Language Brokering During Shared EBook Reading

By

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Gracias a mis padres, Vicky e Israel, por todo lo que sacrificaron. Ustedes son mi inspiración.

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CHAPTER I

Introduction

The act of reading offers many challenges for all young children, let alone those learning English as a second language. Reading comprehension is recognized to be a complicated task that builds on multiple developing components (RAND Reading Study Group, 2002), including the reader's abilities, the nature of the text, and contextual factors. Additional challenges in learning to read confront Latino Language Minority (LM) learners, who make up 7.6% of students in U.S. public schools (Kena et al., 2016) and account for the largest segment of children living in poverty (Jiang, Granja, & Koball, 2017). Along with learning vocabulary and how to decode written text in a second language, many Latino children face the disadvantages common to children from lower socioeconomic status homes (Hoff, 2013). The combination of low parental education and income, negative perceptions of cultural prestige, and a lack of language input in English and Spanish place Latino children at greater risk for inadequate academic progress. A recent analysis of the National Assessment of Educational Progress (NAEP) reading assessment by Child Trends found that only 21 percent of Latino fourth-graders reached proficient reading levels in 2015, compared to 46 percent of their white counterparts (Ramos & Murphey, 2016). This is especially troubling given the predictive strength of fourth-grade reading achievement on high school graduation rates (Slavin, Karweit, Wasik, Madden, & Dolan, 1994).

A growing body of research on LM learners indicates that, just as with English monolinguals, the development of English word reading and oral language skills is critical both for English reading achievement (August & Shanahan, 2006; Mancilla-Martinez & Lesaux, 2011; Páez & Rinaldi, 2006; Proctor, Carlo, August, & Snow, 2005) and for making further progress in English language development (August & Shanahan, 2006). Children must learn to read words fluently and accurately, as well as develop English vocabulary knowledge and listening comprehension. Among Spanish-speaking LM learners, initial levels of English word reading accuracy and English productive vocabulary at age 4.5, as well as rate of growth in these foundation skills through age 11, predicted English reading comprehension at age 11 (Mancilla-Martinez & Lesaux, 2010). Similarly, English vocabulary knowledge and listening comprehension predicted English reading comprehension among 4th grade Spanish-speakers (Proctor et al., 2005).

The relative importance of word reading and oral language skills on reading achievement appears to change as children get older (Storch & Whitehurst, 2002; Mancilla-Martinez & Lesaux, 2010). In early years, word reading skills may carry more weight in predicting reading comprehension. The basic language in early text is typically already part of the child's vocabulary, so difficulties in comprehension can come from ineffective word reading. As children get older and are presented with more difficult text, low vocabulary knowledge can result in low reading comprehension. Children who struggle to develop their word reading and oral language skills subsequently struggle with reading comprehension.

Although Spanish-speaking LM learners typically do well on word reading measures, it is their **oral** language skills that tend to fall behind when compared to native English speakers. Paez and Rinaldi (2006) reported that Spanish-English bilinguals score within monolingual

norms on an English letter- and word-naming task at the end of kindergarten and 1st grade but below monolingual norms on expressive vocabulary and sentence memory at both time points. This difference between word reading and oral language skills seems to grow larger with age. Mancilla-Martinez and Lesaux (2011) also found that Spanish-speaking LM learners scored below national norms at age 4.5 on word reading skills, but quickly caught up by age 5 and remained at appropriate levels through age 11. However, expressive vocabulary and short-term language memory started below national norms at age 3.4 and did not catch up by age 11. In summary, Spanish-speaking LM learners tend to struggle with oral language skills and subsequently with reading comprehension.

Many suggestions for supporting English oral skills of LM learners are rooted in research on monolinguals. For example, Konishi and colleagues (2014) recommend increasing English language input, child interest, interactivity, prompts and questions, and teaching more vocabulary. Unfortunately, these principles can be difficult to implement when a family faces inadequate access to resources combined with language barriers.

To overcome language and cultural barriers in their new homeland, a common phenomenon among immigrant communities involves children becoming interpreters and translators between their parents and U.S. society (McQuillan & Tse, 1995; Orellana, 2003; Tse, 1995). While this phenomenon appears in research under several names, including *para-phrasing*, *natural interpreting*, and *family-interpreting*, the most common term is *language brokering* (Dorner, Orellana, & Li-Grining, 2007). Generally, a broker (e.g., stockbroker) facilitates an interaction between two parties (e.g., a buyer and a seller). Similarly, child language brokers use their quickly developing knowledge of U.S. culture, U.S. media, and the English language to support their culturally, linguistically, and technologically less-fluent family

members (Katz, 2014). According to research (predominately on Latino families), the majority of children and adolescents from immigrant families act as language brokers, usually starting between the ages of 8 and 12 (Morales & Hanson, 2005).

For many families, child language brokering is a normal practice in and out of the home. Children may interpret at parent-teacher conferences, assist in filling out medical forms, shop with parents online and in-store, interpret television shows, call insurance companies, translate and pay bills, communicate with neighbors, and engage in a multitude of other language-intensive activities (see Orellana, Dorner, & Pulido, 2003). It is important to note that child language brokers are not professional interpreters or translators and can influence the messages they convey (inadvertently or on purpose) or even act as decision makers during interactions with adults (Tse, 1995). For example, Katz (2014) describes an interaction in which a Latino 16-year-old altered her parents' message to better facilitate a positive outcome for her family. The family's health insurance was not accepted by a doctor's office, but rather than interpret her parents' frustrations against the doctor's staff, the minor crafted a new message that made it clear that the blame lay with the insurance company. Staff members were more sympathetic and the end result benefited the family.

When children language broker, they alter the typical transfer of information between adult and child. In sociocultural theories of cognitive development, information transmission typically occurs when a more skilled individual supports a less skilled one to accomplish a task (Vygotsky, 1980). In education, this typically looks like an adult providing scaffolds for the child's learning in the form of asking questions, modeling actions, providing encouragement, and including the child as a conversational partner. During language brokering, the typical roles of master and apprentice flow back and forth (Eksner & Orellana, 2012). Parents actively provide

scaffolds for their children: they may break up speech into smaller segments, provide linguistic knowledge (correct syntax and word forms) in Spanish and for English vocabulary they know, push the child to find appropriate definitions or Spanish equivalents for unknown English words, keep their child focused on the entire text or meaning of the conversation, and provide contextual information about the task. Children may try to paraphrase, describe unknown words, use Spanish phonological pronunciation of English words, or guess the meaning of words from context clues (Eksner & Orellana, 2012). As children get older, they may become more comfortable speaking up, asking questions, and negotiating between adults based on cultural norms (Katz, 2014). However, this does not mean that parents give up their authority. According to Katz, there is little evidence that parents become passive or that language brokering disrupts the family dynamic. The adults and child enter the interaction with varying levels of expertise in relevant culture and languages spoken. Research into the importance of social context for language development makes it clear that parents need to include their children into the interaction and provide appropriate scaffolds to support learning (see Konishi et al., 2014).

As language brokers, children may develop cognitive, linguistic, and decision making abilities due to their experiences as go-betweens. Several theorists propose that children who become competent are likely to develop their vocabulary, metalinguistic awareness, and interpreting/translating strategies that can support better school performance (Buriel, Perez, De Ment, Chavez, & Moran, 1998; Krashen, 1985; Heath, 1986; Malakoff & Hakuta, 1991). Language brokering requires that children reconstruct and retell information while actively engaging with adults, which has been shown to increase oral language abilities in young children (Morrow, 1985).

The strategies that adults and children use during language brokering resemble what occurs during “dialogic reading," a method shown to increase children’s vocabulary knowledge (Whitehurst, et al., 1988). The basic strategy is to pause and ask children open-ended questions while reading stories. Parents are trained to guide the book-reading interaction so that their child becomes an active participant. Answering “WH-questions” gives children practice with oral language and encourages them to make inferences about story events (e.g., **Why** something happened or **What** will happen next), which fosters deep cognitive processing. Parents are trained to guide the interaction by encouraging, correcting, and expanding on children’s responses, similar to how parents and children both contribute to constructing meaning during Language Brokering. With continued use over time, dialogic reading has been shown to improve young children’s oral language skills (Hargrave & Senechal, 2000; Strouse, O’Doherty, & Troseth, 2013; Whitehurst et al., 1988), including those of bilingual preschoolers with expressive vocabulary delays when the intervention was administered concurrently in English and Spanish (Tsybina & Eriks-Brophy, 2010).

Mol and colleagues (2008) noted that dialogic reading may be less effective with older children who may require more challenging prompt and questions. Similarly, younger children at risk for language and literacy impairments may not currently possess the abilities required to make the most of the strategies employed through dialogic reading. However, they suggest that older children at risk may possess the abilities required to make inferences and actively engage in conversation, allowing them to benefit more from dialogic techniques. These findings suggest that language brokering (which resembles dialogic reading) could be useful with young LM learners over the age of 5. Also, language brokering incorporates several of Konishi and

colleagues (2014) recommendations for improving oral language—including interactivity, prompts and questions, and a focus on the meaning of words.

As previously described by Eksner and Orellana (2012), parents use a variety of strategies including questions and prompts to structure brokering interactions. Children are required to become active participants and employ all their language and inferential skills and strategies to make sense of the information they are interpreting or translating for the adults. Thus, to navigate in the English-speaking world, parents appear to develop strategies during language brokering that are known to support the developing oral language and literacy skills of young children.

Unfortunately, there are few studies that examine the relationship between language brokering and academic achievement. Dorner, Orellana, and Li-Grining (2007) found that children who self-reported as engaging in extensive brokering for their families had higher English reading and math scores at 5th grade when compared to Latino children who did some brokering or none, even after controlling for earlier academic achievement. Buriel and colleagues (1998) reported that in their study, the variety of experience Latino 9th- and 10th-graders had with language brokering, their biculturalism (cultural adaptation), and their academic self-efficacy together predicted self-reported academic success. For middle school students categorized as struggling readers, group interactions that required translating (i.e., classroom activities similar to language brokering) provide more opportunities to better understand language and texts at the lexical, syntactic, and semantic levels (Jiménez, Risko, Pray, & Gonzales, 2015).

The guiding question for the current study is whether language brokering can be an effective tool for LM learners during the primary grades. As language brokering occurs in families, children may be translating content (e.g., medical, financial) that is aimed toward

adults. However, if the content is age appropriate (e.g., a children's picture book), can language brokering be employed to help improve English vocabulary and story comprehension in language minority learners? The proposed research will examine 1) the impact of language brokering on target words and story comprehension, and 2) the interpretation accuracy of children between the ages of 5 and 8. Given that most studies on language brokering have focused on children over the age of 11 (Perry, 2009), we aimed to document whether children this young engaged in language brokering at home, and whether a brief intervention that encouraged translation and recounting of the story would improve children's learning. Because dialogic questioning has been shown to be effective at improving children's vocabularies and story comprehension over a period of time, it was not clear whether or not a brief intervention using familiar language brokering strategies would increase learning.

Chapter II

Methods

Participants

Participants were 43 children (27 females) between the ages of 5 and 8 years (M = 6.50 years, SD = 1.00) from southern California and middle Tennessee, initially contacted at various community outreach events and recruited by telephone. Three additional children participated in the study, but were not included in this analysis because they had difficulty understanding English instructions or were not compliant during the session. Children who participated had normal hearing, no developmental delays, and no major health issues after birth.

Thirty-one mothers reported Mexico as their country of origin; other responses were the U.S. (4), Guatemala (2), and Nicaragua (1); 5 declined to respond. All families spoke Spanish in the home, but only 79.1% claimed it as their primary language. Mother's and father's highest education ranged from elementary/middle school to a master's degree, with the median for both parents being some high school. While the median yearly income for the sample was between $15,001 and $25,000, 38.6% of the families reported a yearly income of less than $15,000.

Children were randomly assigned to one of two conditions: *language brokering* (M = 6.65 years, SD = 1.02, 15 females and 8 males) or *control* (M = 6.33 years, SD = 1.40, 12 females and 8 males). Parents received $15 for their time and children were given a small toy as a thank you for their participation.

Materials

Questionnaires. At the beginning of their visit, parents completed an 8-item eligibility questionnaire to ensure that both the parent and child qualified for the study and that the task would not be too difficult for the participating child. Parents were asked how well they and their child understood and spoke English (Table 1). Responses were on a 5-point scale from *none* to *excellent*. Participating children were reported to understand English very well and speak English well. Participating parents reported understanding English well, being able to speak a little English, and being able to read and write a little English. Children varied in the number of years they had been speaking English, from less than 1 year up to 8 years (M = 3.32, SD = 1.91). The three additional children whose data were dropped from analyses had similar family and personal scores on the entry questionnaire.

Table 1: Parent Rated English Proficiency: 1 = None to 5 = Excellent

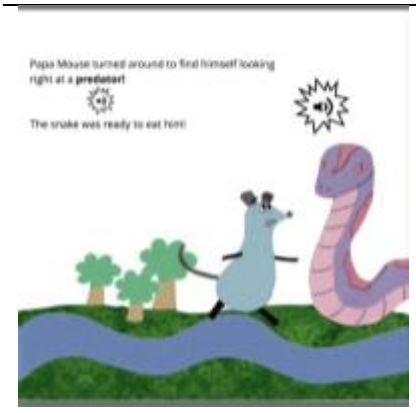
Measures	*n*	*Min*	*Max*	*M*	*SD*
1. How well does your child understand English?	41	2	5	4.10	.80
2. How well does your child speak English?	40	2	5	3.98	.80
3. How well do you understand English?	41	1	5	3.10	1.22
4. How well do you speak English?	41	1	5	2.95	1.20
5. How well do you read and write English?	42	1	5	2.73	1.18

A second questionnaire included family demographic information and examined the families' experience with language brokering. Parents were asked if the participating child ever interpreted for a parent, other family members, teachers, or other adults (see Appendix A for

English translations of the questions). These questions were adapted from similar questions used by Dorner, Orellana, and Li-Grining (2007) to create language brokering composite scores. The questionnaires were written in English and then translated into Spanish by a bilingual researcher.

EBook. Children in both the language brokering and control conditions listened to a narrated English storybook presented on an iPad. The basic eBook was created by the Early Development Lab at Vanderbilt University using Book Creator for iPad (version 4.2.3; Red Jumper Limited, 2016) and contained no animation, only a voiceover of an adult reading the story in English. The eBook depicted the journey of a mouse who gets lost on his journey home. Six target vocabulary words (shelter, insects, stream, predator, tunnel, and trail) were chosen with the help of an elementary school teacher and distributed throughout the 14-page eBook. Each page of the eBook contained one speaker icon that would trigger the narration when pressed. Six pages contained a second, smaller, speaker icon that would trigger the narration of the target words. See Figure 1 for a depiction of one of the book pages containing the target word "predator".

Figure 1: Sample EBook Page and Researcher Dialog by Condition

Page 7	Language brokering	Control
	Researcher: 1) Spanish: "Que dice?" English: "What does it say?" 2) Spanish: "Y que es esa palabra?" English: "And what's that word?" 3) Spanish: "Tu que crees que ahra Papa Raton para poder escapar?" English: "What do you think Papa Mouse is going to do to escape?"	Researcher: 1) Spanish: "Vamos a escuchar" English: "Let's listen"

Procedures

Two bilingual researchers visited the majority of families in their homes. A few families participated at local libraries or in our research lab at Vanderbilt University. One researcher (who functioned as an **English-Spanish bilingual speaker**) spoke to the parent in Spanish and to the child in English; the other researcher (who acted as a **Spanish-only speaker**) spoke and responded in Spanish. In both conditions, the following sequence of activities occurred: 1) the English-Spanish bilingual researcher administered a standardized and a story specific vocabulary pre-test; 2) children listened to the eBook with the Spanish-only researcher; 3) the bilingual researcher administered a story specific vocabulary post-test and requested that the child retell the story in either English or Spanish. The only procedural differences between conditions occurred during the eBook listening phase.

Language brokering condition. At the beginning of the eBook phase, the Spanish-only researcher asked the child, in Spanish, if they were ready to listen to the eBook. The researcher followed up by asking the child if s/he could tell the researcher what the book said in Spanish. On each page of the eBook, the child or researcher tapped the icon to narrate the text in English. After each page was narrated, the Spanish only researcher asked the child, "Que dice?" or "What did it say?" to prompt the child to interpret. On the six pages containing a target word, the child or researcher then tapped the second, smaller, icon to narrate the word in English. The researcher asked the child "Que es esa palabra?" or "What is that word?" Additionally, on these pages, the researcher followed up with a question regarding what was narrated. For example, children were asked, "What do you think Papa Mouse will do to escape?" on the page with the target word, "predator". If the child spoke to the researcher in English, the researcher requested that the child repeat their comment in Spanish.

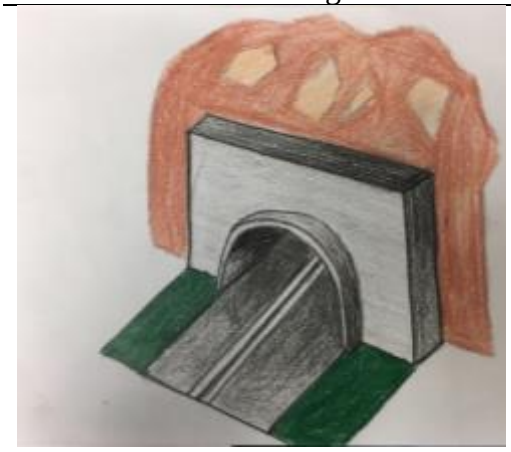
Control group. Everything about the eBook listening phase was the same, except the Spanish-only researcher did not ask the child to interpret any content from English to Spanish. On each page of the eBook, the child or researcher tapped the icon to narrate the text in English. On the six pages containing a target word, the child or researcher also tapped the second, smaller, icon to narrate the word in English. Because the language brokering condition took longer (due to the questioning and interpreting), children in the control condition listened to the eBook twice. See Figure 1 for a summary of the researcher's dialogue in both conditions for the page containing the target word "predator".

Measures

Expressive Vocabulary Assessment. Children in both conditions were pre-tested with the Spanish Bilingual Edition of the Expressive One-Word Picture Vocabulary Test-4 (EOWPVT-4: SBE—Martin, 2013b). The test is normed on U.S. Spanish-bilinguals, ages 2 through 70+, and can be administered in either English or Spanish, depending on the child's language dominance. Participants are permitted to respond to the test in either language, which enables the test to measure total acquired vocabulary. The 180 items are presented in a developmental sequence that reflects the concepts people have experience with, based on the normative sample. Children are shown full color pictures, one at a time, and asked to name objects, actions and concepts. Items are ordered by increasing difficulty. Age-related starting points and a set number of consecutive errors (ceilings) ensure that researchers only need administer a subset of the items, known as the critical range. The publisher reports the median internal consistency reliability coefficient as .95 for the Spanish-bilingual edition of the assessment.

Story-Specific vocabulary. Children were pre- and post-tested on all six target words from the story. As on the EOWPVT-4, children were asked to name the illustrations that were shown, one at a time. However (unlike on the EOWPFT-4), children were asked to provide an answer in English first. The post-test used the same illustrations that appeared in the eBook, while the pre-test illustrations were different, hand-drawn, exemplars of the target words. For example, in the pre-test the label "tunnel" was represented with a drawing of a tunnel not found in the eBook, while in the post-test the same label was represented by the eBook illustration of a tunnel the mouse dug under a wall (see Figure 2). Six additional filler illustrations with irrelevant but familiar labels (fruit, chair, car, cow, cat, and tree) were used in the test. Filler items were chosen from a preschool flashcard list and hand-drawn to match the style of the pre-test target words. These fillers appeared between the target items to maintain child interest and motivation in the event the target words were too difficult. In total, the story specific vocabulary test included 12 items, six targets and six fillers. Responses in English were scored as correct or incorrect.

Figure 2: Sample Illustrations

Pre-test – different image of tunnel	Post-test - image of tunnel from the story
	

Story comprehension. After the vocabulary post-test, children were asked to retell the story to the English-Spanish bilingual researcher. Participants could retell the story in English or Spanish and receive a maximum of five points. Children were given a half-point for describing one of 10 predetermined key events throughout the story. If children were hesitant to retell the story, the research assistants requested the aid of parents for encouragement.

Interpretation accuracy. Children's interpretation accuracy was only assessed in the language brokering condition, as children in the control group were not asked to interpret the story or the target vocabulary words. Interpretations of the English story into Spanish were scored for accuracy. Each page was scored on a 4-point scale: 0) inaccurate interpretation in which the child relied on repeating the English words or provided a completely wrong interpretation of the story content, 1) partial Spanish interpretation of the page with errors, 2) mostly complete Spanish interpretation with errors 3) complete Spanish interpretation without errors. Each participant had an average eBook interpretation score ranging from 0 to 3. Definitions of each of the target words were score as either 0) incorrect or 1) correct. Scores on target word interpretation could vary from 0 to 6. Participants could provide an equivalent Spanish word or a definition of the target word.

Chapter III

Results

Language brokering experience. One question of interest was whether such young children actually had experience engaging in or observing language brokering. Of the parents who completed questionnaires, 90.7% reported that their 5- to 8-year-old child had direct experience language brokering either for a parent, family member, teacher, or other adult. Some of these young children had extensive experience (18.6% = daily language brokering), but most had relatively limited experience (4.7% = once a week, 67.4% = only sometimes), while 9.3% of parents reported that their child had no experience. Seventy percent of the sample had at least some direct language brokering experience with **multiple** social partners. This data is in line with Morales and Hanson's 2005 review, which indicated that the majority of children from immigrant backgrounds have experience language brokering for a variety of individuals. When asked how often their child helped a parent with computers, phones or tablets, 16.3% reported several times a week, 20.9% indicated once a week, 45.2% said once a month, and 16.7% indicated never. Although this question does not directly ask about language brokering, it does suggest that parents rely on the mastery children have over new media to connect the family with this aspect of the social and commercial world. Research on language brokering and technology indicates that child brokers do facilitate the connection between the English language and technology, including the Internet (Katz, 2010). More than half (65.1%) of the parents affirmed that the participating child had a sibling who interpreted information for the parents. Of the 43

participants, only 4 children did not have direct or indirect experience with language brokering. Dorner, Orellana, and Li-Grining (2007) theorized that gender differences seen in language brokering experience (i.e., girls doing more) may not appear until later in adolescence, when labor divisions may become clearer. In that regard, we found no differences in direct language brokering experience by gender in these young children, $t(41) = -0.41$, $p = .86$.

Expressive Vocabulary Assessment. Table 2 displays raw and standardized EOWPVT-4: SBE scores. Participants had an average standardized score of 108.31 ($SD = 14.50$), with a range from 82 to 145. The sample mean fell within the average range, based on the Spanish-bilingual population on which the assessment was normed. Additionally, there were no differences in EOWPVT-4: SBE scores by condition, $t(37) = .48$, $p = .42$, or by gender, $t(37) = -1.29$, $p = .49$.

Table 2: Descriptive statistics for EOWPVT-4: SBE

Measures	*n*	*Min*	*Max*	*M*	*SD*
EOWPVT raw scores	39	25	109	59.85	18.81
EOWPVT standard scores*	39	82	145	108.31	14.40

* $M = 100$, $SD = 15$ for the standard scores.

Outcome Measures. This study included five outcome measures. In both conditions, we were interested in the number of English words participants picked up from the story (post-test story vocabulary), in the quality of the story retellings (story comprehension), and how often the children used target words in their story retellings. Additionally, in the language brokering condition, we were interested in the quality of children's English-to-Spanish interpretations of the book text/narration and target words. Table 3 displays means for the five outcome measures.

On average, children provided the correct English label for less than one of the target words (possible maximum = 6) during the pre-test and less than 2 words in the post-test. There was a significant difference between the control (m = .45) and experimental (m = .61) conditions in the number of target words provided during the pre-test, $t(41) = 5.42$, p = .03, but not in the post-test $t(41) = .83$, p = .37. The mean comprehension score for the sample was 2.99 of a possible 5, indicating that participants could retell just over half of the story. However, there was no significant difference between the two conditions in comprehension, $t(34) = .01$, p = .92 Many of the participants used less than 2 of the target words during their story retellings. Additionally, there was a significant difference between the control (m = 1.00) and experimental (m = 1.65) conditions in the number of target words used during the story retellings, $t(26) = 5.44$, p = .03

Overall book interpretation was calculated by averaging participants' scores on each page over the 14-page book. The mean for the sample was 1.48 of a maximum 3, indicating that participants could provide partial interpretations of the pages, but with some errors. The second measure addressed how well the children could interpret the six target vocabulary words. On average, children could provide appropriate Spanish interpretations or definitions for less than two of the target words.

Table 3: Descriptive Statistics for Outcome Measures

Measures	*n*	*Min*	*Max*	*M*	*SD*
1. Pre-test story vocabulary	43	0	3	.53	.74
2. Post-test story vocabulary	43	0	6	1.65	1.60
3. Story comprehension	36	0	5	2.99	1.73
4. Target words used	28	0	4	1.39	1.52
5. Book interpretation	22	.21	2.71	1.48	.78
6. Target word interpretations	22	0	6	2.86	2.08

Correlations. We created a composite variable using the four language brokering experience questions (shown in Appendix A) to test if language brokering was positively related to the five oral language outcomes. The composite variable took into account direct frequency of brokering for adults. Parent responses to the four questions were used to designate two categories of experience, high and low. Children with high language brokering experience had a combined score of 3 or higher (maximum of 12) on questions 1a – 1d, indicating at least some experience interpreting in three of the four categories. Children with low language brokering experience had a combined score of 2 or lower, indicating at most some experience in two of the four categories. The composite language brokering experience variable produced a Cronbach's alpha of 0.88, indicating the items had high shared covariance.

Table 4 shows correlations between the measures of interest. Overall, the measures were positively correlated. Age, in particular, was significantly correlated with all five outcome measures. EOWPVT scores were significantly correlated with post-test story vocabulary and target word interpretations. Condition and language brokering experience were not significantly correlated with any of the outcome measures. All five outcome measures were also highly correlated.

Table 4: Correlations Between predictor and outcome Measures of Interest

Measures	1	2	3	4	5	6	7	8	9
1. Age	—								
2. Condition	.16	—							
3. Pre-test story vocabulary	.53**	.11	—						
4. EOWPVT standard scores	.30	-.08	.25	—					
5. Language brokering experience	.13	.02	.14	-.07	—				
6. Post-test story vocabulary	.59**	.09	.59**	.63**	.09	—			
7. Story comprehension	.64**	.22	.43**	.23	.06	.61**	—		
8. Target words used	.56**	.21	.43*	.34	.18	.79**	.71**	—	
9. Book interpretation	.76**	—	.58**	.42	-.19	.74**	.73**	.55*	—
10. Target word interpretations	.62**	—	.35	.69**	.01	.65**	.50*	.69**	.64**

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Multiple regression analyses. We conducted multiple regression analyses to determine if language brokering experience was a significant predictor of post-test story vocabulary and story comprehension (Tables 5 - 9). Tables 5-7 included age, condition, Pre-test story vocabulary, EOWPVT scores and direct language brokering experience as predictors. Three of the five variables were significant predictors of post-test scores, R^2 = .69 F (5, 33) = 14.73, p = .00. Age, Pre-test story vocabulary, and EOWPVT scores were all significant predictors of post-test vocabulary.

Table 5: Multiple Regression Analyses for Post-test Vocabulary

Measures	*B*	*SE B*	*β*	*t*	*p*
Age	.54	.21	.33	2.65	.01
Condition	17	.33	.05	.51	.62
Pre-test story vocabulary	.70	.27	.31	2.60	.01
EOWPVT standard scores	.05	.01	.45	4.45	.00
Direct language brokering experience	-.42	.33	-.13	-1.27	.21

Age was the only significant predictor of story comprehension, R^2 = .42, F (5, 27) = 3.95, p = .01.

Table 6: Predictors of Story Comprehension

Measures	*B*	*SE B*	*β*	*t*	*p*
Age	.98	.36	.52	2.74	.01
Condition	.39	.54	.10	.69	.50
Pre-test story vocabulary	.21	.43	.09	.51	.63
EOWPVT standard scores	.00	.02	.03	.20	.84
Direct language brokering experience	.32	.53	.09	.61	.55

There were no significant predictors of target words used during the story retelling (Table 7), R^2 = .45, F (5, 19) = 3.11, p = .03. Neither direct language brokering experience in the real world, nor condition assignment, significantly predicted any of the outcomes in these models.

Table 7: Predictors of Target Words Used

Measures	*B*	*SE B*	*β*	*t*	*p*
Age	.74	.37	.44	2.02	.06
Condition	.45	.58	.14	.77	.45
Pre-test story vocabulary	.27	.41	.15	.67	.51
EOWPVT standard scores	.03	.02	.24	1.39	.18
Direct language brokering experience	.23	.58	.07	.39	.70

We conducted two additional regression analyses focusing on the children's interpretation accuracy in the language brokering condition only (because control condition participants were not asked to interpret). As shown in Table 8, age was the only significant predictors of overall book interpretation, R^2 = .70, F(2, 55) = 9.43, p = .00.

Table 8: Predictors of Book Interpretation

Measures	*B*	*SE B*	*β*	*t*	*p*
Age	.45	.14	.56	3.19	.01
Pre-test story vocabulary	.22	.15	.25	1.50	.15
EOWPVT standard scores	.01	.01	.14	.96	.35
Direct language brokering experience	-.46	.22	-.29	-2.09	.05

Direct language brokering experience fell just short of meeting the conventional level of significance in predicting book interpretation ($p = .05$). Age and EOWPVT scores were both significant predictors of target word interpretations (Table 9). Direct language brokering experience was not a significant predictor in any of the five multiple regression analyses conducted.

Table 9: Predictors of Target Word Interpretations

Measures	*B*	*SE B*	*β*	*t*	*p*
Age	.96	.41	.45	2.34	.03
Pre-test story vocabulary	-.09	.43	-.04	-.20	.84
EOWPVT standard scores	.07	.02	.52	3.16	.01
Direct language brokering experience	-.22	.64	-.05	-.34	.74

Chapter IV

Discussion and Implications

The purpose of this study was to document language brokering in this young age group, and examine the impact of language brokering on the oral language outcomes of Spanish-speaking Language Minority (LM) learners. Because oral language skills are so important to the academic success of LM learners, it is critical that we understand how language brokering, a common phenomenon among immigrant communities, might influence child language development. A goal of this study was to work with younger children because past research examining language brokering and its effect on academic outcomes has focused on older children and adolescents.

Latino children in our sample were from predominately Spanish speaking immigrant households. Most of our young participants had direct experience language brokering for adults. Over a third of the children helped their parents and other adults to operate technology, including smart computers, phones, and tablets. Many of the children in the current research also had older siblings who engaged in language brokering, suggesting participants also had indirect experiences with this practice. These findings are in line with past research indicating that most children of immigrants engage in language brokering for adults in a variety of settings, including with technology (Eksner & Orellana, 2012; Katz, 2014; Morales & Hanson, 2005). While past studies have acknowledged and documented children under the age of eight engaging in language brokering (Morales and Hanson, 2005; Perry, 2009), it is important to note that our

sample was focused completely on children this young. Our data provides further evidence that, regardless of age, children of immigrants play an important role in the family by engaging in language brokering.

Participants in the language brokering condition were asked to interpret an English-narrated eBook into Spanish for a Spanish-speaking researcher. While most were reluctant to begin interpreting the eBook, they often adapted to their role quite quickly. Participants used many of the strategies described by Eksner and Orellana (2012): children attempted to use context clues when unsure of a word meaning, Spanish phonological pronunciations of Spanish words, describing unknown words, and paraphrasing more difficult sentences. Katz (2014) suggests that brokering strategies develop as children get older. For example, older children are more comfortable asking questions, negotiating the meaning of a message, or searching additional resources for help. Undoubtedly, being familiar with at least one participant in a language brokering situation might also affect children's willingness to speak up. As would be expected, participants in this study seldom asked questions or requested assistance from the research assistant, whom they had just met.

Overall, the participants were able to provide a partial interpretation of the eBook. Not surprisingly, few of these young participants could do so with complete accuracy. Those that did were often the older children in the sample. Participants also struggled to provide definitions or Spanish equivalent words for the target vocabulary when directly asked to do so. Interestingly, children often defined the target words as part of the page interpretation. However, children had difficulty during the follow-up request to interpret the target word separate from the rest of the text. During the comprehension component, children would sometimes use the target words appropriately as they explained the story. This was especially surprising given the low scores on

the post-test that required children to use the target words. These results suggest that children could make use of context clues to correctly interpret the unknown words. However, the children struggled to connect definitions they devised to the target words in the story. It is possible that participants were more focused on the general message they were asked to interpret, over any one word.

Results of the multiple regression analyses indicated that age was the best predictor for each of the five outcome measures. Neither language brokering experience during daily life nor being asked to interpret and translate in the language brokering condition was a significant predictor of any of the oral language outcomes. There are several reasons why language brokering may not have predicted the outcomes in this study. First, our measure of language brokering experience was not as thorough as those used in past studies. Dorner, Orellana and Li-Grining (2007) examined the variety of language brokering experiences by directly asking about the context and content in which students did language brokering. Students provided information about frequency of acting as a go-between, for which adults they engaged in language brokering, and with what kind of materials. Similarly, Buriel and colleagues (1998) asked about the variety of settings in which students participated in language brokering. Our questionnaire included a limited variety of questions regarding language brokering experience (it was shortened due to time constraints for the home visits). Combined with the small sample of families who participated, our questionnaire may have failed to capture important information regarding the experiences of young language brokers.

Second, parents reported that these young children were asked to translate and interpret for adults, but this was not a daily occurrence for most of the children. Very young children may not get enough exposure to being questioned by their parents and other adults about language

and asked to deeply process information (while translating, interpreting, and negotiating meaning with those adults) during daily life for this experience to affect their language learning. This might suggest that specific interventions to promote intensive immersion around age-appropriate language are needed, as "dialogic questioning" of children around stories has been effective in promoting language development in monolingual children (Hargrave & Senechal, 2000; Strouse, O'Doherty, & Troseth, 2013; Tsybina & Eriks-Brophy, 2010; Whitehurst et al., 1988).

Nevertheless, children who were asked by the Spanish-speaking researcher to translate and interpret during one brief book reading session did not do significantly better than the children in the control group on the outcome measures. One interpretation of our results is that brokering during eBook listening may not be an effective tool to support oral language outcomes. Another interpretation stems from the fact that scores on all outcomes by children in the language brokering and the control conditions were similarly low. It is likely that children did not have adequate exposure to the story in either condition to allow them to robustly learn the target vocabulary and comprehend the story.

A more thorough approach would be to provide children with multiple exposures to the eBook over several days. As has been shown in studies of dialogic questioning, multiple exposures, along with structured prompting, are needed to make gains in vocabulary and comprehension. For instance, studies of dialogic questioning involve weeks or months to a whole semester of exposure to stories and adult questioning prompts (Hargrave & Senechal, 2000; Strouse et al., 2013; Whitehurst et al., 1988). Thus, language brokering may be most effective under circumstances similar to dialogic reading, where children are repeatedly exposed to stories accompanied by adult questions about the content.

It is important to note that language brokering did not appear to impede the success of our participants in learning story vocabulary and contents. The demands from parallel activation of the first and second language during translating might have made the activity of interpreting far more cognitively difficult than was expected (Kroll, et al., 2015). And it is possible that in one short session with novel materials, these cognitive demands limited the learning that children in the language brokering condition could display, despite the potential benefits of actively engaging with the verbal content. Nevertheless, although these children were quite young, they had additional experience prior to the study managing multiple language as child language brokers, which can lead to long-term cognitive and linguistic benefits (Luk, De Sa, & Bialystok, 2011).

Language brokering is a cultural practice that brings the child and the parent together to gain crucial information. Future research should strive to explore how early language and literacy outcomes are influenced by such sociocultural practices. How do the strategies that parents and their children employ during language brokering impact the course of language development? Additionally, when they engage their children in language brokering, adults shift between the role of leader (providing scaffolding for the interaction) and the role of the learner. This cultural phenomenon may provide immigrant parent with the opportunity to learn language and literacy skills along with their children. Future research should address this question by probing the language and literacy outcomes of both social partners.

A specific topic for future research involves investigating the role of technology, as its integration to support learning is becoming more common. For instance, Strouse and colleagues (2013) demonstrated that dialogic questioning (a technique similar to language brokering) could be effectively administered by embedding a questioner in video storybooks. This “dialogic

actress" appeared in the corner of the screen to ask a variety of questions during the story. Although watching the story videos while being questioned by this embedded character was not as successful as being questioned by their own parent, children in the dialogic actress condition did exhibit greater vocabulary gains than children who merely watched the story videos without this support. In ongoing research, we are creating an English eBook with an embedded questioning avatar that can switch between languages, modeling dialogic questioning in Spanish or English for language minority parents. The idea is that encouraging parents to ask questions and get their children to translate age-appropriate English material for them may, over time, facilitate the growth of language and literacy skills among both the children and their parents.

For many people, learning a new language is a choice. Child language brokers must learn to navigate multiple languages and cultures to ensure the success of their families. Educators, policy makers, and researchers need to recognize the complexity and importance of language brokering. We should strive to explore how this developing skill can support the academic success of our most vulnerable students. Even if our standard methods of assessment indicate that language minority learners struggle, these students and their parents are clearly developing skills and strategies employed in many learning interventions.

Appendix A

Appendix A: Questions for Language Brokering Composite

Questions	(0)	(1)	(2)	(3)
Does your child ever translate (between English and Spanish) for:				
a) you or your spouse?	Never/I don't know	Only sometimes	Once a week	Every day
b) other people? (E.g. Doctors, waiters, employees)	Never/I don't know	Only sometimes	Once a week	Every day
c) a teacher?	Never/I don't know	Only sometimes	Once a week	Every day
d) other family members? (Brothers, Sisters, grandparents, uncles)	Never/I don't know	Only sometimes	Once a week	Every day

REFERENCES

August, D., & Shanahan, T. (2006). Developing Literacy in Second-Language Learners: Report of the National Literacy Panel on Language-Minority Children and Youth. Executive Summary. *Lawrence Erlbaum Associates*.

Buriel, R., Perez, W., De Ment, T. L., Chavez, D. V., & Moran, V. R. (1998). The relationship of language brokering to academic performance, biculturalism, and self-efficacy among Latino adolescents. *Hispanic Journal of Behavioral Sciences*, *20*(3), 283-297.

Dorner, L. M., Orellana, M. F., & Li-Grining, C. P. (2007). "I helped my mom," and it helped me: Translating the skills of language brokers into improved standardized test scores. *American Journal of Education*, *113*(3), 451-478.

Eksner, H. J., & Orellana, M. F. (2012). Shifting in the Zone: Latina/o Child Language Brokers and the Co-construction of Knowledge. *Ethos*, *40*(2), 196–220. http://doi.org/10.1111/j.1548-1352.2012.01246.x

Hargrave, A. C., & Senechal, M. (2000). Abook reading intervention with preschool children who have limited vocabularies: The benefits of regular reading and dialogic reading. *Early Childhood Research Quarterly, 15*, 75–90

Heath, S. B. (1986). Sociocultural contexts of language development. *Beyond language: Social and cultural factors in schooling language minority students*, *143*, 186.

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*(1), 4.

Jiang, Y., Ekono, M., & Skinner, C. (2016). Basic facts about low-income children. *National Center for Children in Poverty, Columbia University, New York*.

Jiménez, R. T., Risko, V. J., Pray, L., & Gonzales, M. (2015). Using Translation to Drive Conceptual Development for Students Becoming Literate in English as an Additional Language, *49*(3), 248–272.

Katz, V. (2014). Children as brokers of their immigrant families' health-care connections. *Social Problems*, *61*(2), 194-215.

Katz, V. S. (2010). How children of immigrants use media to connect their families to the community: The case of Latinos in South Los Angeles. *Journal of Children and Media*, *4*(3), 298-315.

Kena, G., Hussar, W., McFarland, J., de Brey, C., Musu-Gillette, L., Wang, X., ... & Barmer, A. (2016). The Condition of Education 2016. NCES 2016-144. *National Center for Education Statistics*.

Konishi, H., Kanero, J., Freeman, M. R., Golinkoff, R. M., & Hirsh-Pasek, K. (2014). Six principles of language development: Implications for second language learners. *Developmental neuropsychology*, *39*(5), 404-420.

Krashen, S. D. (1985). *The input hypothesis: Issues and implications*. Addison-Wesley Longman Ltd.

Kroll, J. F., Dussias, P. E., Bice, K., & Perrotti, L. (2015). Bilingualism, mind, and brain. *Annu. Rev. Linguist.*, *1(1)*, 377-394.

Luk, Gigi, E. R. I. C. De Sa, and Ellen Bialystok. "Is there a relation between onset age of bilingualism and enhancement of cognitive control?." *Bilingualism: Language and Cognition* 14, no. 04 (2011): 588-595.

Malakoff, M., & Hakuta, K. (1991). Translation skill and metalinguistic awareness in bilinguals. *Language processing in bilingual children*, 141-166.

Mancilla-martinez, J., & Lesaux, N. K. (2010). Predictors of Reading Comprehension for Struggling Readers : The Case of Spanish-Speaking Language Minority Learners, *102*(3), 701–711. http://doi.org/10.1037/a0019135

Mancilla-martinez, J., & Lesaux, N. K. (2011). The Gap Between Spanish Speakers ' Word Reading and Word Knowledge : A Longitudinal Study, *82*(5), 1544–1560. http://doi.org/10.1111/j.1467-8624.2011.01633.x

Martin, N. A. (2013). *EOWPVT-4: SBE. Expressive one-word picture vocabulary test – 4: Spanish-bilingual edition*. Novato: Academic Therapy Publications.

McQuillan, J., & Tse, L. (1995). Child language brokering in linguistic minority communities: Effects on cultural interaction, cognition, and literacy. *Language and Education, 9(3),* 195-215.

Mol, S. E., Bus, A. G., de Jong, M. T., & Smeets, D. J. (2008). Added value of dialogic parent–child book readings: A meta-analysis. *Early Education and Development*, *19*(1), 7-26.

Morales, A., & Hanson, W. E. (2005). Language brokering: An integrative review of the literature. *Hispanic Journal of Behavioral Sciences, 27(4),* 471-503

Morrow, L. M. (1985). Retelling Stories: A Strategy for Improving Young Children's Comprehension, Concept of Story Structure, and Oral Language Complexity. *The Elementary School Journal*, *85*(5), 646. http://doi.org/10.1086/461427

Orellana, M. F. (2003). Responsibilities of children in Latino immigrant homes. *New Directions for Student Leadership, 2003*(100), 25-39.

Orellana, M. F., Dorner, L., & Pulido, L. (2003). Accessing assets: Immigrant youth's work as

family translators or" para-phrasers". *Social problems*, *50*(4), 505-524.

Páez, M. M., & Rinaldi, C. (2006). Predicting English Word Reading Skills for Spanish-Speaking Students in First Grade. *Topics in Language Disorders*, *26*(4), 338–350. http://doi.org/10.1016/j.biotechadv.2011.08.021.Secreted

Perry, K. H. (2009). Genres, contexts, and literacy practices: Literacy brokering among Sudanese refugee families. *Reading Research Quarterly*, *44*(3), 256-276.

Proctor, C. P., Carlo, M., August, D., & Snow, C. (2005). Native Spanish-Speaking Children Reading in English: Toward a Model of Comprehension. *Journal of Educational Psychology*, *97*(2), 246.

Ramos, M., & Murphey, D. (2016). Latinos and Literacy: Hispanic Students' Progress in Reading. Recent Gains at National, State, and School District Levels. Publication # 2016-13. *Child Trends.*

RAND Reading Study Group. (2002). Reading for understanding: Toward an R&D program in reading comprehension. Santa Monica, CA: RAND Corporation.

Red Jumper Limited. (2016). Book Creator for iPap (Version 4.2.3) [Mobile application software]. Retrieved from http://itunes.apple.com

Slavin, R. E., Karweit, N. L., Wasik, B. A., Madden, N. A., & Dolan, L. J. (1994). Success for all: A comprehensive approach to prevention and early intervention. *Preventing early school failure*, 175-205.

Storch, S. a, & Whitehurst, G. J. (2002). Oral language and code-related precursors to reading: evidence from a longitudinal structural model. *Developmental Psychology*, *38*(6), 934–947. http://doi.org/10.1037/0012-1649.38.6.934

Strouse, G. A., O'Doherty, K., & Troseth, G. L. (2013). Effective coviewing: Preschoolers'

learning from video after a dialogic questioning intervention. *Developmental Psychology*, *49*(12), 2368–82. http://doi.org/10.1037/a0032463

Tse, L. (1995). Language brokering among Latino adolescents: Prevalence, attitudes, and school performance. *Hispanic Journal of Behavioral Sciences*, *17*(2), 180-193.

Tsybina, I., & Eriks-Brophy, A. (2010). Bilingual dialogic book-reading intervention for preschoolers with slow expressive vocabulary development. *Journal of Communication Disorders*, *43*(6), 538-556.

Uchikoshi, Y. (2013). Predictors of English reading comprehension: Cantonese-speaking English language learners in the U.S. *Reading and Writing*, *26*(6), 913–939. http://doi.org/10.1007/s11145-012-9398-z

Vygotsky, L. S. (1980). Mind in society: The development of higher psychological processes. Harvard university press.

Whitehurst, G. J., Falco, F. L., Lonigan, C. J., Fischel, J. E., DeBaryshe, B. D., Valdez-Menchaca, M. C., & Caulfield, M. (1988). Accelerating language development through picture book reading. *Developmental psychology*, *24*(4), 552.