represent the first and second most frequently spoken home languages among non-English speaking families in the U.S. (United States Census Bureau, 2015) and (b) Spanish-English bilinguals learn two alphabetic languages while Cantonese-English bilinguals learn one alphabetic and one non-alphabetic language, allowing us to see potential influences of the home language on bilingual language development. The following three research questions were addressed:

1. What is the oral language proficiency (in L1 and English) for Spanish-English and Cantonese-English bilingual children in first grade?
2. What is the English reading achievement for Spanish-English and Cantonese-English bilingual children in the spring of second grade?
3. What are the associations between oral language ability and reading comprehension for these children? Are there differences between Spanish-English and Cantonese-English bilingual children?

This study is part of a larger study examining the language and literacy development of Cantonese-speaking and Spanish-speaking ELLs. Only measures relevant to this study will be discussed. Oral narrative data were collected during winter of first grade, as children would have been exposed to English for over 1.5 years by this time—enough to gain some English proficiency if they had not been exposed to English prior to school entry. Follow-up

reading data were collected in the spring of second grade when most children would have learned to decode and can read on their own (Garcia & Cain, 2014).

Methodology

Participants

The majority of children were American-born, but the majority of Cantonese-speaking parents had been born in Cantonese-speaking areas of China and the majority of Spanish-speaking parents had been born in Mexico. Data were collected from 102 students (42 boys, 60 girls) enrolled at six schools in two major urban school districts in northern California; 57 were Cantonese-speaking and 45 were Spanish-speaking. All six schools had similar high percentages for children with free/reduced lunch status. According to district demographics, school data, and parental questionnaires, 75% or more of the participating students qualified for free or reduced lunch. Three of the schools offered both Spanish-English and Cantonese-English early-exit transitional bilingual programs, in which, by second grade, approximately 60–90% of class time was in English. Children from both bilingual and mainstream programs were recruited to ensure varied L1 and L2 proficiencies. Children were enrolled in bilingual or mainstream programs based on parental preference, in consultation with the school administration and kindergarten teachers. Sixty of the 102 students were enrolled in bilingual classrooms, while 42 were enrolled in mainstream classes.

For children in the mainstream programs, Spanish and Cantonese-speaking ELLs were placed in the same classrooms with the same instructors. Children in the bilingual programs were in separate classrooms. Their teachers and the mainstream teachers met weekly to discuss curriculum and ensure that similar content and topics were taught in all classrooms.

ELL first graders were given consent forms to take home. The return rate of the consent forms averaged 73%, but ranged from 60% to 98%, depending on the classroom. There appeared to be no pattern to the lack of return of the consent forms. All teachers addressed the state standards in their instruction and used the same state-adopted reading textbooks. Each school had weekly grade-level teacher meetings where teachers met to discuss curriculum and standards and ensure that similar content was being taught in all classrooms.

Measures

All children were individually tested, on two separate days, in both L1 and English by trained research assistants who were native speakers of English, Cantonese, or Spanish. Each testing session lasted approximately 30 minutes.

Narrative skills—First graders' narrative skills, in both Cantonese and English, were assessed using the wordless picture book, *Frog, Where are You?* (Mayer, 1969/1994.) The same book was used for both L1 and L2 narrative elicitation. As has been done in previous studies (Uchikoshi, 2005), children were randomly selected to produce the narrative in L1 or L2 first. Utilizing the Frog Story is a popular method of obtaining narratives from school-age children (Heilmann, Miller, Nockerts, & Dunaway, 2009). Many researchers looking at cross-linguistic child language development use this instrument to elicit narratives;

transcripts can be found in the Child Language Data Exchange System (CHILDES) (MacWhinney, 2000).

The children were individually asked to look through the book first and then tell a story aided by the pictures in the book. During the task, the assessors were permitted to only provide backchannel responses or to restate the child's last utterance. If the child began to describe the picture instead of providing a narrative, the assessor prompted the child with questions such as "What is happening in the story?" or "What happened next?" If the child appeared to be taking no definite course in the narrative or if the child ended the narrative abruptly, the assessors asked, "Is that the end of the story?" or "How does the story end?"

All narratives were audio-recorded, then transcribed and verified by trained native-speaking research assistants. An initial transcription was completed by a single transcriber, which was then reviewed by a second transcriber. These were analysed for narrative productivity and quality. Based on previous research (Miller et al., 2006), narrative productivity was measured with the number of different words (NDW) and total number of words (TNW). The NDW provides a measure of vocabulary diversity in narratives that significantly correlates with age, $r=.71$ (Miller et al., 2006), and is sensitive to disordered language performance (Miller & Klee, 1995).

Narratives were also coded for quality according to the Narrative Scoring Scheme (NSS) (Miller et al., 2006). The NSS is an index of the participant's ability to produce a coherent narrative consisting of seven categories derived from story grammar categories. The seven narrative elements included: introduction, character development, mental states, referencing, conflict/resolution, cohesion, and conclusion. In addition, the NSS assesses specific referencing, the use of mental state verbs, and coherence. Each category is holistically scored using a 5-point scale for a total of 35 points. Five points were given for proficient use, three for emerging or inconsistent use, and one for immature or minimal use. Scores of zero were given for poor performance and for cases where children did not tell the story or gave a narrative in their first language.

A professional transcribing and coding company coded the Spanish and English narratives. The fourth author, a native Cantonese speaker coded the Cantonese narratives. For reliability of coding, 20% of the narratives were randomly selected and independently scored by another trained Cantonese-speaking researcher. The Cohen's Kappa statistic, which corrects for chance agreement (Bakeman & Gottman, 1997), was .85.

Letter-Sound/decoding knowledge—English letter sound and decoding knowledge were tested using the Woodcock Language Proficiency Battery – Revised (WLPB-R) (Woodcock, 1991) letter-word identification subtest in the spring of second grade. The first five items measure the ability to match a rebus with an actual picture of an object. The next nine items measure the students' ability to name letters. This is followed by a list of sight words or high-frequency words. The difficulty gradually increased to include multi-syllabic or low-frequency words. Reported split-half reliability from the norms for children at age six is .96 (Woodcock, 1991).

Reading comprehension—The children were also tested with the reading comprehension subtest of the WLPB-R in English in the spring of second grade. On this cloze-type reading comprehension test, the children silently read short passages in order of increasing difficulty and had to orally provide the missing word. Reported split-half reliability from the norms for children at age six is .95 (Woodcock, 1991). This measure was chosen for the reading comprehension assessment since it is a widely used standardized measure in reading research with both monolingual English speakers and bilinguals and has high reliability and validity (Francis et al., 2006; Leider et al., 2013).

Statistical Analysis

First, a descriptive analysis was conducted on all measures by language (Spanish or Cantonese) and by program (mainstream or bilingual) (Tables A and B). A series of 2 (language) $\times$ 2 (program) ANOVAs were conducted on all measures to see if there were any statistical differences among the variables. Interactions were tested but were not significant.

Correlation analyses were run to examine the relations between the variables. Multiple regression analysis was then conducted to examine the role of first grade oral proficiency in second grade reading comprehension.

Results

A series of 2 $\times$ 2 ANOVAs for comparing the performance of first grade English narrative scores (NSS, TNW, NDW) revealed no significant main effect for language or program (see Table A). Overall, all groups had wide variation and performed similarly on all three English narrative measures. A series of 2 $\times$ 2 ANOVAs for comparing the performance of L1 TNW and NDW measures also revealed no significant main effect for language or program. However, there was a significant main effect for L1 NSS measure. The Bonferroni post-hoc test indicated the Spanish-speaking groups scored significantly higher than the Cantonese groups.

A one-way ANOVA on second grade decoding skills revealed no significant main effect of group (see Table B). On average, all groups performed over one standard deviation above the age-matched monolingual norms as published in the WLPB-R manual (Woodcock, 1991). A one-way ANOVA on second grade reading comprehension revealed a significant main effect (see Table B). The Bonferroni post-hoc test indicated the Cantonese group scored significantly higher than the Spanish group. On average, the Cantonese groups scored nearly one standard deviation above the monolingual norms, while the Spanish groups scored slightly above the published monolingual norms.

Table C shows correlations among measures in the study. Overall, the L1 narrative qualities (TNW, NDW, NSS) were highly and positively correlated with each other. At the same time, the English narrative qualities were also highly and positively correlated with each other. The NDW and TNW variables were moderately and positively correlated with each other across languages. The NSS in L1 and L2 were also moderately and positively correlated with each other. Decoding and reading comprehension were strongly and positively

correlated with each other. The only other variable that was positively, but weakly, correlated with reading comprehension was English NDW.

To examine the within-language (Table D) and cross-language (Table E) relations between the second grade English reading scores and earlier oral proficiency in both L1 and L2, multiple regression analysis was conducted. Table D shows results of a fixed order regression analysis in which English reading comprehension was predicted by language, program, and English narrative skills. First, language (Spanish coded as 1, and Cantonese coded as 0) was entered in the model (step 1). Language explained 11% of the variance in English reading comprehension, $F(1, 100) = 12.25, p < .0001$. Then, program (bilingual coded as 1 and mainstream coded as 0) was entered (step 2). Although program was not significant, it was kept in the model to control for program differences. The models in the next steps were compared with this model. English narrative variables (NDW, TNW, NSS) were all entered in the model next (step 3a). None of the English narrative variables were significant. Only the narrative quality measure, English NSS, was kept in the model (Step 3b). After controlling for language and program, first grade English NSS significantly predicted second grade English reading comprehension, accounting for an additional 4% of the variance in English reading comprehension.

Table E shows results of a fixed order regression analysis in which English reading comprehension was predicted by language, program, and L1 narrative skills. First, language (Spanish) was entered in the model (step 1). Then, program (bilingual) was entered (step 2). Although program was not significant, it was kept in the model to control for program differences. The models in the next steps were compared with this model. L1 narrative variables (NDW, TNW, NNS) were all entered in the model next (step 3a). Only L1 NNS was significant, so others were removed and only NSS was kept in the model (step 3b). After controlling for language and program, first grade L1 NSS significantly predicted second grade English reading comprehension, accounting for an additional 6% of the variance in English reading comprehension.

Discussion

As mentioned earlier, the primary goal of this paper was to describe the oral narrative and reading skills of Cantonese-speaking and Spanish-speaking ELLs, and associations the two skills might have. There were no significant differences on first grade English narratives skills between language groups, nor between programs. Both Cantonese-speaking and Spanish-speaking ELLs performed similarly on the English narratives. At the same time, children enrolled in bilingual programs and mainstream programs performed similarly. However, Spanish-speakers scored higher than Cantonese-speakers on L1 NSS scores; all other L1 narrative skills were not significantly different. The data from this study does not explain why Spanish-speakers scored higher on L1 NSS scores than their Cantonese-speaking peers. It may be due to differences in story telling practices at home and school. Alternatively, it may be due to the fact that there are shared cognates in Spanish and English, but not in Cantonese and English. More information, as well as a detailed examination of the children's narratives, would be needed to determine this.

One particularly noteworthy finding in this study that the ELL children—as a whole and disaggregated by first language —performed at grade-level or higher on both reading measures, English decoding, and English reading comprehension. This differs from past research that has shown Spanish-speaking ELLs to score below grade-level in English reading comprehension (Gottardo & Mueller, 2009; Nakamoto, Lindsey, & Manis, 2008). This may be because Nakamoto et al.'s study was conducted with older children; past research has found that ELLs in upper elementary grades struggle with reading comprehension due to the high demands of academic language. The present study's findings also contradict Gottardo and Mueller's study with Spanish-English bilingual second graders. This may be due to the fact that the children in their study scored significantly lower on English decoding, possibly leading to lower reading comprehension scores, while the children in this study scored over one standard deviation higher than the published monolingual norms on English decoding (Woodcock, 1991). Moreover, there were no differences in the reading scores between children attending bilingual programs and those enrolled in mainstream classrooms. That is to say, attending a bilingual program does not seem to disadvantage these children. In fact, these bilingual children are performing at or above language standards compared to their monolingual peers.

Another significant finding is that multiple regressions results show a small but significant within-language and cross-language relationship between first grade narrative quality and English reading comprehension skills one year later. NSS skills in both English and L1 explained some variance in English reading comprehension one year later, even after controlling for native language and program. This may be due to the fact there were cross-language relationships between L1 and L2 English NSS skills, similar to past research that has shown cross-language relationships between narrative skills in the two languages of Spanish-English bilinguals (Miller et al., 2006; Squires et al., 2013; Uccelli & Paez, 2007).

Previous studies have found mixed results concerning cross-linguistic transfer of L1 oral proficiency on English reading comprehension, suggesting results may differ depending on bilingual children's varying levels of proficiency in each language. Proctor, August, Carlo and Snow (2006) found a significant main effect of Spanish vocabulary, and an interaction between Spanish vocabulary and English fluency, on English reading comprehension with a group of Spanish-speaking fourth grade ELs. That is, they found those who were the fastest L2 English word readers benefited from more L1 vocabulary knowledge than those who were slower L2 English word readers. Miller and colleagues (2006) also found Spanish oral narratives measures explained a small variance in English reading comprehension with Spanish-English bilinguals in kindergarten through third grade. However, Lesaux, Crosson, Kieffer, and Pierce (2010) found with Spanish dominant fifth grade bilinguals, Spanish oral language measures were only weakly correlated with English reading comprehension. It appears children may need sufficient L1 and L2 knowledge for cross-linguistic transfer to happen. The children in the current study may have attained these levels as they were from L1 speaking homes and scoring at or above grade-level on English word reading and English reading comprehension measures, suggesting they had enough proficiency in both L1 and English to communicate and function at home and school. More research examining the variation in bilinguals' language abilities is needed.

In addition, similar to Muñoz and colleagues (2003), we found story structure (as shown through NSS) might be a more valid indicator of oral proficiency than language productivity measures such as TNW and NDW. It was not the quantity and variety of words in narratives that made a difference on English reading comprehension; rather, it was the overall ability to produce a coherent narrative that made a unique contribution to English reading comprehension. The more developed the children's stories were in either their home language or English, the higher their English reading comprehension scores were one year later. Interestingly, the L1 NSS measure accounted for slightly more variance, after controlling for program and language, than the English NSS measure did.

One limitation of this study is that English reading comprehension was measured with only one assessment. Although it is a widely used measure, there are problems with assessing bilinguals with monolingual-normed assessments (Abedi, Lord, Hostetter, & Baker, 2000). Results may differ with other reading comprehension measures consisting of short passages followed by multiple-choice questions.

In terms of understanding the relationship between oral language proficiency and reading comprehension for ELLs, these findings offer important theoretical and practical implications for schools and districts that serve students with language backgrounds other than English. First, these results highlight the importance of examining narrative skills, especially as measured by narrative quality. Given that narrative quality plays an important role in reading comprehension, practitioners should encourage narrative production in both English and the L1. Past research has suggested vocabulary is the key measure of oral proficiency. Being able to give a coherent narrative structure is dependent on the child's proficiency in the language of narration, including having enough vocabulary. Although more research is needed to further examine the relations between vocabulary and narrative structures, the findings from this study suggest educators should not focus only on vocabulary development but also work on developing children's vocabulary in a communicative context and as part of a coherent narrative. Thus, teaching bi/multilingual students how to produce and develop narratives, as well as how to assess narrative ability, would be effective ways for educators to best foster students' linguistic abilities.

Second, these findings suggest children should be exposed to stories and story-telling from a young age, regardless of the language of exposure. It appears ELL children use similar strategies in conceptualizing, planning, organizing, and delivering their narratives in any language. Parents of ELLs should be encouraged to read books in their home language to young children to maximize exposure to narrative structures. Pretend play using a variety of vocabulary and dialogue may also foster young children's narrative quality and competence (Lillard et al., 2013). Bi/multilingual parents should be informed that developing their children's L1 oral proficiency can be just as important as developing their L2 English, thereby allowing for home language maintenance to occur alongside English language development.

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Descriptive Statistics (Mean and Standard Deviation) and ANOVA Results on L1 Spanish/Cantonese and English Narrative Skills in First Grade by Language and Program Groups.

Table 1

	Spanish MSP Mean (SD)	Spanish BIL (n=30) Mean (SD)	Cantonese MSP Mean (SD)	Cantonese BIL (n=30) Mean (SD)	df	F
English						
Total Number of words (TNW)	239.13 (91.88)	237.57 (80.30)	217.07 (69.22)	191.63 (56.55)	3	2.44
Number of Different words (NDW)	74.80 (23.24)	74.43 (20.98)	75.52 (17.28)	67.13 (15.86)	3	2.19
Narrative Scoring Scheme (NSS)	12.60 (3.11)	12.83 (3.53)	12.85 (2.58)	12.13 (2.90)	3	.35
L1						
Total Number of Words (TNW)	203.07 (71.09)	225.00 (62.98)	185.19 (122.39)	225.70 (85.75)	3	1.30
Number of Different Words (NDW)	60.20 (18.54)	66.57 (14.58)	59.63 (30.66)	67.13 (15.86)	3	.94
Narrative Scoring Scheme (NSS)	15.93 (4.42)	17.73 (3.48)	12.89 (5.09)	15.50 (3.21)	3	6.88***

Note. L1= Spanish or Cantonese; MSP=mainstream programs; BIL=bingual programs. n=102.

* p<.05,

** p<.01,

*** p<.001.

Descriptive Statistics and ANOVA Results on English Decoding and Reading Comprehension in Second Grade by Language and Program Groups.

Table 2

	Spanish MSP (n=15) Mean (SD)	Spanish BIL (n=30) Mean (SD)	Cantonese MSP (n=27) Mean (SD)	Cantonese BIL (n=30) Mean (SD)	df	F
Decoding	114.40 (13.95)	117.93 (18.85)	118.85 (14.25)	124.40 (13.71)	3	1.64
Reading Comprehension	109.60 (10.85)	102.67 (14.36)	112.07 (9.14)	113.80 (9.89)	3	5.52**

Note. MSP=mainstream programs; BIL=bilingual programs. n=102.

* p<.05,

**

p<.01,

p<.001.

Table 3

Correlations Between Narrative and Reading Measures.

	1	2	3	4	5	6	7	8
1. L1 TNW	–							
2. L1 NDW	.87***	–						
3. L1 NSS	.68***	.70***	–					
4. E TNW	.39***	.32***	.40***	–				
5. E NDW	.26**	.30**	.32**	.85***	–			
6. E NSS	.18	.19	.29**	.67***	.67***	–		
7. E Decoding	.002	–.04	.14	.09	.16	.21*	–	
8. E Reading Comp.	.09	.06	.09	.11	.21*	.19	.68***	–

Note. L1 = Spanish or Cantonese; E = English; TNW = Total Number of Words; NDW = Number of Different Words; NSS = Narrative Scoring Scheme; Comp. = Comprehension. n = 102.

* p < .05,

** p < .01,

*** p < .001.

Table 4

Results of Within-Language Fixed Order Regression Predicting English Reading Comprehension by Language, Program, and English Narrative Measures.

	Predictors	R ²	Change in R ²	F	Change in F
Step 1	Language	.11		12.25	
Step 2	Program	.11	0	6.41	
Step 3a	ENDW, ETNW, ENSS	.18	.07	4.21	2.20 *
Step 3b	E NSS	.15	.04	6.00	.41 *

Note. E = English; NDW= Number of Different Words, TNW = Total Number of Words, NSS=Narrative Scoring Scheme.

3a and 3b are two separate regression models.

n=102.

* p<.05,

** p<.01,

*** p<.001.

Table 5

Results of Cross-Language Fixed Order Regression Predicting English Reading Comprehension by Language, Program, L1 Narrative Measures, and English Decoding.

Predictors	R ²	Change in R ²	F	Change in F
Step 1 Language	.11		12.25	
Step 2 Program	.11	0	6.41	
Step 3a L1NDW L1TNW L1 NSS	.20	.09	4.77	1.64***
Step 3b L1 NSS	.17	.06	6.87	.46**

Note. L1= Spanish or Cantonese; NDW= Number of Different Words, TNW = Total Number of Words, NSS=Narrative Scoring Scheme.

3a and 3b are two separate regression models.

n=102.

* p<.05,

** p<.01,

*** p<.001.