Bilingual Dialogic Book-Reading Intervention for Preschool Children with Slow Expressive Vocabulary Development: A Feasibility Study

by

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A thesis submitted in conformity with the requirements for the degree of Doctor of Philosophy
Graduate Department of Speech-Language Pathology
University of Toronto

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Abstract

The purpose of the study was to examine the feasibility of a dialogic book-reading intervention for bilingual preschool children with expressive vocabulary delays. The intervention was provided in English and Spanish concurrently to an experimental group of six children, while six children were in a delayed treatment control group. Dialogic book-reading has been shown previously to be effective with monolingual children, and the current study was the first to extend it to bilingual children. The children participating in the study were 22 – 41 months-old and were recruited from the waiting list of an agency providing speech-language services. The intervention was provided in English in the children’s homes by the primary investigator and in Spanish by the children’s mothers, who were trained in the techniques of dialogic book-reading. Thirty fifteen-minute sessions in each language using dialogic book-reading strategies were provided to each child in the intervention group over six weeks. The study examined the acquisition of ten target words selected for each child in English and Spanish separately, in addition to overall increases in the children’s vocabularies. The children in the intervention group learned significantly more target words in each language following the intervention than did the children in the control group. The children in the intervention group were also able to
produce the acquired words at a delayed posttest six weeks following the posttest. The intervention also led to an improvement in the ability of the children in the intervention group to stay focused on book-reading tasks. The gains in the overall vocabulary of the children in the two groups did not differ significantly. The mothers’ evaluations of the intervention revealed their satisfaction with the approach. The mothers were successful in learning dialogic book-reading strategies and stated that they felt empowered to improve their child’s vocabulary development.
Acknowledgments

Throughout the years leading up to the writing of this thesis, I was fortunate to receive the help and support of many more people than it is possible to acknowledge here. First, this research would not have been possible without the help of my supervisor, Dr. Alice Eriks-Brophy, who devoted much of her time, energy, and patience to this project, and who has always believed in my ideas and encouraged me to do the same. My supervisory committee included Dr. Luigi Girolametto, Dr. Becky Chen-Bumgardner, and Dr. Nina Spada. Their invaluable expertise and generous advice were essential to the completion of this study. I would also like to acknowledge the Department of Speech-Language Pathology at the University of Toronto that provided the financial support and an excellent learning environment necessary for this research.

I would like to thank the children who participated in this study for giving me valuable insight into their language, and for being willing to play and read with me, which has enriched my life immensely. I am also thankful to their families for allowing the children to participate in this project, and for being open to learning a new approach to reading with their children. The intake workers and managers of an agency providing preschool speech-language services have made it possible to recruit these families, Anny Castilla ensured that my Spanish letters were understood by them, and Santiago Luna spent hours watching their videotapes and working on the reliability. For their assistance I am very thankful.

Finally, I am extremely grateful to my parents, my grandparents, and my husband for their unsurpassed love, good advice and unlimited patience. I am also thankful for the support of my friends, and for the prayers of my local church, the Leaside Bible Chapel. Above all, I would like to thank the Lord Jesus Christ for giving me the opportunity to conduct this research, and for ensuring that it reaches completion.
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CHAPTER 1: LITERATURE REVIEW

The goal of this research was to determine the feasibility of using a dialogic book-reading intervention for preschool Spanish-English bilingual children with slow expressive vocabulary development who were on the waiting list for speech-language services at the start of the intervention period. The intervention was provided concurrently in English by the investigator and Spanish by their mothers to an experimental group of six children, while six children were in a delayed treatment control group. The study included an intervention and a control group to ensure that any demonstrated effects could be attributed to treatment and not to the children’s maturation. The study examined the acquisition of sets of target words that were selected for each individual child in both languages, as well as the children’s general vocabulary gains.

Canadian society is both culturally and linguistically diverse, with over 125 languages currently being spoken, according to the 2001 census (Statistics Canada, 2007). As a result, a considerable number of children with language or vocabulary delays or difficulties who speak languages other than English or in addition to English may be referred for speech-language services. Thus, research in bilingual language intervention for these populations of children is becoming increasingly clinically important. The speech-language pathologist who chooses in favor of a bilingual service delivery model may be faced with many important considerations, including the practical issue of his or her own proficiency in the child’s home language. One option for a speech-language pathologist who is not proficient in the child’s home language may be to include other agents, and particularly parents, in the intervention process instead of opting to deliver services only in the mainstream language. Kohnert, Dongsun, and Kelly (2005) have suggested the potential effectiveness of joint clinician-parent intervention programs as a viable
option for the delivery of speech and language intervention for bilingual children with slow expressive vocabulary development in particular.

There is a paucity of research with children who have slow expressive vocabulary development and speak languages other than English. The bulk of intervention studies with children with slow vocabulary development have involved English-speaking parents who were generally well educated and highly motivated to participate in family-centered language intervention programs. All of these variables are likely to have had a significant positive impact on their children’s acquisition of new vocabulary. For these reasons, research involving a greater variety of populations is urgently needed in the context of the increasing diversity in language, culture and socio-economic status present in North-American society.

Importance of Early Bilingual Intervention

Children with slow expressive vocabulary development develop typically in the domains of cognition, social and self-help skills, and have normal hearing but experience vocabulary learning difficulties from a very young age, regardless of the language(s) they speak. Early intervention is important for these children because they may be at risk for long-term language, academic, emotional, and social difficulties (Paul, 2000; Rescorla, Dahlsgaard, & Roberts, 2000a; Rescorla, 2002; Thal & Katich, 1996). If speech-language services are not available early to these children, a window of opportunity may be missed to provide intervention when it may be most effective (Rescorla, 1989).

Some children with initial vocabulary learning difficulties may improve their vocabulary between the ages of two to three years; however, they still show grammatical delays in the preschool years (Dale, Price, Bishop, & Plomin, 2003). Furthermore, the difference between typically-developing children and those with a history of vocabulary difficulties often becomes
even more apparent when it comes to higher language skills such as reading and writing. It has been shown that the limited language skills of these children when they finish kindergarten may in turn delay their development of reading and writing in the elementary school (Scarborough & Dobrich, 1990; Law, Boyle, Harris, Harkness, & Nye, 2000). Law et al. (2000) reported reading problems persisting at the age of eight years for 41-75% of children in their study. By the age of 13, the reading skills of many children previously diagnosed with slow expressive vocabulary development still fell into the lower end of the normal range, while remaining significantly below those of their peers according to Rescorla (2002). The notion of ‘recovery’ may be a relative term, and children may need to be monitored throughout their school age years, when initial concerns with vocabulary, phonology and syntax give way to concerns regarding literacy and overall academic performance.

Similarly, bilingual preschool children with vocabulary learning difficulties are likely to benefit greatly from early intervention approaches, especially when they are provided with the opportunities for improvement in both the language of the majority as well as their home language (Kohnert et al., 2005). There are several reasons why a bilingual intervention approach might be preferable to a unilingual approach. First, while it is often assumed that by providing intervention in one language it may be possible to facilitate the development of another language (Kohnert et al., 2005), intervention in both languages may, in fact, facilitate general language-learning mechanisms including attention and perception. These would in turn facilitate the development of both languages (Cummins, 1980, 1984).

Second, intervention following a bilingual approach would also enable parents to participate in intervention in their home language even if they had limited proficiency in the mainstream language. Parents may be trained to use naturally occurring strategies that have been
shown to be associated with language gains in typically developing children, such as fostering joint activity around the child’s interests, promoting interactions, and language modeling (Girolametto, Pearce, & Weitzman, 1996a, 1996b). Parent-administered programs with monolingual children with slow expressive vocabulary development have been shown to improve parent-child interaction and give children practice in using words and syntactic structures as well as resulting in gains in the children’s speech complexity, vocabulary, and verbal output (Girolametto, Wiigs, Smyth, Weitzman, & Pearce, 2001; Robertson and Weismer, 1999). A reduction in parental stress and anxiety are also possible benefits of family-focused intervention programs (Robertson & Ellis Weismer, 1999).

Third, bilingual children may benefit from the social, linguistic, and cognitive support resulting from their parents’ involvement in supporting their home language (Wong Fillmore, 1991a). Research has shown that a child’s language dominance may shift during the course of lexical development, since bilingualism has been described as a continuum of proficiencies, meaning that individuals fluent in two languages may show differences in performance across language tasks, contexts, and conditions (Valdes & Figueroa, 1994). By providing intervention in both languages, the input will be comprehended by the child no matter what his or her dominant language is at that time (Gutierrez-Clellen, 1999).

Finally, in addition to this theoretical basis for benefits of a bilingual intervention approach, there is also a practical reason for not compelling families to choose a single language of intervention. Such a choice may not be beneficial to the internal dynamics of some families, especially if the choice is made in favor of the majority language and not the home language. Not surprisingly, intervention provided exclusively in the majority language has been shown to have the potential to contribute to deterioration of the parent-child relationship and the loss of the
home language and culture (Cummins, 1986; Hakuta & D’Andrea, 1992; Wong Fillmore, 1991a). Such intervention may also negatively influence the conversational patterns used by caregivers with their bilingual children with vocabulary delays when cultural differences are present (Van Kleeck, 1994). Facilitating the development of the home language for bilingual preschool children may decrease the risk of language and cultural loss, which is an important factor in maintaining children’s cultural identity in situations where relationships with older family members may be rooted in their first language (Cummins, 1986; Wong Fillmore, 1991b).

Childhood Bilingual Development

Childhood bilingualism can be described according to the circumstances in which it develops and the children’s resulting proficiency in each language. Since the 1980s, a traditional distinction has been made between ‘simultaneous’ and ‘sequential’ bilinguals (Baker, 1996). The first term is applied to children exposed to two languages in a relatively balanced way during early childhood, while the second is applied to children introduced to a second language as they enter school or immigrate to another country at school-age. The term ‘bilingual first language acquisition’ is a more recent term applied to learning two languages simultaneously from birth (Goldstein, 2004).

Bilingual first language acquisition differs from sequential development in several respects (Meisel, 2004). The characteristics of the early phases and the processing mechanisms used in the development of sequential bilingualism resemble the adult’s development of a second language more closely than the development of a child’s first language (Meisel, 2004), in that children acquire their first language automatically, while adults learn their second language consciously (Krashen, 1982). Furthermore, there is considerable variability in the extent to which the previous language knowledge of sequential learners results in their proficiency (Genesee,
Paradis, & Crago, 2004). In addition, the rate of acquisition may depend on learners’ motivation (Genesee et al., 2004). For these reasons, researchers consider the two types of bilingual development as constituting separate profiles in bilingual language acquisition research (Langdon & Merino, 1992), although of course, there is much variability in both populations.

Despite the relatively early start of research into bilingualism in the 1800s (Baker, 1996), the research on disordered bilingual first language acquisition and suggestions for the clinical management of bilingual speakers have remained relatively limited (Chavda et al., 2003; Gutierrez-Clellen, 1999). There is also a paucity of properly standardized assessment instruments for bilingual speakers, and uncertainty about what level of proficiency should be considered the norm for them (Jordaan, 2008; Gutierrez-Clellen, 1999). Currently, speech-language pathologists may not always perceive themselves as competent to deliver services to bilingual children as a result of this situation (Junker & Stockman, 2002), and very few speech-language pathologists currently provide bilingual services (Jordaan, 2008; Jordaan & Yelland, 2003). This may not be surprising, considering historical views of bilingualism’s negative effects on children’s developing language and cognition (Baker, 1996).

A primary decision that has to be made when it comes to the clinical management of bilingual clients is choosing the language(s) of intervention. However, that decision may depend on the clinician’s knowledge and assumptions in several areas, such as, for example, if there are any advantages or costs to being bilingual, the course that the development of the two vocabulary systems may take, and how the two lexicons of a bilingual individual are represented in the mind. These issues are examined in the following sections.
Childhood Bilingualism: Costly or Advantageous?

The first issue to be considered is the potential advantage or cost to being bilingual. Earlier in the development of the field, bilingual children were misidentified as having mental retardation, learning disabilities, and speech-language disorders as a consequence of learning two languages (see review by Chavda et al., 2003). This negative view of bilingualism spanned the early 1800s to the 1960s (Baker, 1996). Early studies suggested that bilingualism posed high information-processing demands on children’s limited cognitive capacity (e.g., Hakuta, 1986). Therefore, the possibility of dual language intervention approaches for bilingual clients was simply not considered.

Subsequently, however, some evidence has suggested that bilingualism may have positive influences on meta-linguistic awareness, linguistic creativity, and on cognitive and conceptual processing, as illustrated by the following examples. Research in the area of metalinguistics has shown that bilingual four- and five-year-old children had a greater understanding of the general symbolic representation of print than monolingual children (Bialystok, 1997), and increased metalinguistic awareness (Bialystok, 2001; Cook, 1997). Similarly, Campbell and Sais (1995) suggested that exposure to a second language at the pre-literacy stage may improve five-year-old children’s metalinguistic awareness. In terms of pragmatics, bilingual seven and eight year-old children showed better performance on register shifts, which are necessary in tasks involving use of academic language (Herman, 1997). Cognitively, bilingual linguistic advantages may carry over into such areas as attention in both school-age (Bialystok & Majumder, 1998) and preschool children (Bialystok, 1999), as well as in long-term memory (Kormi-Nouri, Moniri, & Nilsson, 2003). Thus, the field has began to view bilingualism as having significant positive effects, as described by Baker (1996).
When it comes to linguistic costs or benefits of bilingualism, then, the current view is that typically-developing bilingual children do not seem to have any obvious linguistic disadvantages resulting from their bilingual development (Snow, 1993). In contrast to this, during the period of ‘negative effects’ of bilingualism (as described by Baker, 1996), it was challenging to separate true language delays from the development that might be considered appropriate for a bilingual child because the range of normal variation in bilingual development had not yet been established. For example, early research had shown negative effects of bilingualism on lexical learning (Ben-Zeev, 1977; Teuber & Furlong, 1985). Further examination of these findings indicated that this interpretation occurred due to the use of inappropriate assessment instruments that were designed for use with monolingual populations. The underlying issue was that the vocabulary size of a bilingual child would vary depending on the perspective taken on the procedures for pooling the words from two lexicons to determine an overall vocabulary size (Patterson, 1998).

More recent studies using improved assessment strategies showed that bilingual children could meet the standards for monolingual toddlers when the total lexicon in both languages was tallied (e.g., Patterson, 1998). In fact, pooling of words from both lexicons resulted in bilingual learners having a larger overall number of different word forms in their repertoire than their monolingual peers (Patterson, 2000). Patterson (1998) assessed 102 Spanish-English toddlers, aged 23- through 25-months. Over 80% of the bilingual children in this study had typical or advanced vocabulary development when the words in their two lexicons were added together. However, when vocabulary is assessed based on the total number of words in the two lexicons, this may lead to an overestimation of conceptual knowledge for some children (Patterson, 1998). This is because bilingual children often have some concepts in their lexicon for which they may have a lexical item in each language. These are referred to as translation equivalents. Pearson
and colleagues (Pearson & Fernandez, 1994; Pearson, Fernandez, & Oller, 1993, 1995a) derived a total conceptual vocabulary measure to avoid the overestimation of bilingual vocabulary. This conceptual vocabulary measure results from subtracting the number of translation equivalents from the total number of words produced in both languages. In other words, each pair of translation equivalents is counted as only one item. It should be noted that even when a conceptual measure was used, Pearson and colleagues (Pearson & Fernandez, 1994; Pearson et al., 1993, 1995a) found bilingual children’s lexicons to be similar to monolingual Spanish and English speakers. For example, Pearson and Fernandez (1994) examined and compared patterns of vocabulary growth in English in relation to Spanish in 20 monolingual and bilingual children aged 10-30 months. The pace of development of total and conceptual vocabulary, as well as the percentage of nouns, social words and verbs in these children’s bilingual vocabularies was similar to that of monolingual children.

Learning two languages with many common features may not be as challenging as when the languages being learned are very different, but there is no direct evidence to support this assumption (Junker & Stockman, 2002). Junker and Stockman (2002) studied children who spoke a combination of languages that were both Germanic in origin (German and English). Similarly to the Spanish-English studies reviewed above, Junker and Stockman (2002) found a larger total number of words in the bilingual group as compared to the monolingual English group. This study was also the first to compare bilinguals and monolinguals on the number of verbs in their vocabularies, which is important because verb diversity may be regarded as a particularly sensitive indicator for predicting language delays in some languages (Junker & Stockman, 2002). The authors hypothesized that if bilingual children were inherently delayed in language acquisition, they may appear weak in their acquisition of verbs. It was found that
vocabulary ‘richness’, defined as the number of different verbs or event words, as well as the size of their lexicon, was comparable for bilinguals and their monolingual counterparts.

**Lexical Development of Bilingual Children**

Three main theoretical frameworks have been formulated in the field regarding the course of typical bilingual vocabulary development. The frameworks differ with respect to the relative independence of word-learning processes in the two languages of the bilingual child. Initially, the Unitary Language System hypothesis postulated that bilingual lexical acquisition began with a stage when the child was assumed to be in possession of only one lexical system containing words from both languages, with no translation equivalents present (e.g., Redlinger & Park, 1980; Vihman, 1985; Volterra & Taeschner, 1978). Volterra and Taeschner (1978) stated that, based on their data, bilingual children did not possess translation equivalents in their early lexicons, and they interpreted this finding as supporting the existence of a stage of a fused lexicon in bilingual language acquisition. This argument is consistent with the mutual exclusivity constraint, which postulates that children assume that objects can have only one label. This constraint is proposed to aid them in restricting the range of meanings of a word (Markman & Wachtel, 1988; Merriman & Bowman, 1989; Merriman & Kutlesic, 1993).

Subsequently, however, numerous studies have reported abundant pairs of translation equivalents in the early Norwegian-, Spanish-, French-, and German-English lexicons of young children (Genesee, Boivin, & Nicoladis, 1996; Genesee, Nicoladis, & Paradis, 1995; Junker & Stockman, 2002; Lanza, 1992, 1997; Pearson, et al., 1995a, 1995b; Quay, 1995). Furthermore, Volterra and Taeschner’s (1978) own data has been re-examined and found to contain translation equivalents (Meisel, 2004). Researchers therefore began to question the hypothesis of a unitary-lexicon stage and proposed an explanation to the existence of translation equivalents in the early
lexicon based on an early separation of the two languages. This led to the introduction of the Dual Language System Hypothesis, with the proposal of the independent development of two lexical systems from the beginning of a child’s language development (Genesee, 1989), in the early 1990s. As mentioned above, Pearson et al. (1995b) found the number of translation equivalents in bilingual lexicons to be similar to the number of words co-occurring in the lexicons of two monolingual children randomly combined in pairs (i.e., a pair of monolingual children was treated as one bilingual child), which they interpreted as evidence against the Unitary Language System Hypothesis.

To summarize the previous discussion, then, there exist two possibilities for whether or not early bilingual lexicons develop as a fused system, in light of the presence of transaction equivalents. A strong body of evidence exists in monolingual language acquisition in support of the mutual exclusivity constraint (Markman & Wachtel, 1988; Merriman & Bowman, 1989; Merriman & Kutlesic, 1993). Thus, it is indeed possible that bilingual children begin with two separate lexical systems, contrasting languages from an early age (Lanvers, 1999). The second possibility, however, may be that the principle of contrast may only be valid for the acquisition of inter-language synonyms (such as ‘car’ and ‘truck’), and bilingual children may have an inherent ability to determine which words belong to each system and to suppress this constraint in acquiring translation equivalents (such as ‘car’ and ‘carro’). If this hypothesis is true, it would not possible to use the existence of translation equivalents as the main argument for or against the Dual Language System Hypothesis (Pearson et al., 1995b; Quay, 1995).

Even monolingual children must suspend the mutual exclusivity constraint to learn names for overlapping categories, for example, ‘dog’ and ‘animal’ (Davidson, Jergovic, Imami, & Theodos, 1997). In fact, as children grow older, equivalent learning increases, and it is possible
that, with age, bilingual children also grow to be less constrained (Davidson et al., 1997). While only a few translation equivalents have been found to be present in the lexicons of simultaneous bilingual children under the age of two years, by their second birthday, most of these children have translation equivalents for 30% to 50% of their words (Lanvers, 1999). DeWitt (1994) and Merriman and Kutlesic (1993) have found bilingual children to override the mutual exclusivity constraint between languages and acquire translation equivalents. However, the research on bilingual children’s tolerance to learning lexical items that are not mutually exclusive is still relatively limited.

It is also possible that the children in earlier studies reporting low numbers of translation equivalents had individual preferences for avoiding translation equivalents. Significant variations in the proportions of translation equivalents of the individual children were reported in later studies (Pearson et al., 1995b), and this may be so for reasons other than the children’s lack of tolerance to learning synonyms. The presence of translation equivalents may depend on the children’s learning style (Pearson et al., 1995b) or on parental factors, such as whether or not they avoid language mixing in their provision of input to the child (Lanvers, 1999). Finally, the lexical role of translation equivalents has not been fully determined. They may not serve as absolute synonyms but may instead convey shades of meaning and cover different semantic fields or represent under- or over-extensions such as those that are present in the lexicons of monolingual children as well (Meisel, 2004).

At the present time, there is no consensus with respect to whether or not children go through an initial fused stage of lexical development in the research on bilingual lexical development. The evidence previously used to support the Unitary Language System has been reinterpreted. On the other hand, no consistent evidence has yet been provided to fully support
the Dual Language System either. One might suggest that the middle ground between the Unitary and Dual Hypotheses of lexical development may be found in the Common Underlying Proficiency Hypothesis (also known as the Interdependence Hypothesis), proposed by Cummins (1984). Cummins (1984) suggested that cross-lingual proficiency can promote the development of both cognitive and academic skills. Cummins’ work has focused on school-age sequential bilingualism, and the main thrust of his arguments is that second language acquisition is influenced by the extent to which the first language is developed (Cummins, 1984). Cummins proposed that conceptual knowledge and other linguistic skills found in what he called the central processing system may constitute a common basis for both languages. Differing surface features of the two languages of a learner, including for instance vocabulary, are governed by working memory and may be supported by a shared set of deep features such as conceptual knowledge (Cummins, 2000). This hypothesis has an important implication for the facilitation of younger children’s bilingual development, and it will be revisited below in the discussion of the representation of lexicons in the minds of adult bilingual speakers.

The discussion of this literature and its associated theoretical bases is important because the clinical management of bilingual children may be greatly impacted by the perspective taken on bilingual vocabulary development. For example, if it is accepted that both languages develop as unrelated language systems, intervention is likely to be provided only in one language in situations when it is most economical to do so. Since intervention in two languages may be perceived as being taxing both cognitively and with respect to available resources, it may be simplest to avoid the bilingual approach based on this assumption (Gutierrez-Clellen, 1999). Furthermore, if the maintenance of the home language is not valued, the language chosen for intervention will likely be the majority language as opposed to the child’s home language. On the other hand, if the development of two languages is believed to be interrelated, intervention in
both languages may be preferred, since intervention provided in one language may have a facilitative effect and a positive impact on the other language, and vice versa (Gutierrez-Clellen, 1999).

**Bilingual Lexical Representations**

Studies of lexical representation in adult bilinguals may cast some light on the issue of the extent of interdependency between the two linguistic systems of a developing bilingual child. The central question posed by this line of research is essentially how many lexicons a bilingual speaker may possess. Two main accounts have been proposed to address this question. A separate-store model suggests that there is a separate lexicon for each language (Potter, So, von Eckardt, & Feldman, 1984). On the other hand, in common-store models, words from both languages are accessed through one system and are linked directly to the same concepts (Paivio, Clark, & Lambert, 1988). Support for both of these models is found in psycholinguistic experiments. The common-store model is supported by findings related to a facilitative effect of semantic priming that exists between languages, and a separate-store model – by the effect of repetition priming within rather than between languages (for a review, see Harley, 2008). If the common-store model were correct in its representation of the bilingual lexicon, then bilingual children may be said to begin learning the two vocabularies as a fused lexical system, which also does not separate in adulthood. If the separate-store model were correct, the question of when the separation of the two lexicons occurs would still remain.

Kroll and Stewart (1994) proposed that there had to be some degree of conceptual mediation between the items in the two lexicons of older bilinguals, based on their experiments that involved translation times. They showed that only forward translation (from the first language into the second language) was slowed down by semantic category interference.
Semantic interference was induced by organizing lists of word for naming tasks by semantic categories. The participants (24 fluent Dutch-English bilingual university students), were asked to either name or translate the words that were presented on a screen in rapid succession. The words were presented in lists that were either organized by semantic categories (e.g., items of clothing) or were presented at random. The authors concluded that for forward translation, the meaning (conceptual representation) of a word had to be retrieved, but to translate a word from the second language into the first language (backward translation) a direct link was used to associate the two lexical entries. Figure 1 illustrates the model proposed by Kroll and Stewart (1994).

Kroll and Stewart’s (1994) findings have provided further support for the existence of a single underlying conceptual system that has links to lexical representations. These links are both direct (as shown by the arrows from ‘concepts’ to ‘L1’ and ‘L2’), as well as indirect, mediated through the items in the more dominant language (as shown by the solid line on the top of the diagram). It should be emphasized that this model illustrates the organization of the lexicon of adult sequential bilinguals. However, it may be useful in understanding the development of the
lexicon of bilingual children, and may, therefore, have implications for making a choice between a bilingual versus a monolingual intervention.

Bilingual children who are acquiring two vocabularies simultaneously may begin by learning new vocabulary by assigning only one lexical item to each concept, which may happen to be in one language for some concepts and in another language for other concepts, depending on the context for their acquisition. With continued exposure to both languages, the children may then learn the counterparts from another language for existing concepts (i.e., translation equivalents). The mechanism for forming the links between the lexical items in the two languages may be similar to that of older sequential bilinguals described by as Kroll and Stewart (1994). The difference is that the young children would not have a full conceptual system in place for vocabulary in a single language to which they are matching the lexical items to form the new vocabulary. Thus, they cannot be said to have L1 lexical items to which they are linking L2 lexical items. Instead, they may be viewed as acquiring lexical items from both of their languages in parallel based on input from different contexts (e.g., home and community).

The model of Kroll and Stewart (1994) may also explain a restriction in the meaning of each item in a pair of translation equivalents, in that each item conveys only a shade of meaning of the same concept, similar to under- or over-extensions in monolingual children (Meisel, 2004). This provides further support that, according to this model, bilingual children may not initially have direct access to the full meaning of a concept when they are learning a new lexical item in their community language for a concept with an already existing lexical item in their home language. They may first need to establish a link from the new lexical item to the existing lexical item, instead of creating a direct connection between the new lexical item and the existing
concept, in a similar manner to adult learners of a second language. This hypothesis remains to be examined with bilingual children who are learning their two languages simultaneously.

**Bilingualism and Slow Expressive Vocabulary Development**

Bases on the previous discussion, bilingual intervention approach may be preferable to a monolingual approach. The question remains, however, whether bilingual children are, in fact, capable of learning two vocabularies under the condition of impairment. There is a paucity of research with young bilingual children with slow vocabulary development. On the other hand, several studies have been conducted with older bilingual children with specific language impairment (SLI); that is, with children over the age of four years who presented with both vocabulary and language difficulties (Rescorla & Lee, 2001). For example, Paradis, Crago, Genesee, and Rice (2003) found that French-English bilingual children with SLI were similar to their monolingual peers with SLI, in various aspects of grammatical morphology, including their use of tense-bearing and non-tense-bearing morphemes in each language. Paradis et al. (2003) concluded that there was a possibility that SLI may not be an impediment to learning two languages, at least in the domain of grammatical morphology. Similarly, Westman, Korkman, Mickos, and Byring (2008) also concluded that it would not be necessary to deprive children with language impairments from opportunities for dual language learning. In their group of 81 six-year-old children, of whom 35 children were monolingual Swedish speakers and 46 were Swedish-Finnish bilinguals, bilingualism was not associated with more severe language problems in either language.

However, research on language delays in bilingual children involved a different population of children from the current study, as they were diagnosed with SLI as opposed to
vocabulary delay. Children with SLI have language difficulties, manifested primarily as morpho-
syntactic deficits, which purportedly arise subsequent to an initial vocabulary delay (Leonard, 1998). One of the various theories used to explain SLI has to do with perceptual deficits in phonological processing (Joanisse & Seidenberg, 1998). In order to learn syntactic rules (e.g., information about inflections, word classes, etc.) young children must be able to extract meaning by parsing the continuous input they receive into discrete meaningful units. Caregivers may accentuate and emphasize information in the input through intonation, stress, and placement in the sentence, to make it more salient to the child. Nevertheless, the theory of perceptual deficits in SLI suggests that these children may not be able to capitalize on such strategies in their acquisition of language due to deficits in auditory processing that reside outside of language. It is as yet undetermined whether difficulties in vocabulary acquisition in young bilingual children with expressive vocabulary delays result from similar deficiencies in the ability to segment speech input into meaningful lexical units.

There is an urgent need for additional research with young bilingual children with slow vocabulary development who, as a result of their young age, cannot yet be identified as children with SLI. The participants in the current study represent such a group of children. On the other hand, there is a large and well-developed body of the literature on monolingual children with slow expressive language development that has been created over the past three decades (for a review see Tsybina & Eriks-Brophy, 2007). These children are often referred to as ‘late-talking children’; that is, children who are between 24 – 30 months of age and who have a vocabulary delay in the absence of other cognitive, sensory or emotional problems (Law et al., 2000; Desmarais et al., 2007; Rescorla, 1989). Five of the children in the current study were, in fact, late-talking children according to this definition. The rest of the participating children were either older than the age cut-off for late talking children but had been late-talkers in their earlier years
and continued to have a vocabulary delay (three children), or children who had vocabulary learning difficulties that were less severe than those typically described for late-talking children, namely fewer than 50 words at age 2 (four children). However, the participating children share several important characteristics with late-talking children, including slow expressive vocabulary development, parental concern, and being at-risk for future language delay. Thus, the literature pertaining to interventions used with late-talking children provide a suitable framework to guide an investigation centered on vocabulary acquisition with the heterogeneous group of children who participated in the current research, and it will be briefly reviewed below.

**Vocabulary Assessment and Interventions Used with Monolingual and Bilingual Late Talking Children**

**Characteristics of Late Talking Children**

The prevalence of late-talking children is 10 to 15 percent of all two-year-olds (Hrncir, Goldfarb, Scarr, & McCartney, 1985; Rescorla, 1989), and 8 percent of three-year-olds (Silva, 1980). By the age of two years, the expressive vocabulary size of late-talking children is fewer than 50 words, or below the 10th percentile for their chronological age, whereas their typically developing peers normally have expressive lexicons of about 200 words (Paul, 1996; Whitehurst, Arnold, Smith, Fischel, Lonigan, & Valdez-Menchaca, 1991b). Late-talking children’s vocabulary development is generally believed to be delayed rather than disordered (Leonard, 1989; Miller, 1991). According to Rescorla’s definition (1989), late-talking children should also have receptive vocabulary comparable to typically developing children, in contrast to their slow expressive vocabulary acquisition. However, in most studies in the field (e.g., Paul, 1991), the groups that were referred to as ‘children with specific expressive language delay’ or ‘late talkers’ included children with either expressive and/or receptive vocabulary delays.
It has been shown that children with slow expressive vocabulary development normally show gross motor, fine motor and self-help skills comparable to their peers and that the perception of their affect and mood by their parents is similar to that of typically developing children (Paul, 1991). In addition, according to Thal and Tobias (1992), such children may use the same or a higher frequency of gestures than typically developing children do to compensate for their limited verbal abilities. However, some children who have vocabulary difficulties may also be overactive and difficult to manage, as reported by some parents (Paul, 1991). Most importantly, these children constitute an at-risk group for subsequent language and academic difficulties (for a recent review, see Desmarais et al., 2007).

**Vocabulary Assessment of Late-Talking Children**

A number of different assessment measures have been used in research related to children with slow expressive vocabulary development. One of the earlier tests used was the *Expressive One-Word Picture Vocabulary Test (EOWPVT)* (Gardner, 1981), a standardized test of expressive vocabulary. Another commonly used measure is the *Language Development Survey (LDS)*, a check-list for parent vocabulary report developed by Rescorla in 1989 (Rescorla, 1989). The *MacArthur-Bates Communicative Developmental Inventory (MBCDI)* (Fenson, Reznick, Thal, Bates, Hartung, Pethnick et al., 1993) is another parent-report tool that has been quite widely used, for example, in the Girolametto et al. series of studies (1996a; 1996b; 1999).

It is difficult to evaluate a child’s level of vocabulary development before the age of 24 months due to high variability in the rate of vocabulary acquisition at early ages (Rescorla 1989; Dale et al., 2003). Furthermore, Whitehurst et al. (1991) have proposed that 24 months is the minimum age to evaluate a child’s level of vocabulary development because it is only at that age that any existing gap between children’s receptive and expressive vocabulary may become
apparent. The authors contend that another reason for the selection of this age for diagnosis is that parents rarely begin to express concerns about their children’s vocabulary at earlier ages.

Rescorla (1989) defined children as having an expressive vocabulary delay if their vocabulary contained fewer than 50 words at 24 months of age. However, this definition can only be used with children who are 24-months-old, since for an older child a vocabulary size of 50 words would be an indication of an even more marked vocabulary delay (Desmarais et al., 2007). Thus, most researchers (e.g., Thal & Tobias, 1992) considered a score below the 10th percentile on the *MacArthur-Bates Communicative Developmental Inventory (MBCDI)* (Fenson et al., 1993) to be an accurate indicator of a vocabulary delay. The *MBCDI* norms, however, have an age limit of 30 months. Thus, in the literature, the term ‘late-talking child’ is not used to refer to children over the age of 30 months.

The vocabulary assessment instruments mentioned above have also been used until recently with bilingual children. However, all of these tools have norms based on monolingual children. Gutierrez-Clellen (1999) has suggested that procedures for vocabulary assessment developed for monolingual children are not appropriate for use with bilingual children. She described methods that may be more appropriate for the vocabulary assessment of bilingual clients including naturalistic language sampling in a play situation. Such an approach may be as useful with bilingual children as it is with monolingual children, although it requires additional time and training (Marchman & Martinez-Sussman, 2002). However, with bilingual children there is a concern that there may be cultural differences in adult-child language behaviors viewed as appropriate during play interactions, as in some cultures children may not be expected to talk to and interact with adults as often or in the same ways as do North American children (Van
Kleeck, 1994), which may result in underestimation of the child’s vocabulary based on the sample.

Caregiver report is becoming an increasingly popular technique that has some specific advantages for use with toddlers, and there is a growing confidence that, if properly constructed and administered, caregiver report instruments can provide valid information and may be more cost-effective than behavioral assessments (Marchman & Martinez-Sussman, 2002). Nevertheless, it is currently not known whether or not using two monolingual instruments is as valid as using one instrument specifically designed for bilinguals. An example of such an instrument is a bilingual adaptation of the English-based Language Development Survey (Rescorla, 1989), developed by Patterson (1998). The Spanish-English Vocabulary Checklist (SEVC) (Patterson, 1998) contains 564 words, equally split between Spanish and English, consisting essentially of a shorter version of LDS in English together with its Spanish translation, developed primarily for toddlers. Patterson (2000) validated the measure by comparing reported vocabulary with that produced during free-play and found strong correlations between observed and reported vocabulary. Unfortunately, the limited range of vocabulary items as well as the restricted age norms of this instrument made it inapplicable for use with the children in the current study.

The Pearson group of studies (Pearson & Fernandez, 1994; Pearson, Fernandez, & Oller, 1993; Pearson et al., 1995a) created a parallel Spanish version of the MacArthur-Bates Communicative Development Inventory (MBCDI) (Fenson et al., 1993), known as the MacArthur Inventario del Desarrollo de Habilidades Comunicativas (MIDHC) (Jackson-Maldonado, Bates, & Thal, 1992). Both the MBCDI and MIDHC were used in the current study, allowing for some potential comparisons to the Pearson group of studies.
Early Vocabulary Interventions with Monolingual Children with Vocabulary Delays

There is little consensus in the field of speech-language pathology regarding the necessity and the urgency of providing early intervention for young monolingual children with vocabulary difficulties or the optimal age at which such intervention might best be initiated (Olswang & Bain, 1991; Paul, 1996, 1997; Whitehurst & Fischel, 1994). It has been generally agreed that, if a child is diagnosed with specific language impairment at the age of three years or older, he or she should be provided with treatment (Paul, 2001). Therefore, an important question remains as to what should be done with children younger than age three. Two proposed options currently have been put forward that consist either of monitoring the child’s development or providing direct intervention.

Paul (1996) proposed a wait-and-see approach, in which children are monitored closely instead of receiving direct intervention. In this approach, children are evaluated at different intervals depending on their age; every three to six months for 2-year-olds and subsequently every six to twelve months until the age of five. Paul (1997) has argued that the wait and see approach is justified since clinical intervention has a high cost in both financial and emotional terms, especially since she maintains that the majority of children will attain age-appropriate language norms by preschool age without direct intervention. Similarly, Dale et al. (2003) considered it inefficient to target young children for intervention because a high proportion of them would eventually achieve normal developmental language profiles without treatment.

On the other hand, other researchers have advocated for early intervention, because employing a wait-and-see approach requires predicting with certainty which children will improve spontaneously versus those for whom the language delay will persist (Van Kleeck,
Gillam, & Davis, 1997). Moreover, waiting until a child is old enough to rule out the possibility of what has been termed a spontaneous recovery may deprive him or her of intervention at a time when it might be the most effective (Rescorla, 1989). Unfortunately, the age when intervention is most effective has not as yet been determined, and is yet another facet of the problem of when and how to intervene, and whether or not it is necessary. Furthermore, children who seem to recover do not necessarily attain the desired age norms in all the aspects of linguistic competence, as previously mentioned. Children with limited expressive vocabulary at two years of age may perform significantly lower than their peers at up to eight years of age in almost every area of expressive language, even though for these children factors such as receptive language, nonverbal ability, and family history warranted no concern (Rescorla, 2002).

Another important argument in support of early intervention is that, even though an identified child’s language skills may eventually improve, in the meantime other skills that depend on language proficiency may be delayed as a consequence. For example, skills central to literacy, such as metalinguistic and phonological awareness, depend on vocabulary knowledge (Bishop & Adams, 1990). These skills may be negatively affected by a wait-and-see approach. Social and language deficiencies may also interact with each other because children with low communicative abilities may be rejected by peers, and may thus have fewer opportunities to practice their language skills (Rice, 1993). The utterances of these children may not be readily understandable, which decreases their chance of receiving parental and peer reinforcement in response to their productions (Paul & Shiffer, 1991). A scarcity of reinforcement may in turn decrease these children’s motivation to practice their communication skills (Paul & Shiffer, 1991).
Researchers in favor of providing early intervention have proposed various domains of focus of such interventions. Olswang and Bain (1991) suggested targeting single words, word combinations, early grammatical morphemes, and simple syntactic constructions. They stated, however, that intervention would not cure the disorder, but would rather make the children more proficient in certain linguistic behaviors at a certain point in time. Paul et al. (1991) emphasized the need to improve socialization skills. Rescorla et al. (2000b) proposed that intervention involving labeling could help to initiate the acquisition of new words.

Other interventions have focused on caregivers rather than the children themselves. In terms of optimizing the children’s communicative environment, Whitehurst, Falco, and et al. (1988) proposed that caregivers of late-talking children could become less directive and reduce their use of non-contingent labeling through intervention. Similarly, Paul and Ellwood (1991) emphasized optimizing the children’s communicative environment through parental use of expansions and imitations. These findings raise the question of whether or not it is possible for caregivers of late-talking children to alter their interactional style. It may not, in fact, be an easily achieved goal if, as suggested by Whitehurst, Falco, and et al. (1988), the parents’ directive interactional style is an adaptive strategy stemming from relying on children’s receptive rather than their expressive abilities.

To date, only one study by Pearce et al. (1996) has directly addressed this question. In this study, 16 mothers and their toddlers with expressive vocabulary delay were randomly assigned to treatment and control groups. The treatment adhered to a focused stimulation approach, which will be discussed in more detail below. In the course of the intervention, mothers learned to use shorter, less complex utterances, repeat target words more often, and become less directive in their interactions with their children. However, the mothers did not
become more responsive. The authors provided two competing explanations for this finding. First, children with slow vocabulary development may not provide enough opportunities to increase contingent input due to the paucity of their talk. Alternately, mothers may have already reached an optimal level of responsiveness prior to the intervention. The objective of reducing mothers’ talkativeness was also not achieved, possibly due to the fact that children used fewer interpretable verbal social utterances and the mothers may have felt that they needed to maintain a certain level of child-directed talk to continue the social exchange.

Approaches to language intervention in clinical settings have been documented in experimental studies. The effectiveness of modeling in combination with prompts was compared with modeling alone, as administered by clinicians to a group of three 27-28 month-old children (Ellis Weismer, Murray-Branch, & Miller, 1993). One of the three children participating in the study responded to the first type of treatment. This child had overall improvements in vocabulary use and language development after the intervention. Another child in the study responded better to the second type of treatment. The third child did not respond differentially to either condition. Results of the study seem to indicate that modeling and evoked production may have similar effectiveness, however, the findings are inconclusive other than indicating that children may require different approaches to treatment based on their individual learning styles. The sample size of the study was too small to draw any definitive conclusions. As this study utilized a single subject design, more studies are needed in order to assess the relative effectiveness of the various treatment options, employing randomized assignment of the participants to groups.

Since the early 1980s, an interactive model of language intervention has been commonly used with children with vocabulary delays (Girolametto, Pearce, & Weitzman, 1996a). It focuses on training parents to use naturally occurring strategies that have been shown to be associated
with language gains in typically developing children (Girolametto, Pearce, & Weitzman, 1996a, 1996b). This is an economical approach that requires few centralized resources, and includes three main techniques: fostering joint activity around the child’s interests, promoting interactions, and providing language modeling (Girolametto et al., 1996a, 1996b). There are two types of such interactive language interventions: focused stimulation and general stimulation. Although both versions of the approach train parents to provide contingent responsive input to child’s talk, in focused stimulation parents use frequent presentations of pre-selected targets, individually chosen for each child, taking into consideration his or her phonetic repertoire (Girolametto et al., 1996b). The use of this type of intervention may be warranted given that, as some researchers have suggested, late-talking children may have a less developed drive for interaction for its own sake that prevents them from initiating conversations (Paul & Shiffer, 1991).

Robertson and Weismer (1999) employed general stimulation emphasizing vocabulary development and the use of two- to three-word combinations in a social context with 21 late-talkers who were 21 – 30 months-old. A script encouraging communicative attempts was used, which included scaffolding by adults. Children’s productions improved in complexity and verbal output in the intervention group but not in the control group. Children’s socialization scores improved as well, while parental stress scores decreased, even though this was not specifically targeted.

It has been proposed that the techniques utilized by clinicians as described above may also be effectively adopted by parents or educators as a preventative measure for toddlers at risk for language delays. This would increase the cost-effectiveness and naturalness of early intervention, while taking into account the various arguments against providing formal early
intervention for late-talking toddlers, For example, Whitehurst et al. (1991) investigated the effectiveness of an intervention with 27 two-year-old children that was implemented by parents in a home setting. The home setting for intervention was chosen because in such environments the intervention was constant and took advantage of the child’s natural interests. The authors concluded that their intervention was effective, based on the finding that children increased their production of specified targets from 8% to 50% during mealtime interactions. This study used a quasi-experimental design and lacked randomization and a control group, and as such the findings should be interpreted cautiously.

The studies of Girolametto’s group of researchers are stronger in terms of their experimental design in examining the effectiveness of the focused stimulation approach. In a pilot study, Girolametto et al. (1996a) recruited 16 children who were 24 – 40 month-old and had expressive vocabulary delays. The children and their mothers were randomly assigned to treatment and delayed treatment groups. Following a focused stimulation intervention that was provided by their mothers over the course of 11 weeks, children in the experimental group started to use more target words and learned more symbolic play gestures, although their overall vocabulary size was not affected. In a subsequent study, Girolametto et al. (1996b) employed a similar design with some important adjustments such as recruiting more children (n = 25, 25 – 35 months), and using more stringent measures of vocabulary and language development including parent report, direct observations, and semi-structured probes. The study examined mothers’ use of language-modeling strategies (talkativeness, linguistic complexity, and labeling) in addition to documenting children’s outcomes. Results showed that, following treatment, the input of mothers in the experimental group decreased in complexity and rate, as compared to mothers in the control group. Children in the experimental group used more target words in probes and in free play interactions, had larger vocabulary sizes overall, and used more multiword utterances.
and early morphemes than those in the control group, all of which could be directly attributed to the effects of the intervention.

With respect to the question of what exactly is the component of focused stimulation that seems to have facilitative effects on language acquisition, the same group of authors tested the validity of both a structural and a responsivity hypothesis (Girolametto et al., 1999). According to the responsivity hypothesis, it is the semantic contingency of the input that is facilitative for language acquisition, whereas, according to the structural hypothesis, providing language models within the child’s zone of proximal development (Vygotsky, 1978) is important. The results of the study provide empirical support for the responsivity hypothesis and, more importantly, demonstrate a direct link between children’s language gains at posttest and maternal language variables such as imitations and expansions, which have previously been shown to be facilitative of language development with typically developing children (Baker & Nelson, 1984). Thus, Paul and Ellwood’s (1991) initial conclusion that providing more contingent feedback may be more important than making structural changes appears to be supported, based on these limited findings.

The results of the studies discussed above indicate short-term effectiveness of interventions with toddlers with slow expressive vocabulary development. However, there is not much evidence available with respect to their long-term effectiveness. Only one study by Girolametto, Wiigs, Smyth, Weitzman, and Pearce (2001) explored the long-term effect of a consistent intervention model. The authors followed up the development of children provided with the focused stimulation approach, the short-term effects of which were demonstrated in their earlier studies. In this study, parents of late-talking children were trained to administer intervention for their children, focusing on aspects of phonology and language intervention, for
11 weeks when the children were between two and three years of age. As indicated by standardized measures, 86% of children in the experimental group reached age-appropriate levels in expressive language and grammar. However, the children’s abilities remained weak in their use of pragmatic cues, and in narrative tasks. These findings are consistent with previous studies that indicated that late-talking children continue to have difficulties with higher level linguistic tasks that increase their risk for learning and academic difficulties during the early school years (Kelly, 1998; Paul, 1996; Whitehurst et al., 1991a). Girolametto and colleagues (2001) concluded that close monitoring and intervention in these key areas of weakness may be necessary for late-talkers as they reach school age, particularly for higher level linguistic abilities (Girolametto et al., 2001). It may be particularly important to emphasize early literacy in addition to learning vocabulary and improving socialization skills in the course of early intervention.

**Interventions with Bilingual Preschoolers with Vocabulary Delays**

The findings of various intervention studies indicate that both clinician- and caregiver administered types of treatment may be effective in achieving short-term goals of improving the vocabulary of young children with slow vocabulary development. In general, well-designed studies employing group designs with randomization, larger sample sizes, and clearly-defined selection criteria are still needed to generate further high quality evidence. Furthermore, such studies should also be expanded to include bilingual children as intervention studies with the population of bilingual children with slow vocabulary development are urgently needed. Furthermore, the intervention models that have been shown to benefit monolingual children may not be useful for bilingual children because cultural differences may be present in the conversational patterns of bilingual late-talkers and their caregivers (Van Kleeck, 1994).
A was discussed above, it may be possible that bilingual intervention may be more advantageous than intervention in the majority language alone due to the potential linguistic, cognitive, familial and social benefits it provides. However, existing intervention studies with bilingual children with slow expressive vocabulary development are currently limited and do not directly address this question. The only such study to our knowledge was conducted with a preschool four-year-old child with slow expressive vocabulary development who was learning Icelandic and English (Thordardottir, Ellis Weismer, & Smith, 1997). Through a single-case alternating treatments design, a bilingual intervention was shown to be more advantageous than a monolingual intervention for this child’s target vocabulary acquisition. As was previously described, bilingual language intervention with older children has been shown to facilitate general language-learning mechanisms including attention and perception, which may in turn facilitate the development of both languages of the bilingual child.

Two studies are available that have shown the success of a Spanish-English bilingual approach to vocabulary intervention with young children with language delays who were older than four years of age. Although neither of the two studies examined the impact of intervention on the acquisition of expressive vocabulary, the interventions showed positive effects on receptive vocabulary. Perozzi (1985) attempted to improve the receptive vocabulary acquisition of six bilingual children aged from 4;0 to 5;6. The children had language delays in both Spanish and English. Spanish, the home language, was considered to be the children’s stronger language. Vocabulary items were presented in Spanish and English in two orders according to the child’s proficiency in the languages. When the stronger home language was taught before the weaker, children learned both words faster than when words were learned initially in the weaker (English) language.
In the second study by Perozzi & Chavez-Sanchez (1992), bilingual first grade children with language delays were provided with intervention to accelerate their acquisition of English pronouns and prepositions. A comparison was made between training in the stronger language followed by the weaker (Spanish followed by English) and training in the weaker language only (English-only). The conclusion was that children in the bilingual condition learned twice as fast as the children who received intervention in only one language. Thus, in this small body of literature on interventions with bilingual children, there is emerging support for the benefits of bilingual intervention.

**Dialogic Book-Reading**

In the current study, a dialogic book-reading approach was chosen as the method of intervention because it has been successfully extended to use with parents (Arnold, Lonigan, Whitehurst, & Epstein, 1994). Dialogic book reading is a reading technique that involves adults and children taking turns in a conversation about a book (Whitehurst, Falco, et al., 1988). It is the practice of introducing dialogue to shared reading experiences that makes such experiences more interactive than typical reading with children (Cutspec, 2004). This type of activity naturally evokes tutorial behavior from adults, and offers a rich opportunity for children to practice and learn language (Whitehurst et al., 1988). In dialogic book-reading, adults share the topic of the child’s attention while supplying models only slightly more complex than the forms already in the child’s repertoire, that is, within the child’s zone of proximal development (Vygotsky, 1978).

Dialogic book-reading is similar to the focused stimulation approach described above in that both may be considered hybrid approaches to intervention, which allow parents some freedom in following the child’s interest while interacting in a relatively structured environment (Paul, 2001). The main difference between dialogic book-reading and focused stimulation is that
the focused stimulation approach does not include an elicitation component. The elicitation component has been incorporated into the current study because late-talkers may not offer many spontaneous utterances that can be used by adults to provide feedback. Thus, it may be advantageous, especially over a short intervention period, to employ a less child-centered approach so that adults need not be fully dependent on following the child’s lead. In the course of dialogic book reading activities, caregivers may elicit productions of items from the child as well as respond contingently to the child’s talk. Moreover, the focused stimulation approach does not prescribe the specific activities caregivers should carry out in the course of an intervention block. For the current study, the advantage of introducing dialogic book-reading is in creating a specific context for language stimulation while introducing rich early vocabulary learning experiences for the participating children.

Researchers who have employed dialogic book reading as a form of intervention have designed it according to three principles first proposed by Whitehurst et al. (1988). First, evocative techniques (e.g., questions) are used, through which adults encourage children to talk about pictures in a book. Second, adults provide feedback to the child’s utterance in the form of praise and/or expansion. Finally, a progressive change is expected, according to which the adults’ use of strategies reflects the child’s increasing abilities. For example, adults may ask about the attributes of an object after the child has mastered the object label. Thus, the goal of dialogic book-reading is for children to eventually retell the story, as opposed to being passive listeners; and for adults to become active listeners rather than dominating the communicative exchange. The strategies the adults were trained to implement during dialogic book-reading in this study followed those of Whitehurst et al. (1988) and consisted of asking wh-questions as opposed to yes-no questions, to follow a correct response with another question, and to imitate, model, praise, and shadow the child’s interest. All of these are common language intervention
behaviors, as was described above. The final strategy recommended was to have fun (Whitehurst et al., 1988).

The books that have been suggested for use with dialogic book-reading are those with clear illustrations, relatively little text, and an engaging story (Zevenbergen, 2003). This is particularly relevant for the current study, since it has been suggested that children with language impairment may show little interest in shared book reading (Kaderavek & Justice, 2002; Kaderavek & Sulzby, 1998).

The beneficial effects of dialogic book reading on children’s expressive vocabulary scores have been empirically supported with monolingual children with and without language difficulties. This literature is summarized below. Early studies in dialogic book-reading were conducted by Whitehurst and colleagues with typically developing monolingual children. In Whitehurst et al. (1988), the parents of 15 children, aged 21 – 35 months, provided a dialogic book-reading intervention in individual sessions in their homes three to four times per week over the course of four weeks. There was also a control group of parents of the same size who read to their children using regular book reading strategies (i.e. reading the text alone) for the same length of time. Children in the intervention group had higher EOWPVT-R scores following the intervention than did children in the regular reading group. Nine-month follow-up testing showed that this increase in vocabulary scores was maintained. This format of intervention was extended by Arnold et al. (1994), who developed a new method of training parents using an instructional videotape and recruited a larger sample of 64 children, aged 21-35 months. Their study replicated previous results. In a recent study by Huebner (2000a), one hundred and twenty-nine children who were 24 – 35 months-old participated in a dialogic book reading intervention. The study also included a control group. As in Whitehurst’s group of studies, the
intervention group that received dialogic book reading had higher expressive vocabulary scores than the regular reading group, confirmed by a three-month follow-up. Although this study used the MBCDI as a screening tool for expressive vocabulary delay, it was not used to assess vocabulary gains at the posttest interval because by that time most of the children were older than 30 months, which is the cut-off age for the MBCDI norms.

Dialogic book-reading studies have also been conducted with monolingual children with language difficulties. Dale, Crain-Thoreson, Notari-Syverson, and Cole (1996) recruited 33 children, aged 36-72 months, who had been identified as having mild to moderate language delays. One group of children was provided with dialogic book-reading, and another group with a conversationally-based intervention, similar to the focused stimulation approach previously described. Following the 6 – 8 week-long treatment, children who received the dialogic book-reading intervention used a greater number of different words and were more verbally engaged than children in the conversational condition. In a second study, Huebner (2000b) recruited 61 children, aged 24 – 47 months, some of whom were typically developing and others who had mild to moderate language delays. Dialogic book-reading led to increases in children’s EOWPVT-R scores that were maintained at the three-month follow-up testing. However, given the mixed nature of the sample, it is possible that the gains achieved by the typically-developing children and those children with milder language delays may have obscured a lack of gains of children with more severe language delays, leading to an average increase in the EOWPVT-R scores in his study. The data provided do not allow examinations of children’s gain as a function of the severity of their language delay to be made.

A dialogic book-reading intervention with children with language difficulties was also provided in a daycare context. Hargrave and Sénéchal (2000) randomly assigned 36 preschoolers
who were late-talkers to regular and dialogic book-reading conditions in order to compare the effects of dialogic book-reading and regular reading on vocabulary learning. Dialogic book-reading was conducted in small groups of eight children. The findings of the study revealed that the intervention group who received dialogic book-reading learned more new vocabulary items introduced through books and made greater gains on \textit{EOWPVT-R} as compared to children who experienced the regular book reading.

The effectiveness of dialogic book-reading has also been compared across different contexts in several studies, including home and day care settings. Seventy-three children who were aged 36 – 41 months and had moderate-to-severe language delays participated in a study by Whitehurst et al. (1994). The children were divided into four groups that included preschool dialogic book-reading, preschool regular reading, combined preschool and home dialogic book-reading, and a control (play) group. At posttest, children in the two groups who had received dialogic book-reading had greater expressive vocabulary scores than children in the play group. Children provided with the combined dialogic book-reading in both preschool and home contexts had greater improvement scores than children who received intervention at preschool only. At six-month follow-up, expressive vocabulary growth was maintained for these children. A similar study was conducted by Lonigan and Whitehurst (1998) with 91 children, aged 33-60 months, who had mild to moderate language delays. Adults used dialogic book-reading with three groups of children in three contexts, including preschool, home, and combined preschool and home. There was also a control group of children who did not receive any reading intervention. Reading in the preschool condition was conducted in small groups of no larger than five children for 10 minutes per group per day, five times per week. Parents administered individual sessions on a voluntary basis, which lead to variation in treatment duration and intensity and was a methodological disadvantage of the study. The results showed that children in the combined
dialogic book-reading condition had higher expressive vocabulary scores at posttest than the children in the control or preschool dialogic book-reading groups alone.

Two meta-analyses of the existing dialogic book-reading literature have recently been conducted. The first meta-analysis included 16 studies published between 1988 and March, 2007 (Mol, Bus, de Jong, & Smeets, 2008). In all of the selected studies parents were trained to use dialogic book-reading strategies with their children who had no physical, cognitive, or sensory difficulties. Children’s age range was from 27.8 to 70.2 months. The selected studies also included control groups consisting of families reading in a typical fashion. Any studies in which interventions were provided by early childhood educators or teachers alone or in addition to home-based interventions were excluded (e.g., Hargrave & Sénéchal, 2000; Lonigan et al., 1999; Whitehurst et al., 1999; Whitehurst, Arnold, et al., 1994; Whitehurst, Epstein, et al., 1994; Valdez-Menchaca & Whitehurst, 1992). Eight of the 16 studies included in the meta-analysis reported measures of both children’s receptive and expressive vocabulary, seven reported only receptive vocabulary, and one focused on expressive vocabulary only. The total sample size for the meta-analysis consisted of 626 families, evenly divided into intervention and control groups.

The results of the meta-analysis indicated that, first, about 4% of variance in the outcome measures was explained by the intervention ($r = 0.20$). When the analyses were conducted only on studies that examined expressive vocabulary outcomes, the reported correlation was greater ($r = 0.29$), explaining approximately 8% of the variance. The strong effect size found in the original study by Whitehurst et al. (1988) was not replicated. However, the comparison of studies conducted by Whitehurst’s group and those by other authors did not reveal any consistent authorial bias. A moderate effect size was found for studies focusing on measures of expressive vocabulary ($d = 0.59$). For those studies that reported receptive vocabulary measures the effect...
size was small \((d = 0.22)\). Based on the results of this extensive meta-analysis, the authors concluded that dialogic reading may have had a more significant effect on expressive vocabulary than on receptive vocabulary.

The meta-analysis also provided some specific conclusions regarding various groups of children who have been provided with dialogic book-reading intervention. First, the effects of dialogic reading were found to be modest for children from disadvantaged economic backgrounds, putting them at greater risk for future language and literacy impairments \((d = 0.13)\) when compared to children from higher socio-economic status \((d = 0.53)\). This significant difference in the treatment effect sizes between the two groups was also revealed when analyses were restricted to studies focusing only on expressive vocabulary as opposed to both receptive and expressive vocabulary. The authors hypothesized that the strong educational background of higher SES parents may have contributed to their successful use of dialogic reading strategies. Parents with lower socio-economic status may have had difficulties implementing the required techniques (Mol, Bus, & de Jong, 2009). No studies to date have systematically investigated differences in the implementation of dialogic reading as a function of parental education levels.

Second, dialogic book-reading intervention may have a greater effect on preschool children’s vocabulary \((d = 0.50)\) rather than on that of older children \((d = 0.14)\). It is possible that the dialogic reading strategies for facilitating vocabulary learning implemented in the reviewed studies were not sufficient to facilitate higher level vocabulary development in more linguistically advanced populations. Furthermore, the authors hypothesize that when parents talk considerably more frequently than their children during reading sessions, children’s learning may not be optimized (Mol et al., 2009).
In order to examine the extent to which dialogic book-reading in the classroom environment supports the development of vocabulary and print knowledge as precursors to reading development, Mol et al., (2009) conducted a second meta-analysis. This meta-analysis included 31 (quasi-) experimental studies, in which dialogic book-reading intervention was provided by (how many) trained educators or researchers to a total of 2,049 children. The finding of this meta-analysis of particular relevance to the current study is that a moderate effect size was found for expressive language ($d = 0.54$), suggesting that quality and frequency of dialogic book-reading in the classroom were important for facilitating the development of oral language skills and vocabulary in children with more advanced language development. However, the effect sizes generated by the meta-analysis for the studies in which the intervention was provided by researchers or graduate students ($d = 0.79$ for oral language, and $d = 1.10$ for vocabulary) were significantly greater than those for the interventions that were conducted by trained educators ($d = 0.35$ for oral language, and $d = 0.28$ for vocabulary). In summary, these findings suggest that both the intervention context (home/school) and the characteristics of the agents of intervention (parent/educator) may need to be better tailored to respond to the needs of different populations of children depending on their language abilities.

The only study to apply a dialogic book-reading approach to children speaking a language other than English was conducted with a group of 20 Spanish-speaking children with moderate-to-severe language delays who received dialogic book-reading intervention in a daycare setting in Mexico (Valdez-Menchaca & Whitehurst, 1992). The positive impact of dialogic book-reading for these children was demonstrated by the finding that children in the experimental group had greater increases in their $EOWPVT-R$ scores than did children in the control group at the time of the posttest. Thus, dialogic book-reading may be an approach that can be effectively used in Spanish in addition to English.
To date, no dialogic book-reading studies have been conducted with bilingual children with or without vocabulary delays. However, the benefits of regular reading for 64 Spanish-English bilingual children aged 21 – 27 months have been demonstrated by Patterson (2002). Patterson (2002) examined the correlations of expressive vocabulary size with the frequency of being read to and the frequency of watching television at home in both languages. The frequency of being read to in each language was found to be associated with expressive vocabulary size in the same language, while the frequency of watching television did not have such an association with either language.

Research Questions and Hypotheses

Research focusing on children who have slow expressive vocabulary development is important because their social, emotional, and academic performance may be affected by their limited early vocabulary and language skills, regardless of whether they have experienced a spontaneous recovery in their vocabulary size. However, there is a paucity of research with children who have slow vocabulary development and speak languages other than English. Such research is important and urgently needed in the context of our increasingly multicultural North-American society. The current study is the first to apply a dialogic book-reading approach as a bilingual vocabulary intervention for young children with slow expressive vocabulary development. The study included an intervention group and a delayed-treatment control group. The research posed five questions.

Question 1

The first question concerns target word learning in English and Spanish separately:
(a) At posttest, will the children in the dialogic book-reading intervention group produce more target words in English than the children in the control group in a free-play and book-reading tasks?

(b) At posttest, will the children in the dialogic book-reading intervention group produce more target words in Spanish than the children in the control group in a free-play and book-reading tasks?

**Hypotheses**

(a) The children in the dialogic book-reading intervention group will produce more target words in English following the intervention than the children in the control group.

(b) The children in the dialogic book-reading intervention group will produce more target words in Spanish following the intervention than the children in the control group.

**Rationale**

No previous dialogic book-reading studies have included the assignment of individually selected target words for individual children. However, Hargrave and Sénéchal (2000) reported that the dialogic book-reading intervention group in their study learned more new vocabulary items introduced using books than a control group. In addition, target words were learned by late-talking children in a number of intervention studies that used approaches other than dialogic book-reading (Ellis Weismer et al., 1993; Girolametto et al., 1996a, 1996b).

**Question 2**

The second question concerns the maintenance of target vocabulary in English and Spanish separately:
(a) Will the children in the dialogic book-reading intervention group maintain their newly acquired English target vocabulary over a period of six weeks following the intervention?

(b) Will the children in the dialogic book-reading intervention group maintain their newly acquired Spanish target vocabulary over a period of six weeks following the intervention?

**Hypotheses**

(a) The children in the dialogic book-reading intervention group will maintain their new English target vocabulary over a period of the six weeks following the intervention.

(b) The children in the dialogic book-reading intervention group will maintain their new Spanish target vocabulary over a period of six weeks following the intervention.

**Rationale**

Previous studies reported that the children who had received dialogic book-reading intervention were able to maintain their overall vocabulary gains as measured by their scores on the *EOWPVT-R* (Dale et al., 1996; Whitehurst et al., 1994).

**Question 3**

The third question concerns gains in children’s overall vocabulary sizes, as reported by parents, in English and Spanish separately:

(a) At posttest, will the children in the dialogic book-reading intervention group gain more English vocabulary overall than the children in the control group?

(b) At posttest, will the children in the dialogic book-reading intervention group gain more Spanish vocabulary overall than the children in the control group?
(c) At posttest, will the children in the dialogic book-reading intervention group make greater gains in their conceptual vocabulary than the children in the control group?

**Hypotheses**

(a) The children in the dialogic book-reading intervention group will gain more English vocabulary overall than the children in the control group.

(b) The children in the dialogic book-reading intervention group will gain more Spanish vocabulary overall than the children in the control group.

(c) The children in the dialogic book-reading intervention group will make greater gains in their conceptual vocabulary than the children in the control group.

**Rationale**

Several studies have reported generalized gains in children’s vocabulary, as measured by their scores on the *EOWPVT-R* (Arnold et al., 1994; Dale, Crain-Thoreson, Notari-Syverson, & Cole, 1996; Huebner 2000a, b).

**Question 4**

The fourth question addresses the balance in the children’s vocabulary sizes in two languages, and asks if the balance of English to Spanish vocabulary of the children in the dialogic book-reading intervention group will remain the same from time of intake to posttest?

No hypothesis was formulated for this question because no previous research has examined the effect of a bilingual intervention on children’s language dominance.

**Question 5**

The fifth question is based on the participant mothers’ evaluations of the intervention:
(a) Will the mothers of children in the intervention group express satisfaction with the dialogic book-reading intervention?

(b) Will the mothers’ evaluations support the outcomes of the quantitative measures of the dialogic book-reading intervention for the children in the intervention group?

Hypotheses

(a) The mothers of children in the intervention group will express satisfaction with the dialogic book-reading intervention.

(b) The mothers’ evaluations will support the outcomes of the quantitative measures of the dialogic book-reading intervention for the children in the intervention group.

Rationale

One previous study examined consumer satisfaction data collected from 32 mothers whose children participated in a language intervention that was focused on parents (Girolametto, Tannock, & Siegel, 1993). All the mothers in that study believed that the program had been useful in improving their own communication, and most of the mothers also stated that positive changes occurred in their children’s communication. This provided evidence for the social validation of the parent-focused approach in the current study.
CHAPTER 2: METHODOLOGY

This study examined the feasibility of using a dialogic book-reading intervention approach for the facilitation of English and Spanish vocabulary development of young bilingual children with slow expressive vocabulary development. A feasibility study that is focused on treatment is a small scale investigation that may precede the launch of a full efficacy study with the purpose of determining if the proposed methodology is appropriate and if the intervention has the potential to produce positive results (Girolametto, Weitzman, Lefebvre, & Greenberg, 2007). As compared to an efficacy study, a feasibility study does not have the potential to detect cause and effect relationships between treatment and outcome because of its lower degree of experimental control. A higher degree of control in an efficacy study may be applied through the use of randomized sampling, blind evaluation, and the homogeneity of participants’ characteristics. However, these methodological strategies also make efficacy studies more complicated with respect to participant recruitment as well as being potentially more expensive and time-consuming than feasibility studies. Thus, a feasibility study may be conducted to provide valuable information to determine whether the proposed project may be successful and clinically practical before a significant investment of resources is made. The methodology of the current feasibility study will be discussed in this chapter. This information will include the recruitment procedures, participants’ characteristics, target selection, testing, reliability, and intervention procedures.

Recruitment

The child participants of the current study were recruited from the waiting list of an organization coordinating speech-language services for children in a large Canadian metropolitan center. The project passed several rounds of ethics review, with ethics approval granted both by
the university in which the research was conducted and by the organization coordinating the speech-language services.

Children were initially referred to the organization either by their pediatricians or their parents. In order for a referred child to be placed on the waiting list for speech-language services, his or her parents must have been contacted by the intake staff of the collaborating agency. As a result, the waiting list was comprised of children whose parents had confirmed that they had concerns about their child’s vocabulary or language development and had indicated their desire for the child to receive a speech and/or language assessment.

The intake workers of the organization in question were asked to search their databases to find families matching three initial inclusion criteria. The potential participating children (a) were 18 to 42 months of age, (b) spoke Spanish at home, and (c) did not produce two-word phrases or produced them infrequently according to parent report. Based on the results of these searches, an invitation letter was distributed to the families of the children who matched the selection criteria. The letter was written in Spanish and included the phone number of the agency intake workers. The recruitment letter can be found in Appendix A. The documents associated with the study that were made available to the families in Spanish were written in English and translated by the primary investigator and subsequently verified by a native speaker of Spanish.

Parents who were interested in participating in the study contacted the intake workers. A telephone script was provided for the intake workers in preparation for the parents’ calls. This script can be found in Appendix B. When the parents expressed interest in the project, the intake workers read the script to them. If the parents agreed to be contacted by the primary investigator, the intake workers forwarded the parents’ phone numbers to the investigator. The primary investigator then phoned the parents, and carefully described the study to them, answering any
questions that they had. All parents were able to communicate in English during all phone conversations. Once parents agreed to participate, the investigator scheduled the first appointment in the family’s home. None of the families that were contacted refused to participate. 

During the first visit to the family’s home, the study was described in further detail to the children’s parents, when necessary, in Spanish. An information letter describing the study was given to the parents in Spanish, provided in Appendix C. Parents who agreed to have their child participate in the study were asked to sign a consent form and a separate videotaping consent form, which were available in both Spanish and English. The English and Spanish consent forms can be found in Appendix D.

Twelve participants were recruited for the study. The assignment of children to either the intervention or control groups was conducted according to the order of their enrolment. The children were recruited in six pairs. Within each pair, the child who was recruited first was assigned to the dialogic book-reading intervention condition, and the second child was assigned to a delayed-treatment control condition. This control group served to ensure that any demonstrated effects could be attributed to treatment and not to children’s maturation. It should be noted that this procedure for the assignment of participants to conditions is methodologically weaker than random assignment but was necessary in order to enroll a maximum number of participants for the study.

The children in the intervention condition were provided with the dialogic book-reading intervention by the investigator in English and the child’s mother in Spanish. The mothers of the children in the control condition received training in dialogic book-reading following the posttest. Children in the control condition did not receive the English intervention by the
experimenter. Instead, the children’s mothers received the same Spanish training as the mothers of children in the dialogic book-reading intervention group.

Inclusion Criteria

Once the parents had signed the consent forms, the primary investigator determined whether the child met all the study eligibility criteria using information collected through an intake protocol. A summary of the four inclusion criteria of the study, which included parental concern about children’s vocabulary development, bilingualism, typical medical history and hearing, and typical adaptive behavior skills, and the corresponding assessment procedures are presented below. The results of the intake assessment were discussed in person with the parents, and the parents of any children who were determined not to eligible were informed that their participation was not required. Two children were not accepted in the study based on the results of the intake assessment. One of these children was trilingual, and the second child’s vocabulary size was deemed to be appropriate for his age (>50th percentile on the MBCDI and MIDHC).

Parental Concern

All participating children were on the waiting list of an agency providing preschool speech-language services. As discussed above, for any child to be included in the study, the initial referral was confirmed by his or her parents indicating their continued concern for the child’s vocabulary development.

Medical History and Hearing

All children had an uneventful medical history and normal hearing, with no episodes of otitis media during the course of the study that did not resolve after one week. A standard medical case history form for the child was completed by the parent in an interview format
(Appendix E). Hearing screening of the child was conducted bilaterally using a distortion product otoacoustic emissions Bio-logic® 580-OAEAX5 screener. All children who were recruited passed the hearing screening.

There were no enrolled children who did not meet these initial inclusion criteria. However, one child had an episode of otitis media shortly after his enrolment into the study that did not resolve within a week, and his participation had to be discontinued. The child was referred to an ear-nose-throat professional by the investigator.

Children who showed any signs of developmental delay or autism were not eligible for the study. One child was excluded from the study based on autistic-like behaviors. These behaviors were observed by the primary investigator, and the videotape of this child’s pretest was further discussed with the supervisory committee prior to exclusion. The child’s mother was informed about the decision and was advised to further discuss his language and communication with her family physician.

**Bilingualism**

Children’s bilingual status was confirmed from family characteristics questionnaires (Appendix F). The inclusion criteria for the study were that the child interacted in Spanish for at least 30 hours per week, and in English for at least 25 hours per week. All children met this inclusion criterion. Only one child was not accepted into the study based on this criterion, for the reason that he was trilingual, learning English, Spanish, and Arabic, as previously mentioned.

**Typical Adaptive Behavior Skills**

Children’s adaptive behavior skills were assessed using the *Vineland Adaptive Behavior Scales Second Edition, Vineland-II* (Sparrow, Cicchetti, & Balla, 2005). This test evaluates
children’s skills in four domains including daily living, socialization, motor skills, and communication (i.e., language), each of which will be discussed separately. The standardized scores of the Vineland-II form a normal distribution with a mean of a 100, and a standard deviation of 15.

Statistical analyses were conducted on the children’s characteristics to ensure that the intervention and the control groups did not differ significantly on any of these variables. The Mann-Whitney U non-parametric procedure was used for all of the analyses because of a large variability in the sample.

All the children met the inclusion criterion of typical adaptive behavior skills in the domains of Vineland-II that did not involve language use (daily living and motor skills domains), based on their standardized scores. The group data on children’s standard scores on the Vineland-II are presented in Table 3 below. The individual data can be found in Appendix G.

Table 1

<table>
<thead>
<tr>
<th></th>
<th>Daily Living</th>
<th>Socialization</th>
<th>Motor</th>
<th>Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intervention Group</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>101</td>
<td>89.8</td>
<td>102.8</td>
<td>86.3</td>
</tr>
<tr>
<td>Median</td>
<td>100</td>
<td>91.5</td>
<td>102</td>
<td>86.5</td>
</tr>
<tr>
<td>Min. – Max.</td>
<td>94 – 109</td>
<td>84 - 96</td>
<td>97 - 117</td>
<td>67 – 103</td>
</tr>
<tr>
<td><strong>Control Group</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>94</td>
<td>83</td>
<td>97.8</td>
<td>80</td>
</tr>
<tr>
<td>Median</td>
<td>95</td>
<td>83.5</td>
<td>91.5</td>
<td>82.5</td>
</tr>
<tr>
<td>Min. - Max.</td>
<td>91 – 102</td>
<td>75 - 89</td>
<td>84 - 127</td>
<td>57 – 110</td>
</tr>
</tbody>
</table>

*Note: Vineland scores form a normal distribution (mean = 100, standard deviation = 15)*
Based on results obtained from administering the *Vineland-II*, all of the children were performing at average levels in all domains with the exception of communication and socialization, indicating that they were typically developing in the areas of development assessed by the *Vineland-II* that did not involve language use. None of the parents expressed any concerns about their children’s global development and cognition.

All children scored within one standard deviation from the mean on the daily living and motor domains of the *Vineland-II*. This range of standard deviation is indicated to be normal in the test manual. Furthermore, no statistically significant differences were revealed between the two groups. For the daily living skills domain, both groups obtained, on average, typical scores that fell within one standard deviation of the mean (Mann-Whitney $U = 6.5$, $p = 0.065$). Both groups of children also scored within the average range in the motor skills domain (Mann-Whitney $U = 12.5$, $p = 0.394$).

The children scored within two standard deviations of the mean on the socialization domain because many of the *Vineland-II* questions related to socialization involve aspects of language use. This range of standard deviations is indicated to be normal to moderately low in the test manual. The intervention children scored within the lower end of the average range, whereas the control children scored on the borderline between the average range and moderately low range; however, these means were not significantly different (Mann-Whitney $U = 8.5$, $p = 0.132$).

On the communication domain of *Vineland-II*, both groups of children had average scores that fell in the low end of the normal range, with no significant difference between the means of the two groups (Mann-Whitney $U = 15.5$, $p = 0.688$). However, one child in the intervention group and two children in the control group had a communication delay (i.e., scored
lower than two standard deviations below the mean). Given that the children in the study were referred for language services, it was expected that some children would have communication difficulties that would be identified by this test.

**Children’s Demographic Characteristics**

The children in the intervention group ranged from 22 to 42 months (on average, 27.8), and the control children were from 24 to 41 (on average, 31.7) months old. This age difference was not statistically significant (Mann-Whitney U = 11.5, p = 0.288). The children’s ages, gender, and birth order are presented in Table 2. Of the 12 children who participated in the study there were two girls and ten boys, which is consistent with the finding that vocabulary delays are more prevalent in boys than in girls (Paul, 1991; Whitehurst & Fischel, 1994). The two female participants were both assigned to the intervention condition based on the procedure for group assignment.

### Table 2

*Children’s ages, gender, and birth order*

<table>
<thead>
<tr>
<th>Intervention Group</th>
<th>Age (months)</th>
<th>Gender</th>
<th>Birth order</th>
<th>Age (months)</th>
<th>Gender</th>
<th>Birth order</th>
</tr>
</thead>
<tbody>
<tr>
<td>ID1</td>
<td>25</td>
<td>Boy</td>
<td>Third</td>
<td>ID7</td>
<td>35</td>
<td>Boy</td>
</tr>
<tr>
<td>ID2</td>
<td>24</td>
<td>Boy</td>
<td>First</td>
<td>ID8</td>
<td>27</td>
<td>Boy</td>
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<td>ID3</td>
<td>22</td>
<td>Boy</td>
<td>Only</td>
<td>ID9</td>
<td>27</td>
<td>Boy</td>
</tr>
<tr>
<td>ID4</td>
<td>27</td>
<td>Boy</td>
<td>Second</td>
<td>ID10</td>
<td>36</td>
<td>Boy</td>
</tr>
<tr>
<td>ID5</td>
<td>27</td>
<td>Girl</td>
<td>Only</td>
<td>ID11</td>
<td>24</td>
<td>Boy</td>
</tr>
<tr>
<td>ID6</td>
<td>42</td>
<td>Girl</td>
<td>Only</td>
<td>ID12</td>
<td>41</td>
<td>Boy</td>
</tr>
<tr>
<td><strong>Mean</strong></td>
<td><strong>27.8</strong></td>
<td></td>
<td></td>
<td><strong>Mean</strong></td>
<td><strong>31.7</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Median</strong></td>
<td><strong>26</strong></td>
<td></td>
<td></td>
<td><strong>Median</strong></td>
<td><strong>31</strong></td>
<td></td>
</tr>
</tbody>
</table>
Exposure to English and Spanish

The number of hours of exposure to each language was calculated as follows: the amount of sleep estimated for toddlers was 12 hours per day, which includes two hours for a nap, and ten hours of sleep. Therefore, given that there are 168 hours in a week, the children spent 84 hours per week awake. The average exposure of the children to each language is presented in Table 3.

Table 3

Sources of children’s bilingual language input

<table>
<thead>
<tr>
<th>Input Source</th>
<th>Hours per week</th>
<th>Input Source</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intervention</strong></td>
<td></td>
<td><strong>Spanish</strong></td>
<td></td>
</tr>
<tr>
<td>ID1</td>
<td>Mother, grandparents</td>
<td>54</td>
<td>Mother (single)</td>
</tr>
<tr>
<td>ID2</td>
<td>Father</td>
<td>27</td>
<td>Mother</td>
</tr>
<tr>
<td>ID3</td>
<td>Daycare</td>
<td>35</td>
<td>Parents</td>
</tr>
<tr>
<td>ID4</td>
<td>Daycare</td>
<td>35</td>
<td>Parents</td>
</tr>
<tr>
<td>ID5</td>
<td>Mother (single)</td>
<td>42</td>
<td>Mother (single)</td>
</tr>
<tr>
<td>ID6</td>
<td>Daycare</td>
<td>35</td>
<td>Parents</td>
</tr>
<tr>
<td>Mean</td>
<td>38</td>
<td></td>
<td>46</td>
</tr>
<tr>
<td>Median</td>
<td>35</td>
<td></td>
<td>49</td>
</tr>
<tr>
<td>Min. – Max.</td>
<td>27 – 54</td>
<td></td>
<td>30 – 57</td>
</tr>
<tr>
<td><strong>Control</strong></td>
<td></td>
<td><strong>Spanish</strong></td>
<td></td>
</tr>
<tr>
<td>ID7</td>
<td>Siblings and friends</td>
<td>42</td>
<td>Parents</td>
</tr>
<tr>
<td>ID8</td>
<td>Parents</td>
<td>25</td>
<td>Daycare, parents</td>
</tr>
<tr>
<td>ID9</td>
<td>Daycare</td>
<td>35</td>
<td>Mother (single)</td>
</tr>
<tr>
<td>ID10</td>
<td>Daycare</td>
<td>35</td>
<td>Mother (single)</td>
</tr>
<tr>
<td>ID11</td>
<td>Siblings and friends</td>
<td>42</td>
<td>Parents</td>
</tr>
<tr>
<td>ID12</td>
<td>Daycare</td>
<td>35</td>
<td>Parents</td>
</tr>
<tr>
<td>Mean</td>
<td>35.7</td>
<td></td>
<td>48.3</td>
</tr>
<tr>
<td>Median</td>
<td>35</td>
<td></td>
<td>49</td>
</tr>
<tr>
<td>Min. – Max.</td>
<td>25 – 42</td>
<td></td>
<td>42 – 59</td>
</tr>
</tbody>
</table>
The hours of exposure to English and Spanish per week were obtained through the parent reports of the amount of time the child spent in each parent’s and other family members’ care, as well as in early childhood education. The average amounts of exposure to each language at the time of intake were not significantly different between the intervention and the control group (both English and Spanish: \( U = 16.5, p = .818 \)).

Half of the children in each group attended full-time English language day-care (having started at the average age of 21 months) but interacted with their family in Spanish. These children received 35 hours per week of exposure to English language input, and 49 hours per week of Spanish input. The children with maximal Spanish exposure (57-59 hour/week) were 1) a child attending a Spanish-speaking daycare, with his bilingual parents providing a balanced exposure to English at home, resulting in 25 hours per week of English exposure (control child ID8), and 2) a child staying at home with a Spanish-speaking mother, and communicating with his English-speaking father in the evenings (intervention child ID2). The children with the most English exposure (42 – 54 hour/week) were: two children of single mothers speaking both languages to their child who was cared for at home (intervention children ID1 and ID5), and two children who stayed at home and spoke English with their older siblings and Spanish with their parents (control children ID7 and ID11). Nonetheless, the exposure of all children to each language adhered to the inclusion criterion regarding the overall amount of language input (at least 30 hours per week in Spanish, and at least 25 hours per week in English). In each group, there were three children who attended a formal English-speaking daycare, and three children being cared for at home.
Children’s Vocabulary

Standardized measures of vocabulary in the form of parental reports were used for this study. These measures are considered appropriate for vocabulary assessment of bilingual children, while also being widely used in previous research with late-talking children. To assess the children’s English vocabulary, the *MacArthur-Bates Communicative Development Inventories, (MBCDI)* (Fenson et al., 1993) was completed by the parents. An adapted version of this tool, *MacArthur Inventarios del Desarrollo de Habilidades Comunicativas, (MIDHC)* (Jackson-Maldonado et al., 1992) was used to assess the children’s vocabulary in Spanish. These vocabulary assessment tools served to estimate the children’s expressive vocabulary sizes in each language, and provided the normative values used to determine the children’s level of vocabulary development at intake.

The infant forms of the *MBCDI* and *MIDHC* were used for this study, even though the children were in the ages for which the toddler form might have been used. This choice was made since the infant form allowed parents to also indicate whether or not the item was known receptively. The children’s receptive ability was considered to be important for fully describing the profiles of children in the sample. Second, it was expected that the children referred for language services would have small vocabularies, and thus the shorter lists were used to decrease the potential stress on the parents that may have resulted from completion of a longer and more elaborate form. Whenever the norms were used to calculate the percentiles, the number of words reported on the shorter forms was proportionally increased to account for the greater number of opportunities for vocabulary items on the longer forms. This was done according to the following formula. For English norms, Toddler Form Count = (Infant Form Count ÷ 396) × 680. For Spanish forms, Toddler Form Count = (Infant Form Count ÷ 428) × 680. This formula was
developed in consultation with Dr. Marchman, one of the original authors of the MBCDI (V.A. Marchman, personal communication, May 27, 2008).

In the majority of dialogic book-reading studies conducted previously, the Expressive One-Word Picture Vocabulary Test Revised (Gardner, 1990) was chosen as the assessment instrument for the expressive vocabulary. Unlike the previous studies that examined the change in children’s standard scores, the current investigation focused on estimating the sizes of children’s initial overall vocabulary. The vocabularies of children participating in the current study were so limited that it was possible to achieve these estimates using MBCDI and MIDHC. These reports were deemed to be more appropriate instruments for this study because they provided inventories of children’s vocabulary items as opposed to standard scores. Furthermore, the EOWPVT-R has been found to have too high a basal for young children with limited vocabularies (Hargrave & Sénéchal, 2000). Hargrave and Sénéchal (2000) were forced to use an automatic basal for the children in their study because 55% of those children failed to obtain a basal score. Therefore, there was a concern related to a floor effect in using the EOWPVT-R with children who had very limited vocabularies, such as some children in the current study.

Expressive Vocabulary

As previously discussed, the literature in the field of bilingualism describes two approaches to measure a bilingual child’s expressive vocabulary size. The first approach is to add the approximate number of words produced in each of the child’s two languages (e.g., Junker & Stockman, 2002). The second way is to estimate the child’s conceptual vocabulary knowledge by subtracting the number of translation equivalents from the sum of total number of words known by the child in each language (Pearson & Fernandez, 1994; Pearson et al., 1993, 1995a). For the current study, conceptual vocabulary is reported in addition to the number of
items produced by the children in each of their two languages separately, based on parent report. Summary data regarding the children’s vocabulary sizes in both languages and their conceptual vocabulary are presented in Table 4. Individual data are presented in Appendix H. The two groups did not differ significantly on these measures at the time of intake (English vocabulary: Mann-Whitney $U = 18.0$, $p = 1.0$; Spanish vocabulary: Mann-Whitney $U = 17.0$, $p = 0.873$; conceptual vocabulary: Mann-Whitney $U = 17.0$, $p = 0.873$).

Table 4

<table>
<thead>
<tr>
<th></th>
<th>English</th>
<th>Spanish</th>
<th>English to Spanish Ratio</th>
<th>Conceptual</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intervention group</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>92.7</td>
<td>35.8</td>
<td></td>
<td>108.3</td>
<td></td>
</tr>
<tr>
<td>Median</td>
<td>25</td>
<td>28.5</td>
<td></td>
<td>41.5</td>
<td></td>
</tr>
<tr>
<td>Min. – Max.</td>
<td>4 – 335</td>
<td>3 – 90</td>
<td></td>
<td>0.2 – 4.3</td>
<td>6 – 349</td>
</tr>
<tr>
<td><strong>Control group</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>54.8</td>
<td>51.7</td>
<td></td>
<td>99.0</td>
<td></td>
</tr>
<tr>
<td>Median</td>
<td>39.5</td>
<td>34</td>
<td></td>
<td>115</td>
<td></td>
</tr>
<tr>
<td>Min. – Max.</td>
<td>0 – 137</td>
<td>0 – 157</td>
<td></td>
<td>0.3 – 8.6</td>
<td>0 – 199</td>
</tr>
</tbody>
</table>

The ratio of children’s English to Spanish vocabulary was also computed. The children whose English to Spanish vocabulary ratios were closer to 1 were considered to have more balanced bilingual vocabularies. The individual data on English to Spanish vocabulary ratios can be found in Appendix H. The ratio of English to Spanish vocabulary of the children in the intervention and the control groups did not differ (Mann-Whitney $U = 16.0$, $p = 0.749$).
**Receptive Vocabulary**

Receptive vocabulary sizes at the time of intake were calculated based on the total number of words parents indicated as being understood in each language on the *MBCDI* in English, and on the *MIDHC* in Spanish. This information was obtained to ensure that the two groups of children did not differ significantly in their receptive vocabulary knowledge at the time of intake. The group data is presented in Table 5. The individual information on children’s receptive vocabulary sizes at the time of intake is found in Appendix I.

Table 5

*Estimates of receptive vocabulary based on parent reports*

<table>
<thead>
<tr>
<th></th>
<th>English Receptive</th>
<th>Spanish Receptive</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intervention Group</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>180</td>
<td>175.2</td>
</tr>
<tr>
<td>Median</td>
<td>117</td>
<td>124</td>
</tr>
<tr>
<td>Min. – Max.</td>
<td>39 – 372</td>
<td>36 – 324</td>
</tr>
<tr>
<td><strong>Control Group</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>143.5</td>
<td>111.2</td>
</tr>
<tr>
<td>Median</td>
<td>102.5</td>
<td>100.5</td>
</tr>
<tr>
<td>Min. – Max.</td>
<td>39 – 313</td>
<td>52 – 142</td>
</tr>
</tbody>
</table>

These vocabulary sizes in both English and Spanish were not significantly different between the two groups at the beginning of the study (English: Mann-Whitney *U* = 16.5, *p* = 0.810; Spanish: Mann-Whitney *U* = 16.0, *p* = 0.748).
Summary of Children’s Vocabulary and Language

The vocabulary and communication development assessment results for the 12 participating children are summarized in Table 6. Of these, there were eight children aged below 30 months, for whom the MBCDI norms could be used. Of these eight children, three had vocabularies on the low end of the normal range (ID3, ID4, and ID8), and five were late-talking children based on the criteria discussed (ID1, ID2, ID5, ID9, and ID11). Of the children who had higher level of vocabulary development (above the 10th percentile), two were in the intervention group, and one child was in the control group. It should be emphasized that all children’s parents had nevertheless indicated concern for their vocabulary development.

For three of the four older children, the results of the communication domain of Vineland-II (Sparrow et al., 2005) indicated a communication delay (ID6, ID10, ID12), and the fourth child had a communication score within the normal range but a very low vocabulary size relative to his age (ID7).
Table 6

Summary of the referred children’s expressive vocabulary development

<table>
<thead>
<tr>
<th>Age</th>
<th>Gender</th>
<th>Conceptual Vocabulary</th>
<th>Percentile (conceptual vocabulary size)</th>
<th>Late-talker: &lt;30 months &amp; vocab. &lt;10th %</th>
<th>Language delay: &lt;-2 SD Vineland-II</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Intervention Group</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ID1</td>
<td>25</td>
<td>M</td>
<td>31</td>
<td>0 – 5</td>
<td>Yes</td>
</tr>
<tr>
<td>ID2</td>
<td>24</td>
<td>M</td>
<td>21</td>
<td>0 – 5</td>
<td>Yes</td>
</tr>
<tr>
<td>ID3</td>
<td>22</td>
<td>M</td>
<td>52</td>
<td>20 – 25</td>
<td>No</td>
</tr>
<tr>
<td>ID4</td>
<td>27</td>
<td>M</td>
<td>191</td>
<td>30 – 35</td>
<td>No</td>
</tr>
<tr>
<td>ID5</td>
<td>27</td>
<td>F</td>
<td>6</td>
<td>0 – 5</td>
<td>Yes</td>
</tr>
<tr>
<td>ID6</td>
<td>42</td>
<td>F</td>
<td>349</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Control Group</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ID7</td>
<td>35</td>
<td>M</td>
<td>88</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>ID8</td>
<td>27</td>
<td>M</td>
<td>199</td>
<td>15 – 20</td>
<td>No</td>
</tr>
<tr>
<td>ID9</td>
<td>27</td>
<td>M</td>
<td>22</td>
<td>0 – 5</td>
<td>Yes</td>
</tr>
<tr>
<td>ID10</td>
<td>36</td>
<td>M</td>
<td>142</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>ID11</td>
<td>24</td>
<td>M</td>
<td>0</td>
<td>0 – 5</td>
<td>Yes</td>
</tr>
<tr>
<td>ID12</td>
<td>41</td>
<td>M</td>
<td>143</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Note. N/A = information not available because the norms of MBCDI could not be applied to children over 30 months of age

Mothers’ Demographic Characteristics

The participating mothers’ demographic information was obtained from the family characteristics questionnaires that were administered at intake. This information is summarized in Table 7.
Table 7
Mothers’ Demographic Characteristics

<table>
<thead>
<tr>
<th>ID</th>
<th>Age</th>
<th>Education</th>
<th>Employment</th>
<th>Past Employment</th>
<th>Country of Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>ID1</td>
<td>31</td>
<td>Diploma</td>
<td>Staying at home</td>
<td>Concierge</td>
<td>Chile</td>
</tr>
<tr>
<td>ID2</td>
<td>32</td>
<td>Post-secondary</td>
<td>Staying at home</td>
<td>Teacher</td>
<td>Spain</td>
</tr>
<tr>
<td>ID3</td>
<td>24</td>
<td>Masters’ degree</td>
<td>Social worker</td>
<td>Still working</td>
<td>Canada</td>
</tr>
<tr>
<td>ID4</td>
<td>35</td>
<td>High-school</td>
<td>Customer service</td>
<td>Still working</td>
<td>Argentina</td>
</tr>
<tr>
<td>ID5</td>
<td>42</td>
<td>High-school</td>
<td>Babysitter</td>
<td>Still working</td>
<td>Peru</td>
</tr>
<tr>
<td>ID6</td>
<td>43</td>
<td>Diploma</td>
<td>Superintendent</td>
<td>Still working</td>
<td>Colombia</td>
</tr>
<tr>
<td>Mean</td>
<td>34.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median</td>
<td>33</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ID</th>
<th>Age</th>
<th>Education</th>
<th>Employment</th>
<th>Past Employment</th>
<th>Country of Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>ID7</td>
<td>34</td>
<td>High-school</td>
<td>Staying at home</td>
<td>Never worked</td>
<td>Colombia</td>
</tr>
<tr>
<td>ID8</td>
<td>38</td>
<td>Post-secondary</td>
<td>Software developer</td>
<td>Still working</td>
<td>Mexico</td>
</tr>
<tr>
<td>ID9</td>
<td>24</td>
<td>Post-secondary</td>
<td>Patient coordinator</td>
<td>Still working</td>
<td>Chile</td>
</tr>
<tr>
<td>ID10</td>
<td>45</td>
<td>Diploma</td>
<td>Staying at home</td>
<td>Secretary</td>
<td>Chile</td>
</tr>
<tr>
<td>ID11</td>
<td>32</td>
<td>High-school</td>
<td>Cleaner</td>
<td>Still working</td>
<td>Ecuador</td>
</tr>
<tr>
<td>ID12</td>
<td>32</td>
<td>Post-secondary</td>
<td>Accountant</td>
<td>Still working</td>
<td>Chile</td>
</tr>
<tr>
<td>Mean</td>
<td>34.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median</td>
<td>33</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The mothers’ average age was 34.5 years for the intervention group and 34.2 years for the control group. The mothers’ levels of education varied from completion of high-school to a Masters’ degree. In each group, two mothers had a high-school education and four mothers were educated at least at the post-secondary level. Similarly, in each group, three mothers were stay-at-home mothers and three mothers were working full-time. Thus, maternal education and occupation were equivalent across groups.
All of the mothers spoke Spanish fluently. All of the mothers except one immigrated to Canada from a variety of countries including Argentina, Chili, Colombia, Ecuador, Mexico, Peru, and Spain. The mother of ID3 was married to a Mexican man, and Spanish was spoken exclusively at home between the parents and to the child.

Measures

The measures of the study were derived from (a) the completion of the vocabulary reports by the parents, (b) the elicitation activities gauging the target word learning of the children, and (c) the parent satisfaction questionnaire and were calculated as follows:

(a) The vocabulary reports were collected at intake, at the posttest at the end of the intervention phase, and at the delayed posttest, conducted six weeks after the posttest. The initial report was used to estimate the children’s vocabulary sizes and select target words. The gains in children’s vocabulary sizes were calculated by subtracting the number of words reported by the parents at the pretest from those at the posttest.

(b) The elicitation activities were conducted with the children at three points in time. At the pretest, they were used to finalize the target lists used in the intervention. During the posttest the elicitation activities were used to assess target word learning. Finally, after the six-week-long period following the posttest, these assessment activities were repeated to evaluate the maintenance of the learned targets.

(c) The satisfaction questionnaire was administered at the end of the intervention phase (posttest).

Procedures

There were four individual assessment sessions conducted with each child and their parents during the course of the study, including an intake, a pretest, a posttest, and a delayed
posttest session. Each of these sessions lasted from 60 to 90 minutes. All of the sessions took place in the children’s homes in the areas where the children would normally play with their families. The procedures described in this section are presented according to the order in which they took place during the assessment sessions. The timeline of the study is summarized in the form of a flow chart in Figure 2.

Figure 2. The timeline of the study
Target Vocabulary Selection

The target vocabulary selection process began following the completion of the MBCDI English and MIDHC Spanish vocabulary reports by the parents at intake. The potential target vocabulary for each child consisted of items on the MBCDI and MIDHC forms that were indicated as not currently produced by the child. For each child, seven nouns and three verbs were targeted. The words were chosen from different semantic categories included in the measures, such as toys, animals, food, and clothing. The number of items chosen from each category varied among the children since the composition of children’s vocabulary at intake also varied across these categories.

Phonological characteristics and receptive knowledge of the targets were not taken into consideration in the target selection. Instead, the primary principle in target vocabulary selection was functionality. Nouns were all concrete, culturally appropriate, and typically encountered in a child’s daily life. Only concrete verbs were selected, which could be easily depicted in pictures in children’s books, such as “eat” or “sleep”. Verbs were selected in addition to nouns as part of target vocabulary to encourage the children to produce two-word utterances and to model early acquired semantic relations through those phrases. English verbs were consistently modeled using the present progressive tense (‘He is running!’), and Spanish verbs were modeled in the third person using the simple present tense (‘Corre!’).

Parents of the children in the intervention group were given an opportunity to approve of the target words selected for their child and to suggest any target words they may have wanted their children to learn (e.g., food or clothing items). All parents indicated that the selected words would be useful for their children. The pretest was scheduled as soon as the primary investigator chose the preliminary lists of target words from the vocabulary reports.
None of the selected target words were translation equivalents for any of the children; that is, the children were not taught a word in Spanish if they were already assigned a word with the same meaning in English. Target words selected for the control and intervention groups did not differ in any observable way. In fact, there was a substantial degree of overlap between the words selected for the intervention and control groups. Approximately 25% of all items were selected for more than one child in both groups. However, based on the focus on individualized target word selection approach, the rest of the items were selected for one to three children in either group with no overlap with the other group. This information is presented in Appendix J. The non-overlapping target words may be deemed equivalent between the two groups because all of the target words were chosen from the MBCDI/MIDHC items, and thus they were among the early acquired words typically-developing children acquire naturally. In addition, the parents of both groups were also asked to review the target words with respect to their child’s interests and dislikes. However, the parents of the children in the control group were asked to do so at posttest because they were not made aware of the target words during the control phase so that they would not draw their children’s attention to these specific words. Both groups of parents confirmed that their children did not have any aversion to the target items that were selected.

**Pretest**

The purpose of pretest was to verify that the words in the final vocabulary list were truly not part of the children’s expressive vocabulary prior to the start of the intervention. A set of words was chosen for each child in both languages before the pretest that included at least six verbs and 14 nouns. The list was made larger than the eventual final target vocabulary list to allow for the possibility of eliminating any words the child might produce spontaneously during the pretest.
The verification activities in each language took place in two contexts to ensure that the child was unable to produce the potential target words. The first activity in each language was free play with toys, and the second activity was naming pictures in a book. These activities were designed to be enjoyable for the children and the children were given breaks during testing as required. These verification activities were videotaped. The children in both the intervention and the control groups participated in the pretest according to a prescribed sequence of activities.

First, the children were videotaped while engaged in a free play activity that lasted up to 15 minutes and involved the mother and the primary investigator. The children played with a set of age-appropriate and appealing toys. The toys were placed in two colorful plastic buckets, one for each language. The primary investigator and the mothers prompted the children to label the objects or actions. The list of toys from these sets can be found in Appendix K.

During the first part of the free play activity, the children and adults were videotaped playing with the toys from the first bucket while speaking English. The primary investigator took a leading role in the play in the English context; however, the mother was free to participate to increase the child’s comfort level and to observe the model provided by the investigator. During the second part, the mothers led the interaction. They played with the toys from the second bucket and spoke Spanish, following the model provided by the primary investigator. The general pattern of interaction during this task consisted of showing the child a bucket of toys, inviting him or her to see what it contained and to take the toys out of the bucket one at a time. When the child took a toy out of the bucket, the adult asked the child to name that toy, saying ‘What is this?’ The verbs were generally modeled by using wind-up toys, demonstrating the action (e.g. brushing child’s or adult’s hair with a brush), or moving the toy (e.g., holding a bird
and waving with it to make it ‘fly’). The prompt for eliciting the verbs was in the present progressive form, ‘What is it doing?’

Second, the children and adults were videotaped during a reading-based activity, in English and in Spanish. During the first part of this activity, the child and the primary investigator participated in an English interaction centered on books containing the target vocabulary. The child was asked to name objects and actions represented by the illustrations in the book. Second, the mothers interacted with their child in Spanish, using a different book for the same purpose. These activities also lasted up to 15 minutes each, as determined by the children’s attention span. These activities were attempted with all the children; however, some of the children were not able to focus on a book for a long enough period to complete this task.

Target items that the children produced spontaneously in the pretest activities were eliminated as intervention targets. After the pretest, a final list of ten words (three verbs and seven nouns) was compiled in each language for each child. None of these target words were translation equivalents for any of the children; that is, the children were not taught a word in Spanish if they were already assigned a word with the same meaning in English. Mothers of the children in the control group were not made aware of the target words at this time so that they would not draw their children’s attention to these words during the control phase.

**Training**

Once target words in each language were selected, the mothers in the intervention condition participated in a training session on how to use dialogic strategies while reading with their children. If other family members were present during these activities, they were invited to observe. The children’s fathers were not asked explicitly to avoid reading to their children, and
were made aware of the target words for their children. The parents of the control children were provided with similar training after the intervention phase of the study was completed.

The training session in the dialogic book-reading techniques was on average 30 minutes-long, and consisted of the prescribed sequence of procedures. First, the primary investigator demonstrated dialogic book reading with the child to the child’s mother in English. The strategies modeled by the primary investigator were then discussed with the mother. The mother was then given an opportunity to read in Spanish with the child, using these strategies, and feedback was provided by the primary investigator. These discussions were in Spanish when necessary. The adults were also given handouts summarizing the dialogic book-reading strategies in either English or Spanish (Appendix L).

The mothers also received weekly additional training. Each mother was observed every week by the primary investigator while reading with her child. The primary investigator recorded the strategies the mother was using and provided verbal feedback. Furthermore, mothers were present during most intervention sessions conducted by the primary investigator, and they were able to observe and discuss their child’s interaction and the reading strategies used in those sessions.

**Intervention**

The expressive language intervention in this study followed the principles of a dialogic book-reading approach. As described previously, dialogic book reading is the practice of introducing dialogue to shared reading experiences to make such experiences more interactive (Cutspec, 2004). The reading sessions in the current study consisted of reading and discussing pictures in selected books, page by page, and included prompting and evaluation. In previous dialogic book-reading studies, the role of adult readers was to prompt using questions, expand
the child’s utterances, and praise the child (Arnold et al., 1994). Dialogic book-reading was applied in this study, and the mothers were trained to use a clear sequence of steps in a prescribed pattern. This prescribed interaction pattern was based on the modified “PEER” pattern suggested by the “Read Together, Talk Together” program developed by the National Center for Learning Disabilities (2002). The “PEER sequence” stands for ‘prompt, evaluate, expand, repeat’, and consists of a series of well-defined steps, as discussed below.

A list of the target words along with the books used to target the words for each individual child was given to the mothers of the children in the intervention group on a weekly basis. The interaction sequences started with adults establishing joint attention to a picture of a target word by calling the child by name, pointing to the picture, and verbally inviting the child to look at the picture (‘Come, let’s look at some pictures!’; ‘Look! A bear!’). Once the child’s attention was directed to the referent, the adult would ask a question-prompt (‘What is this?’) or model the label (‘A cat!’). The adults prompted the children to produce a target word by asking a question (‘What’s this?’) or asking the child to talk about something on the page (‘What is going on here?’). Question-prompting focused the child’s attention, and engaged the child in the interaction. Three types of question-prompts were used: wh-questions, completion prompts, and open-ended prompts, all of which are suitable for reading with younger children. Wh-prompting involved pointing to something in a picture and asking the child for the name of an object or action (e.g., “What is this?”). A completion prompt required the child to complete a modeled word or a phrase (e.g., “He is sitting on a…”). Open-ended prompts asked the child to describe what was happening in a picture (e.g., “What is going on here?”). The adults were also advised to pause and wait for the child to provide a response to their question (Dale et al., 1996).
Because four out of six children in the intervention group did not verbalize often, the use of the wh-type of a prompt was emphasized for the initial stages of the intervention. Two other types of question-prompts (open-ended and completion) were introduced to the children when they began to produce some target words, which occurred by the end of the third week of the intervention program. Open-ended and completion prompts were also used from the beginning of the intervention with the two children in the intervention group who were more verbal at the outset of the intervention. All of the types of prompts used with the children in this study were among the prompts proposed by Whitehurst in his original study (Whitehurst, Falco, & et al., 1988).

After providing a question-prompt, the parents were advised to wait for the child to respond (Dale & al., 1996). If the child responded to a question-prompt and produced a word, the adults were encouraged to praise the child and expand on the child’s response. Expanding meant that the adults repeated the child’s production and added another word or two to it (e.g. saying “A brown bear” in response to the child’s “Bear”). This is a strategy that combines feedback and modeling, and has been shown to be effective for facilitating language development in young typically developing children and children with language delays (Baker & Nelson, 1984; Nelson et al., 1996). If the child remained silent in response to a question-prompt, the adults modeled the correct response (“A bear”), and either prompted the child to produce the same target using a question-prompt (‘What’s this again?’) or directed their child’s attention to another picture, returning to the target word at a later point in the session. The English verbs were consistently modeled using the present progressive form (e.g., ‘He is sleeping’), and the Spanish verbs – using the third person present tense form (e.g., ‘He eats’ = ‘Come’).
In summary, the intervention sessions consisted of using the target words in prescribed interaction sequences with target words being repeated at least three times per target per session as described below. The sequences included establishing joint attention to the picture of a target word, followed by a prompt and, depending on a child’s response, a model or recast and/or praise. For example, a typical interaction sequence taught to the parents would consist of the following:

Mother: “Look! What is this?” [Establish joint attention + Prompt]
Child: “Bear”
Mother: “A brown bear. Good job!” [Recast + Praise]

If the child was still interested in the same picture, the mother might continue talking about it:
Mother: “And what’s the bear doing?” [Prompt]
Child: [no response]
Mother: “He is sleeping” [Model]

To ensure the naturalness of the interactions, the adults were allowed to draw the child’s attention to any word found in the pictures including the target words introduced during the preceding weeks, words already known by a child, or words not targeted by the program. However, the adults were required to use the target words assigned to a given session in the prescribed interaction sequences described above a minimum of three times for each of the target words during that intervention session. The sequences included establishing joint attention to the picture of a target word, followed by a prompt and, depending on a child’s response, either a model, a recast and/or praise.

The mean duration of dialogic book-reading intervention as reported in the literature is six weeks (Cutspec, 2004). Hence, this was the length of intervention chosen for the current study, which was matched by the period between the posttest and the delayed posttest that was of
equal length. The mothers and the primary investigator each provided 30 intervention sessions over the course of six weeks. Although the intervention length of six weeks was chosen as a guideline based on previous dialogic book-reading studies, in the current study the emphasis was on providing each child with 30 sessions in each language, rather than completing the intervention phase in six weeks. Therefore, if for any reason the treatment was not provided on a given day due to a child’s illness or family obligations, the intervention phase was extended by the number of the days missed. However, because the target words were assigned to a block of one week (or five consecutive sessions on five working days), the five session block of each week was extended by the number of sessions missed in that block, as opposed to compensating for the missed sessions at the end of six weeks.

Each session included 15 minutes of reading to a child in each language separately. The periods of time during the session when the child’s attention was not directed toward the book was not considered to be a part of the 15 minutes of intervention time. The mothers were free to read with their children at the time of day convenient for them, which meant that the timing of the intervention sessions and the order of English and Spanish sessions varied across the children. However, for each family, at least one mother-child session per week was scheduled to be held in the presence of the primary investigator to allow for observation and feedback.

Books that were suggested in the literature for use with dialogic book-reading are those with clear illustrations, relatively little text, and an engaging story (Zevenbergen, 2003). The Dora the Explorer and similar series used in this study are examples of books of this type. These books are relatively inexpensive and easy to find in any book or department store. Other books were selected from the “Read Together, Talk Together” program kit (National Center for Learning Disabilities, 2002), when found suitable for the children with respect to the target
words and the amount of text. The list of the book titles and authors used in this study can be found in Appendix M.

The children in the intervention condition each missed, on average, four treatment sessions during the six weeks due to illness, holidays, or other family obligations. Therefore, each treatment block was extended by the number of missed sessions for each child. If a mother stated that they had not conducted a reading session on the previous day, a session was added to the remaining number of prescribed sessions for the Spanish book/targets the parent was using.

Books in each language were alternated each week. The first pair of books (one for each language) was used during the first week of intervention, each targeting three words in the language of intervention (two nouns and one verb). The second pair of books was used during the second week, targeting the next two nouns and one verb. The third pair of books was used during the third week, and at that time the remaining four target words were introduced in each language (three nouns and one verb). This cycle was repeated over the second half of the intervention period starting with the first set of books targeting the first three words in each language. The books were not the same for the Spanish and English sessions. The books also varied across the families, due to the individualized selection of target vocabulary for the children.

Treatment fidelity was assessed by observing the mothers’ use of the prescribed intervention pattern, as described on pages 80 – 81. Six weekly observation sessions were conducted with each mother. Prompts to produce each target word in a given intervention session at least three times was the main criterion upon which the treatment fidelity was assessed. During each of the six observation sessions, each mother demonstrated a 100% rate of compliance in providing her child with at least three prompts for each target word assigned to that session.
Similarly, the primary investigator formally kept track of her own use of prompts during one session each week, and provided each child with at least three prompts for each target word assigned to those sessions. This information is summarized in Appendix N.

**Posttest**

The posttest was conducted on the first working day following the six weeks of intervention. The purpose of the posttest was to determine children’s acquisition of target vocabulary in both English and Spanish. In this session, the children participated in videotaped posttest activities that followed the same protocol as was previously described for the pretest.

A word was considered “learned” if it was produced by a child spontaneously at least once during the posttest activities. The adults elicited the labels of the target words during free play and reading activities, and only the children’s spontaneous productions were counted. As such, production of a target as an imitation of an adult was not considered spontaneous. The word was considered spontaneously produced if at least three conversational turns took place between the initial model of the word by an adult and a subsequent production of the same word by the child. In addition, the vocabulary reports were again completed at this point, and a satisfaction questionnaire was administered. This satisfaction questionnaire was developed specifically for the study and was administered to the mothers in the intervention group only to assess their experiences with the program. The questionnaire included two parts. The first part consisted of nine statements that were rated using a 4 point Likert scale, 1 = “strongly disagree”, 2 = “disagree”, 3 = “agree”, and 4 = “strongly agree”. For the second part, the parents were asked to write short answers to four questions. The statements and questions focused either on the satisfaction of the mothers or on their description of the program’s impact on the child. Statements #1, and #4 – #9, and questions #10 and #13 focused on mothers’ satisfaction.
Statements #2 and #3 and questions #11 and #12 focused on the children’s outcomes. The 13 items of the questionnaire are summarized in Table 7 below. The formatted questionnaire can be found in Appendix O.

Table 8
*Items of the Parental Satisfaction Questionnaire*

<table>
<thead>
<tr>
<th>Statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I enjoyed this reading program</td>
</tr>
<tr>
<td>2. The child in my care enjoyed this reading program</td>
</tr>
<tr>
<td>3. This book reading program helped to improve the child’s language</td>
</tr>
<tr>
<td>4. This book reading program helped to improve my conversations with the child</td>
</tr>
<tr>
<td>5. It was easy to learn new book reading strategies from this program</td>
</tr>
<tr>
<td>6. I learned something new from this program</td>
</tr>
<tr>
<td>7. I learned something useful from this program</td>
</tr>
<tr>
<td>8. I feel I can apply the book reading strategies I learned to any book in the future</td>
</tr>
<tr>
<td>9. I will continue using this program with children in my care</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>10. What I do differently while reading to my child now is_________________________________________</td>
</tr>
<tr>
<td>11. What the child does differently while reading with me now is___________________________________</td>
</tr>
<tr>
<td>12. The important ways in which the child’s language improved are___________________________________</td>
</tr>
<tr>
<td>13. The important ways in which my conversations with the child improved are________________________</td>
</tr>
</tbody>
</table>

**Delayed Posttest**

After a period of six weeks following the posttest, there was a final session during which a delayed posttest was administered to the children in the intervention group. The purpose of the posttest was to examine the extent to which children’s target vocabulary gains were maintained. The procedures of the delayed posttest were the same as those used for the pretests and posttests.
The mothers of the children in the intervention group were not given any specific instructions related to reading with their children during the six weeks between the posttest and the delayed posttest. At this point, the mothers of the children in the control group were trained to use dialogic reading strategies and were given suggested lists of target words based on the pretest vocabulary of these children.

**Reliability**

Reliability of children’s productions of target words was calculated on 25% of posttest and delayed posttest videotapes. A research assistant who was fully bilingual, unfamiliar with the study goals and procedures and not in a profession related to early child development was trained to note the children’s productions of target words following adult prompts. The research assistant was provided with randomly selected videotapes from an equal number of experimental and control children as well as a list of target words for the individual children. Agreement on the production of target words was 84% between the investigator and the research assistant.

**Compensation**

As compensation, the books used in the study were given to the families so that the children each got a set of unfamiliar books and a set of new target words. Parents were encouraged to continue using the dialogic book-reading sessions following the completion of the intervention. The control children received a similar set of books.
CHAPTER 3: RESULTS

The results of the study are presented in order of the five research questions previously outlined. Unless otherwise specified, group data is presented for each analysis, with individual data provided in Appendices P – T. Non-parametric statistical analyses were used and included either the Mann-Whitney $U$ or the Wilcoxon Signed Ranks tests, as specified for each research question. These non-parametric statistical analyses were used due to a high degree of variability in the data and a small sample size.

Question One: Target Word Learning

The first question posed by the research concerned target word learning in English and Spanish separately. The two sub-questions asked if (a) at posttest, the children in the dialogic book-reading intervention group used more target words in English than the children in the control group in a free-play and book-reading tasks, and (b) at posttest, the children in the dialogic book-reading intervention group used more target words in Spanish than the children in the control group in a free-play and book-reading tasks.

Two hypotheses were formulated to address these questions:

(a) The children in the dialogic book-reading intervention group would learn more target words in English following the intervention than the children in the control group.

(b) The children in the dialogic book-reading intervention group would learn more target words in Spanish following the intervention than the children in the control group.

Two separate Mann-Whitney analyses were conducted to examine the learning of English and Spanish vocabulary. The intervention children learned an average of 6.7 targets in English
with a range of from 5 to 9, and an average of 3.2 targets in Spanish with a range of from 0 to 6. In contrast, the control children learned an average of 0.8 targets in English, and an average of 0.5 targets in Spanish, with a range of 0 to 2 targets. As might be expected, the control children learned some vocabulary items spontaneously, despite not having received any intervention. Significant differences between groups were found for the target word learning in both English: \( U = .000, p = .003, d = 1.2 \), and Spanish: \( U = 2.5, p = .012, d = 1.8 \). Effect sizes were large. These results support the two hypotheses proposed, namely that the children provided with the dialogic book-reading intervention would learn more target vocabulary items in English and Spanish than the children in the control group. The group data is illustrated in Figure 3 below and the individual data from the children is presented in Appendix P.

Error bars: 1 standard deviation

Figure 3. Production of target words post-intervention
Question Two: Maintaining the Target Vocabulary

The second research question concerned the maintenance of target vocabulary in English and Spanish separately, and asked if (a) the children in the dialogic book-reading intervention group maintained their English target vocabulary over the period of six weeks following the intervention, and (b) if the children in the dialogic book-reading intervention group maintained their Spanish target vocabulary over the period of six weeks following the intervention.

With respect to the maintenance of the target vocabulary, it was hypothesized that:

(a) The children in the dialogic book-reading intervention group would maintain their new English target vocabulary over the period of six weeks following the intervention.

(b) The children in the dialogic book-reading intervention group would maintain their new Spanish target vocabulary over the period of six weeks following the intervention.

In order to investigate this hypothesis, the number of target words used by the children at the delayed posttest (at the end of the 12th week) was examined in each language separately. At the delayed posttest, the intervention children produced an average of 5.8 target words in English with a range of from 2 to 9, an average of 2.3 targets in Spanish, with a range of 0 to 7, as illustrated in Figure 4. A Wilcoxon Signed Ranks Test revealed that there was no statistically significant difference between the number of target words produced by the children in the dialogic book-reading group at posttest and at the delayed posttest, in English: \( Z = 1.089, p = .276, d = 0.4 \), and in Spanish: \( Z = 0.531, p = .595, d = 0.3 \). These findings indicate that the children did not perform differently at the time of the delayed posttest, suggesting that their newly acquired vocabulary was maintained. The individual data for each child is summarized in Appendix Q.
**Post Hoc Investigation: Learning and Maintaining Nouns versus Verbs**

For each child, the sets of target words consisted of seven nouns and three verbs. The proportional learning of targets by word classes was examined descriptively. The children learned on average 5.5 of English nouns as compared to only 1.2 of English verbs, and 2.8 of Spanish nouns as compared to 0.3 of Spanish verbs. These findings indicate that the intervention children learned proportionately more nouns in both languages. These results, summarized in Table 9, seem to point to greater ease in learning nouns as compared to verbs in both languages.

<table>
<thead>
<tr>
<th></th>
<th>English</th>
<th>Spanish</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Nouns</td>
<td>Verbs</td>
</tr>
<tr>
<td></td>
<td>(7)</td>
<td>(3)</td>
</tr>
<tr>
<td>Mean</td>
<td>5.5</td>
<td>1.2</td>
</tr>
<tr>
<td>Median</td>
<td>5.5</td>
<td>1.2</td>
</tr>
<tr>
<td>Min. – Max.</td>
<td>4 – 7</td>
<td>0 – 3</td>
</tr>
</tbody>
</table>

Figure 4. Maintaining target words
Question Three: Overall Vocabulary Gains

The third question concerned the results related to gains in general vocabulary development, as reported by parents, in English and Spanish separately, and asked (a) at posttest, will the children in the dialogic book-reading intervention group gain more English vocabulary overall than the children in the control group, (b) at posttest, will the children in the dialogic book-reading intervention group gain more Spanish vocabulary overall than the children in the control group, and (c) at posttest, will the children in the dialogic book-reading intervention group make greater gains in their conceptual vocabulary than the children in the control group.

Three hypotheses were formulated with respect to the generalized gains in the children’s overall vocabulary as assessed by parent report on MBCDI and MIDHC:

(a) The children in the dialogic book-reading intervention group would learn more new English vocabulary overall than the children in the control group.

(b) The children in the dialogic book-reading intervention group would learn more new Spanish vocabulary overall than the children in the control group.

(c) The children in the dialogic book-reading intervention group would learn more new conceptual vocabulary than the children in the control group.

Three separate Mann-Whitney U tests were conducted to compare gains in children’s English, Spanish, and conceptual vocabulary sizes in the two groups at the end of the intervention phase. These three measures of vocabulary sizes were based on the MBCDI English, the MIDHC Spanish, and a composite conceptual size. The gains in children’s vocabulary sizes were calculated by subtracting the number of words reported by the parents at the pretest from that at the posttest.
The average gain in English vocabulary was 51 words for the intervention group, with a range of 9 to 215, and 28.7 words for the control group, with a range of 0 to 84 (Mann-Whitney $U = 10.5$, $p = 0.229$, $d = 0.4$). The average gain in Spanish vocabulary was 36.7 words for the intervention group, with a range of 0 to 110, and 31.7 words for the control group, with a range of 0 to 77 ($U = 17.5$, $p = 0.936$, $d = 0.1$). The average gain in conceptual vocabulary was 70.5 words for the intervention group, with a range of 15 to 229, and 42.3 for the control group, with a range of 0 to 88 ($U = 17.5$, $p = 0.936$, $d = 0.4$). The results of the analyses indicate that the children in the intervention group did not have significantly greater gains than the children in the control group in their English, Spanish or conceptual vocabularies. The individual data for English, Spanish, and conceptual post-intervention vocabulary sizes are presented in Appendix R. The individual data on gains are presented in Appendix S, and the group data on gains are presented in Table 10 below.

Table 10

<table>
<thead>
<tr>
<th></th>
<th>English gains</th>
<th>Spanish gains</th>
<th>Conceptual gains</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intervention Group</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>51</td>
<td>36.7</td>
<td>70.5</td>
</tr>
<tr>
<td>Median</td>
<td>21</td>
<td>14.5</td>
<td>32</td>
</tr>
<tr>
<td>Min. – Max.</td>
<td>9 - 215</td>
<td>0 - 110</td>
<td>15 - 229</td>
</tr>
<tr>
<td><strong>Control Group</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>28.7</td>
<td>31.7</td>
<td>42.3</td>
</tr>
<tr>
<td>Median</td>
<td>6</td>
<td>32</td>
<td>40</td>
</tr>
<tr>
<td>Min. – Max.</td>
<td>0 - 84</td>
<td>0 - 77</td>
<td>0 - 88</td>
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</table>

**Question Four: Ratio of Vocabulary Sizes**

The fourth question posed by the study asked whether the ratio of English to Spanish vocabulary of the children in the dialogic book-reading intervention group would remain the
same from pretest to posttest. A Wilcoxon Signed Ranks test was conducted to compare the ratio of vocabulary sizes of English to Spanish vocabulary of the children in the intervention group. The individual data on these ratios are found in Appendix R. The test revealed no statistically significant difference between English to Spanish vocabulary ratios at the two time periods ($Z = -0.105, p = 0.917$). This finding suggests that the balance of English to Spanish vocabulary of the children in the intervention group did not change as a result of the dialogic book-reading intervention.

**Post Hoc Investigation: Translation Equivalents**

Previous research conducted by Pearson et al. (1995a) indicated that the percentage of translation equivalents in the early lexicons of bilingual children may reach approximately 30%. The children in the current study were also found to have translation equivalents in their vocabularies, albeit for a somewhat smaller proportion of their lexicon. These proportions also varied substantially, from as low as 1% to as high as 25%, with a mean of 13.7% in the experimental group and 8.4% in the control group. The percentage of translation equivalents in the lexicons of individual children is presented in Appendix H. Results from the current study provide further evidence that young bilingual children do not avoid translation equivalents even in situations where they have difficulties in early vocabulary acquisition. However, the wide range of these proportions also confirms that the rate of development of translation equivalents may vary considerably across individual children.

**Question Five: Mothers’ Satisfaction and Evaluations**

The fifth research question was based on participating mothers’ evaluations of the results of the study and asked whether the mothers of children in the intervention group would express satisfaction with the dialogic book-reading intervention, and whether the mothers’ evaluations
would support the outcomes of the quantitative measures of the dialogic book-reading intervention for the children in the intervention group.

To address these questions, the mean ratings of mothers’ responses to the items of the satisfaction questionnaire that were relevant to each research question were reviewed. Recall that the complete questionnaire was presented in Appendix O. First, items number one and items four through nine were used to examine if the mothers expressed their satisfaction with the program. The mean ratings of the items reflecting this information are presented in Table 11 below.

<table>
<thead>
<tr>
<th>Table 11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean ratings of the responses to mothers’ satisfaction questionnaire</td>
</tr>
<tr>
<td>Item 1</td>
</tr>
<tr>
<td>Item 4</td>
</tr>
<tr>
<td>Item 5</td>
</tr>
<tr>
<td>Item 6</td>
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<tr>
<td>Item 7</td>
</tr>
<tr>
<td>Item 8</td>
</tr>
<tr>
<td>Item 9</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

Note: 3 = agree, 4 = strongly agree

The mothers expressed their general satisfaction with the program. In total, the program was rated highly, receiving on average 30.3 points out of possible 36 points. The parent questionnaire revealed that the mean ratings for the responses to the item #1: “I enjoyed this reading program” and #4: “This book reading program helped to improve my conversations with
the child” were 3.5 out of 4. All the responses were between 3 and 4 (“agree” to “strongly agree”).

The mothers were also satisfied with their ability to learn the intervention strategies, and with their success at changing their reading style to use dialogic book-reading. The mean rating of the responses to the four items related to these areas was 3.3. These items were: “5. It was easy to learn new book reading strategies from this program”, “6. I learned something new from this program”, “7. I learned something useful from this program”, “8. I feel I can apply the book reading strategies I learned to any book in the future”, and “9. I will continue using this program with children in my care”. Mothers’ free-structured responses to items #10 and #13 were also positive. These comments are presented in Appendix T. It should be noted that not all mothers chose to provide free-structured comments.

Second, the mean ratings of the responses to the two items examining mothers’ perceptions of their children’s outcomes from the parental satisfaction questionnaire were reviewed (items two and three). The mean ratings of the items reflecting this information are presented in Table 12 below.

<table>
<thead>
<tr>
<th>Item</th>
<th>Mother 1</th>
<th>Mother 2</th>
<th>Mother 3</th>
<th>Mother 4</th>
<th>Mother 5</th>
<th>Mother 6</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 2</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3.5</td>
</tr>
<tr>
<td>Item 3</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>3.7</td>
</tr>
<tr>
<td>Total</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>7</td>
<td>6</td>
<td>6</td>
<td>7.2</td>
</tr>
</tbody>
</table>

Mothers’ perceptions of the program were that it had benefited their child. The average rating for the responses to item #2: “The child in my care enjoyed this reading program”, was 3.5
out of 4. The mean response to item #3: “This book reading program helped to improve the child’s language” was rated 3.7 out of 4. The mothers also provided free-structured responses to items #11 and #12, focusing on the children’s outcomes, all of which were positive and reflected their view of the program as having been beneficial for their child’s language. These comments are found in Appendix S. Again, not all mothers chose to provide free-structured comments.

**Post Hoc Examination: Time Spent in Reading Activities**

Several mothers mentioned in their responses to item #11 that their children learned to focus on reading for longer periods of time towards the end of the intervention program. To investigate this point further, a post-hoc examination of the individual videos of each child was conducted to estimate the approximate amount of time the children spent focused on book reading at the times of the pretest and posttest. This information is summarized in Table 13.

<table>
<thead>
<tr>
<th></th>
<th>Pretest reading time</th>
<th>Posttest reading time</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intervention Group</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ID1</td>
<td>No focus</td>
<td>2 minutes</td>
</tr>
<tr>
<td>ID2</td>
<td>10 minutes</td>
<td>3 minutes*</td>
</tr>
<tr>
<td>ID3</td>
<td>5 minutes</td>
<td>5 minutes</td>
</tr>
<tr>
<td>ID4</td>
<td>No focus</td>
<td>7 minutes</td>
</tr>
<tr>
<td>ID5</td>
<td>No focus</td>
<td>1 minute</td>
</tr>
<tr>
<td>ID6</td>
<td>10 minutes</td>
<td>13 minutes</td>
</tr>
<tr>
<td><strong>Control Group</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ID7</td>
<td>22 minutes</td>
<td>7 minutes**</td>
</tr>
<tr>
<td>ID8</td>
<td>2 minutes</td>
<td>4 minutes</td>
</tr>
<tr>
<td>ID9</td>
<td>No focus</td>
<td>No focus</td>
</tr>
<tr>
<td>ID10</td>
<td>3 minutes</td>
<td>No focus</td>
</tr>
<tr>
<td>ID11</td>
<td>No focus</td>
<td>No focus</td>
</tr>
<tr>
<td>ID12</td>
<td>3 minutes</td>
<td>No focus</td>
</tr>
</tbody>
</table>
Note. *Activity was interrupted because the mother had to attend to a housekeeper, after which it was not possible to establish the child’s focus. **Reading time decreased at posttest as compared to pretest as all the target words were prompted and/or elicited within that time, and the activity was terminated by the investigator.

At the time of pretest, three out of six children in the intervention group and one child in the control group were able to participate in a reading activity for over five minutes, and were therefore not considered to have experienced attentional difficulties. Three other children in the intervention group were not able to attend to reading during their pretest for longer than two minutes or at all. The length of time that these three children spent in interactions centered on books was examined again at the time of the posttest. It was found that at the time of the posttest, these same children were able to focus on reading for longer periods of time, ranging from between 2 to 7 minutes. In the control group, only one child had a slightly better focused reading time (from 2 minutes to 4 minutes) from pretest to posttest. This analysis provided some objective support for the mothers’ subjective ratings and comments regarding the benefits of the program for the improvement of children’s focus on reading.
CHAPTER 4: DISCUSSION

This study examined the feasibility of using a dialogic book-reading intervention to facilitate the acquisition of expressive vocabulary of Spanish-English bilingual children with slow expressive vocabulary development. The children in the study were all on the waiting list for speech-language services in a large urban center and had limited vocabularies. The purpose of the study was to provide preliminary research data related to the potential efficacy of a programmatic intervention approach based on dialogic book reading for this population of children. The study identified aspects of the intervention program and measurement that might need to be adjusted to yield more robust efficacy data. This chapter concludes the thesis with a discussion of the results, the limitations of the current study, and the implications for future research related to early bilingual vocabulary interventions for bilingual children based on dialogic book-reading.

Summary of the Results

Children in the dialogic book-reading intervention group learned on average more target words than the control children. This result was evident in both English and Spanish, with more target words learned in English. Proportionally more nouns than verbs were learned by the children in the intervention group in both languages. The children in the intervention group were able to maintain their English and Spanish target vocabulary gains over a period of six weeks following the posttest. In contrast to the findings related to the learning of target vocabulary, there were no significant differences in overall vocabulary sizes between the two groups of children in either English, Spanish, or conceptual vocabulary. The participating mothers perceived that they had been able to learn and implement the intervention strategies easily and indicated that they felt that the program benefited their children’s vocabulary development. The
mothers also perceived a positive change in the time their children spent in reading activities. Upon examination of the posttest videotapes, the children who had been observed to spend little time reading at the beginning of the study were able to read for longer periods of time at the posttest.

Research Implications

Implications Regarding Dialogic Book-Reading

The existing body of research examining the effectiveness of dialogic book-reading with children who have expressive vocabulary delays is not yet extensive. The current study is one of a few recent studies examining dialogic book-reading. The study included several methodological components that are unique to the dialogic book-reading literature, particularly with respect to selecting individualized sets of target words for each participating child.

One previous dialogic book-reading study examined the learning of new vocabulary items found in books by late-talking children (Hargrave & Sénéchal, 2000). These authors reported that children with limited vocabularies learned more new vocabulary items from a dialogic book-reading condition than from a regular reading control condition. In a study that was not primarily focused on dialogic book-reading, Sénéchal (1997) noted that her three- and four-year-old participants were able to learn new vocabulary items from episodes of general shared reading. In addition, target words were learned by late-talking children in a number of intervention studies that used approaches other than dialogic book-reading (Ellis Weismer et al., 1993; Girolametto et al., 1996a, 1996b). The current study and Hargrave and Sénéchal (2000) converge on the conclusion that a dialogic book-reading intervention may facilitate the acquisition of a particular set of target vocabulary items found in books. In the current study, the words were individually selected and determined to be functional for each child. The
functionality of the selected vocabulary was based on the assumption that the target items were words that normally appear in children’s early vocabularies (i.e., taken from the toddler form of the *MBCDI*), were present in the child’s immediate environment, and were chosen in consultation with the mothers. The children produced their target words not only in the reading context in which the words were learned but also while playing with toys, indicating some degree of generalization of the intervention effects across reading and play contexts.

The selected target words consisted of both nouns and verbs. This was included in the target word selection as it may be important to target some verbs in interventions with late-talking children because they tend to combine words into phrases later than their typically developing peers (Rescorla, 1989; Paul, 1991). Verbs are needed to express semantic relationships such as agent-action, which are acquired when children start to combine words into two-word phrases, typically during their second year of life (Brown, 1973). It is possible that if nouns predominate in the vocabularies of these children, they may avoid combining words since, with the exception of possession, the combination of two nouns has limited application in expressing semantic relations. As predicted, the children in this study learned more nouns than verbs. However, it should be noted that these bilingual children with limited vocabularies were able to learn between one and three verbs in each language from the dialogic book-reading intervention. Thus, verbs may be taught with some success through dialogic book-reading. Future research is needed to determine if the teaching of specific verbs as target words encourages young children to combine words into phrases.

Very little is known about cultural differences that may exist in interactions centered on the book-reading of mothers and their children. Valdez-Menchaca and Whitehurst (1992) conducted dialogic book-reading in a Mexican daycare with Spanish-speaking preschool
children, and their intervention resulted in increases in these children’s vocabulary scores based on their performance on the EOWPVT-R. Since the interventionist in that study was a trained doctoral student, the study did not provide any insights into whether or not parents in the low-income Spanish-speaking families who participated in the study would find the techniques of dialogic book-reading acceptable and easy to learn. In the current study, the mothers’ comments indicated that the dialogic book-reading intervention techniques suggested to them were perceived to be culturally appropriate. In fact, the mothers reported that they had learned functional strategies that were easy to implement while reading with their children. Nevertheless, mothers were less consistent in their dialogic book-reading input to the children than the primary investigator, a point that will be discussed in further detail below.

No specialized equipment or books that were not easily accessible to the mothers were utilized in this study. The books did not have to contain Spanish or English text, as the suggested activities were centered on pictures and mothers were discouraged from focusing on reading the text alone. Some families already owned similar books prior to the commencement of the study. However, during the intake interviews, the participating mothers reported that, while they understood the importance of reading with their children, they felt they had to read the English text of these books. This view held them back from reading with their children because of perceived limitations in their English skills. Books written in Spanish were either not always readily available to them in North America or were considered to be too expensive. During the course of the study, the mothers learned that discussing pictures in a book with their children in Spanish, even when the books were written in English, was an effective way to interact and to introduce new vocabulary items to their children who were at the word-learning stage. This change in the mothers’ approach to reading resulted in the acquisition of some Spanish target words by most of the children.
Implications Regarding Early Vocabulary Intervention

Towards the end of the intervention, each child in the intervention group began to produce their selected target words. The experimental-control paradigm of the study contributed to the conclusion that the children’s outcomes may have resulted from the intervention and not from causes unrelated to the experiment, including children’s maturation. It was encouraging to note that, given the heterogeneity and the small size of the current sample, the analyses related to target word learning achieved statistical significance despite the lack of power.

The children were also able to produce their acquired words six weeks after the end of the intervention. Previous dialogic book-reading studies have also examined the maintenance of children’s gains after a period of no intervention. Those studies showed that the children were able to maintain their gains in overall vocabulary on the EOWPT-R after three months (Heubner, 2000a), and after six months (Whitehurst et al., 1994). However, comparisons with these studies are limited due to differences in the outcome measures used as well as differences in the length of the maintenance phases across studies.

It was disappointing to note that there was no generalized effect of the dialogic book-reading intervention on the overall vocabulary acquisition of the children in the intervention group in English, Spanish, or conceptual vocabulary. Previous studies have found gains in scores on standardized tests that pointed to a generalized bootstrapping effect of intervention on overall vocabulary (Heubner, 2000a, 2000b; Lonigan & Whitehurst, 1998; Valdez-Menchaca & Whitehurst, 1992; Whitehurst & al, 1998; Whitehurst et al., 1994).

A number of points may be raised with respect to the lack of generalized vocabulary gains in the current study. It should be noted first of all that a number of the previous studies using dialogic book-reading with children who have limited vocabularies included some...
typically developing children (e.g., Huebner 2000a, 2000b), or children with mild language delays (Craig-Thoreson & Dale, 1999; Dale et al., 1996; Lonigan & Whitehurst, 1998; Lonigan, Anthony, Bloomfield, Dyer, Samwel, 1999). It is possible that findings related to generalized vocabulary gains made by the children in those studies arose as a result of the higher functioning children, whose gains may have obscured a lack of improvement in the children who had more severe vocabulary delays. In the current study, all of the participating children had a vocabulary delay. The lack of an observed generalized effect on overall vocabulary in the current study may be due to an initial variability in the children’s development, and lack an overall of power in the statistical analyses. As may be the case with the previously cited research, group comparisons may have obscured any individual trends, in this case in the reverse direction. While there were no significant group differences in vocabulary gains, several children in the intervention group experienced quite substantial increases relative to their initial intake vocabulary sizes. For example, the children with the smallest intake conceptual vocabularies (fewer than 50 words) were ID1, ID2, ID3, and ID 5 in the experimental group. The vocabulary of ID1 almost doubled in English (26 to 45 words) but this child was learning a lot of translation equivalents, so that his conceptual vocabulary increased from 31 to 46 concepts. However, the conceptual vocabulary of ID2 and ID3 tripled (21 to 60 concepts, and 52 to 169 concepts, respectively), and the vocabulary of ID5 increased five-fold (6 to 31 concepts) following the intervention. Among the children in the control group, fewer children had intake conceptual vocabularies that were as limited as that of the experimental group (ID9 and ID11), and only the vocabulary of ID9 showed a similar magnitude of increase. Future research would need to include greater control of the intake vocabulary of the participating children and random assignment to groups to investigate whether a facilitating effect of the intervention on overall vocabulary might be observed.
On the other hand, it is also possible that the duration and intensity of the treatment provided may not have been sufficient to achieve more generalized results. The organization of the intervention cycle resulted in each target word being elicited in a total of ten sessions, that is, in two five-day blocks. Furthermore, the required amount of exposure to each target was three times per intervention session. This dosage may not have been sufficient to enable the children to apply similar learning strategies to the acquisition of new, untargeted vocabulary. Future research on the optimal dosage and duration of vocabulary-based interventions is required in order to respond to questions of generalizability.

Finally, it is possible that the lack of generalization of the intervention on overall vocabulary may not be related to either the power of analyses or the intensity of intervention, but may instead stem from the choice of the strategies applied in the intervention approach itself. The current application of dialogic book-reading had a very specific focus on target words. As a first-stage intervention, this was deemed to be appropriate for participating children, who were mostly non-verbal. The use of the wh-question prompts was emphasized in this study as being appropriate for these children, since the more decontextualized distancing and open-ended prompts have been recommended for reading with four- to five-year-old typically-developing preschoolers (Zevenbergen & Whitehurst, 2003). Thus, the wh-question is the type of prompts that has the least potential for the generalizability by virtue of it not being decontextualized. Future studies are needed that focus on follow-up interventions with children of similar abilities as they become more verbal. Having acquired a set of target words from the intervention strategies applied in the current study, the children may be able to respond over time to more complex prompts that have a greater potential for generalizability in vocabulary acquisition. A longitudinal investigation examining the impact of the introduction of increasing complex
strategies such as are typically used in dialogic book reading on vocabulary acquisition would be required to investigate this possible explanation.

Implications Regarding Bilingualism

Historically, researchers, clinicians and even parents have believed that bilingual children who have difficulty in acquiring their two languages should receive intervention in only one language, with the language recommended for intervention traditionally being that of the mainstream (Gutierrez-Clellen, 1999). The rationale for choosing intervention in one language appears to have stemmed from a prevailing negative view of the cognitive capacity of bilingual children and a concern that children with language impairment would be incapable of learning two languages concurrently (see review by Baker, 1996).

The current study provides some evidence that, in spite of existing vocabulary learning challenges, bilingual children are capable of expanding their vocabularies in both of their languages. Although the children in the current study on average made greater gains in learning English target words, benefits of the intervention were also observed in Spanish. Moreover, as will be discussed in the following section of this chapter, some children learned similar numbers of target words in both English and Spanish. This suggests that even bilingual children who have difficulties in early vocabulary acquisition may benefit from intervention in both of their languages. Since very few previous studies have examined the acquisition of new vocabulary through an intervention approach with bilingual children with vocabulary delays, this is an important contribution of the current research.

Furthermore, as expected, the children in the current study were found to have translation equivalents in their vocabularies. For some children, the proportion of translation equivalents in their vocabulary was similar to that previously reported for typically developing bilingual
children (e.g., by Pearson et al., 1995a). This finding suggests that the bilingual vocabulary development of the children in the current study appears to have followed a pattern similar to that of typically developing children, albeit at a slower pace. In addition, the balance of English and Spanish vocabulary, as measured by a ratio of the two vocabulary sizes, did not change significantly from pretest to posttest for the children in the current study. Taken together, these findings contribute to the perspective that bilingualism in and of itself may not constitute an obstacle for language acquisition and that early vocabulary intervention should not be limited to a single language.

While the recent research and the results of this study support the importance of bilingual vocabulary intervention for children with slow expressive vocabulary development, this is still a relatively new perspective in the field of speech-language pathology intervention. Some speech-language pathologists may desire to continue to follow unilingual approaches in their advice to parents of children with language learning difficulties. In contrast to historical perspectives that advised parents to concentrate on speaking the language of the majority culture in order to promote the development of the future language of instruction of their children, the current research provides some evidence for the potential utility of advising parents to continue to concentrate on speaking the home language to their child. Such an approach may in fact ensure the continued development of both of his or her languages (Jordaan, 2008), as discussed in previous sections of this dissertation. Thus, it is important that intervention in the majority language should not be conducted at the expense of that of the home language. A primary reason for this perspective is the issue of the importance of the maintenance for the home language, the use of which may be crucial for bilingual families. Continued communication in the home language has tremendous value for preserving cultural identity and relationships between children and their parents, older relatives, and extended family (Wong Fillmore, 1991).
There may in fact be greater value in bilingual intervention than in simply preserving the home language. In a young bilingual child who is in her early and most active stage of language acquisition, the two linguistic systems may be highly interrelated, yet the balance of their development may be quite fragile. For example, the finding that in the current study the children in the experimental group learned on average more target words in English than in Spanish may point to the possibility that it is the children’s home language that will require more attention in intervention than the mainstream language. This may be especially relevant given the fact that the children are likely attending daycare and will soon be enrolled in formal education in the mainstream language. For a typically developing child, the intense exposure to a second language, for example, when the child begins schooling in the mainstream language, will not put his or her home language at risk (Kohnert et al., 2005). However, if the home language of a child is not well-developed prior to the child’s entry into the school system the child may be at risk for losing the home language (Kan & Kohnert, 2005; Wong-Fillmore, 1991b). This may in turn lead to a poor prognosis in the child’s development in the mainstream language, since a young child who does not achieve a certain level of competence in their home language before he or she enters school may at a greater risk for academic delays than his or her peers (Cummins, 1984). This may contribute to a vicious circle in which the child may eventually have limited proficiency in both of his or her languages.

For all of these reasons, it may be important for a child with slow expressive vocabulary development to be provided with continuous support in his or her home language, both prior to and after entry into the mainstream language school system. These children may also require early intervention in their mainstream language, in order to increase their readiness for school and decrease the potential risk of a negative impact of reduced abilities in the language of the majority on their higher language and literacy skills. Finally, as the child reaches school-age, a
decision will need to be made with respect to whether or not intervention in either language might effectively be replaced with monitoring, while still ensuring that the child continues to have adequate support in his or her home language.

Further support for this model may be found in the results of studies that show that the less dominant language of the bilingual child may need to be learned concurrently with the stronger language. For example, the findings of Perozzi (1985) and Perozzi and Chavez-Sanchez (1992) showed that, when the more dominant language was taught in addition to and before the less dominant language, children learned words in both languages faster than when words were learned in the non-dominant language only. It should be noted, however, that in the studies of Perozzi (1985) and Perozzi and Chavez-Sanchez (1992), the non-dominant language of the children was English because the children were older, successive bilinguals who spoke Spanish as their first language. This population of children is different from the simultaneous bilingual children in the current study. However, the concept of boosting the less dominant language with the help of the stronger language remains the same.

The results of this study provide some support for bilingual intervention models to support vocabulary acquisition for young bilingual children with vocabulary delays. Indeed, for the reasons cited above, bilingual intervention may be preferable to monolingual intervention. Furthermore, a dialogic book-reading intervention approach similar to that applied in this study may be suggested to families of young bilingual children as a context for interaction in the children’s home language that is not only culturally acceptable and appropriate but also has observable facilitative effects on the children’s acquisition of target vocabulary.
Implications Regarding the Model of Lexical and Conceptual Representation in Bilingual Memory

As reviewed in Chapter 1, various models have been put forward in the literature regarding the lexical and conceptual representations in memory of bilingual individuals. It was beyond the scope of this study to provide evidence in support of one model over another. However, the intervention approach to target vocabulary selection in the current study was implicitly guided by the investigator’s interpretation of these models. More specifically, this resulted in intentionally avoiding selecting translation equivalents as target words for each child. Thus, it seems appropriate that this interpretation be discussed here.

As discussed in the literature review, bilingual children may be acquiring two vocabularies simultaneously using lexical association links in a manner similar to that of older second language learners, as described by Kroll and Stewart (1994). Since these young children do not yet have a fully developed conceptual system in place, they may begin by acquiring a new concept by labeling it with a word from one of the two languages that they are learning in parallel but potentially in different contexts (e.g., home and community). With continued exposure to both languages, the children learn translation equivalents for the concepts for which they already have a word in one of their languages. Thus, conceptual and lexical representations in the memory of young simultaneous bilingual learners may be illustrated by a model based on that of Kroll and Stewart (1994). In this model, vocabulary acquisition of a young bilingual child may be viewed as being driven by words and concepts initially acquired in either of his or her two languages, rather than by a single first language as was proposed for older simultaneous bilinguals by Kroll and Steward (1994). The proposed model is illustrated in Figure 5.
Figure 5. Proposed model of lexical/conceptual representation development derived from Kroll and Stewart (1994)
The intervention approach used in the current study included creating two separate sets of concepts for each child, represented by sets of words in both languages. Unlike teaching a child a single set of concepts using translation equivalents to form sets of target words for each language, this may prepare a larger platform of concepts for which a child would know a word in at least one language. This expanded conceptual basis could then be used for mapping translation equivalents onto existing concepts using lexical association links. In the memory of a bilingual child, these lexical links might initially be similar to those formed by older learners of a second language as proposed by Kroll and Stewart (1994). This is illustrated by the First Stage in Figure 5. Gradually, conceptual mediation links may start to form in addition to these lexical links, depending on such factors as input, intervention, context, maturation, etc.

Initially, these new lexical items might not have the full access to the conceptual entry level, which would perhaps explain the fact that a young child might use the word ‘dog’ for an animal and ‘perro’ – for the name of a family pet. This is shown by the dash-style lines in the Second Stage in Figure 5. Finally, a bilingual child might gain two lexical items for each concept, with all lexical and conceptual links having been fully established. This would be in contrast to the representations in the memories of second-language learners, discussed by Kroll and Stewart (1994). Their links between the L2 lexical entries and the corresponding concepts might always remain lexically mediated through the L1.

Thus, a bilingual intervention approach may create an underlying cognitive basis for the parallel acquisition of vocabulary in two languages without restricting the child’s language input to a single language, and using an expanded set of target concepts. This is important because, as described above, restricting the language of intervention may eventually result in a monolingual
individual. It should be noted that the model proposed here is only a theoretical projection, and it would need to be verified through extensive future research.

**Implications Regarding Parental Involvement**

There are challenges to providing intervention in the child’s home language, whether or not it is the sole language of intervention. For example, a speech-language pathologist who has a bilingual child on his or her caseload may not be able to speak the child’s home language, or may not be aware of culturally-appropriate discourse patterns in interacting with the child. For these reasons, training parents as agents of intervention may be important in a multicultural society. Kohnert et al. (2005) suggested the potential effectiveness of joint clinician-parent intervention programs for the delivery of intervention in the child’s home language. Thus, the finding that the mothers in the current study were able to learn and implement dialogic book-reading techniques is important in the context of designing culturally-appropriate intervention programs for bilingual children.

The current study had some positive effects on the shared book reading practices of both the children and their mothers. Huebner and Meltzoff (2005) conducted a study that examined whether parental use of dialogic book-reading strategies would improve after instruction. The results indicated that few parents read using dialogic strategies prior to instruction, while the instruction yielded more than four-fold increase in parents’ dialogic book-reading behavior. Many children with vocabulary and language difficulties also show attentional difficulties (Paul, 2001), and may dislike interacting with books (William & Coutinho, 2008). Kaderavek and Justice (2002) recommended monitoring children’s motivation to participate in shared book reading in order to maximize its benefits. Furthermore, William and Coutinho (2008) suggested that increasing children’s motivation to interact with books may be an important outcome of
intervention. Through dialogic book-reading, the mothers in the present study were able to increase their children’s interest in books to the point of being able to use the books to teach new words. A number of children improved in their ability to focus on books and in their enjoyment of the book reading activities. These behavioral changes, observed by the end of the study, were added benefits of the intervention and are similar to those that have been previously reported by Dale et al. (1999).

The training of the mothers was easy to implement, and the mothers reported that they enjoyed learning about the dialogic book reading strategies and making changes to their reading patterns. The mothers’ comments on the satisfaction questionnaire indicated that their interactional style had changed towards becoming more responsive to their children’s communicative attempts through the utilization of such strategies as initiating joint attention, slowing down their speech rate and expanding on their children’s utterances. The benefits of a responsive interactional style as opposed to a directive one for accelerating language development have been extensively reported in the literature (Snow, 1994; Tamis-LeMonda, Bronstein, & Baumwell, 2001), as reviewed in Girolametto and Weitzman (2002).

Another important point related to the benefits of parental involvement in early intervention is the issue of wait times for speech-language services. According to recent communication with an intake worker from the agency through which the children were recruited, waiting lists for preschool speech and language initiatives tend to be lengthy, and six to eight months may elapse between the time of referral and time of assessment. After the initial assessment, there is also sometimes a two- to three-month period of waiting for the initiation of treatment. Training parents in dialogic book-reading may allow them to feel empowered to create a difference in their child’s vocabulary learning prior to the commencement of formal
intervention programs, which may allow children and families to capitalize on time that might otherwise be spent waiting, with potential beneficial effects. The potential utility of suggesting dialogic book reading to parents as they wait for speech-language service is an important research agenda for future studies.

It is important to note, nevertheless, that the Spanish intervention provided by the mothers resulted in a lesser magnitude of outcomes in the children’s learning of Spanish target words when compared to English target words. There are several possibilities for why this may be the case. The first explanation may be due to input factors in the environment of the participating children. It should be noted that the intervention group of children is clearly divided with respect to the number of targets that they acquired in Spanish, as shown in Appendix P. The mean number of Spanish target words acquired by the intervention group was lower than that of the English targets (3.2 versus 6.7 words). However, half of the children in the intervention group (ID2, ID3, and ID6) were able to learn 5 to 6 targets in Spanish, which is, in fact, quite comparable to the mean of 6.7 targets acquired in English by the intervention group as a whole. These were the children whose mothers appeared to be providing them with the most consistent Spanish input outside of the intervention sessions based on information provided in the parent report on children’s language input that was summarized in Table 3.

ID3 and ID6 were exposed to English only outside of the family home through daycare and older relatives, and both of their parents spoke exclusively Spanish with them in their homes. ID2 was exposed to English in interactions with his father and to Spanish consistently in interactions with his mother. In contrast, the children who learned fewer Spanish target words (0 to 2 words) were ID1, ID4, and ID5. The mothers of ID1 and ID5 were single mothers who reported that they were providing their children with a balanced input in both languages. All of
the mothers were instructed to speak Spanish during the interventions sessions, and they were found to do so during the treatment fidelity observations. However, the mothers of ID1 and ID5 may have been code-switching during intervention sessions that they conducted without the investigator present because they were accustomed to doing so in their regular daily interactions with their children. In other words, these mothers’ intervention sessions may not have consisted of an exclusive exposure to Spanish. Finally, the child ID4 was observed to interact with his brother in English at all times when the investigator was in his home. It may be hypothesized that in the case of this child, motivational factors played a greater role than input factors, since English was the language of the daycare that he was attending together with his brother.

Coincidently, the mothers of children who learned fewer Spanish targets (ID1, ID4, and ID5) also had a lower level of education than the mothers of children who learned more Spanish targets (ID2, ID3, and ID6). The education of the mothers of ID4 and ID5 consisted of having completed high school, which represented the lowest education level of the group. In contrast, the mothers of ID2 and ID3 both had post-secondary education. Consequently, the general socio-economic status of the families in which the children learned more Spanish targets was higher, as reflected by the educational level of the mothers. Therefore, it may be difficult to separate the effects that maternal education, socio-economic status, and language input may have had on the children’s acquisition of Spanish targets words and on their acquisition of vocabulary in general. However, the results of this study show that children who are provided with consistent Spanish input through dialogic book-reading may potentially learn similar numbers of target words in Spanish to those learned in English.

Finally, motivation may have been a factor that affected what language the children were more likely to acquire (Genesee et al., 2004). Some of the children, including ID4 described
above may have been highly motivated to learn words in English as they perceived this to be the
language that is used more often in the wider community and by their peers in preschool and
even their siblings, as well as in electronic media such as television and children’s movies. As
mentioned previously, this situation may put the children’s proficiency in Spanish more at risk,
and constitutes an important argument in favor of the model of continued home language support
that was proposed above.

Limitations

The current study had a number of limitations. First, the sample of children recruited in
the study was relatively small, and the number of children in the groups may not have given
sufficient power to the statistical analyses given the degree of variability among participants.
Five children were late-talkers, four were older children with communication delays, and three
children had vocabularies within the lower end of the normal range. The sample consisted of
self-referred participants who were recruited in blocks. Since participants were recruited in pairs,
there was no random assignment or direct matching of the participants. The sample of children
was also quite heterogeneous with respect to their intake vocabulary sizes and ages.
Nevertheless, the two groups of participants were comparable on their intake characteristics. No
standardized measure of children’s general expressive language abilities and vocabulary such as
the PL-4, or the EOWPV were obtained, which created some difficulty in comparing the
research findings with the existing literature. Furthermore, while children’s developmental levels
and adaptive behaviors were assessed using the Vineland-II, no specific IQ measure was used in
this study. Future research should include these assessment procedures.

Second, in terms of the procedures, while translation equivalents were intentionally
avoided in the selection of target vocabulary in each language, there was no control related to
whether or not the child had already acquired a word targeted in one language in his or her other language. The existence of translation equivalents may have facilitated the acquisition of new words for some of the children. On the other hand, the mutual exclusivity constraint may have restricted the children’s learning of the words for which they had a translation equivalent. This is also an important area for future research.

Third, the treatment fidelity measures related to the intervention provided by the mothers as opposed to the experimenter were also somewhat limited, although regular weekly observations of the mothers’ sessions were made. There was also a lack of control in the extent to which the mothers continued with reading during the period of six weeks between the posttest and the delayed posttest. This may have had an effect on the maintenance of some of the children’s vocabulary at the time of the delayed posttest.

Fourth, the treatment intensity related to the duration of the mothers’ intervention sessions was not directly controlled. The only requirement for the mothers was that they elicited and modeled each target word three times during a reading session. Although not observed directly, it is possible that some mothers provided more than three models of a target word in any given session. Therefore, either the length or the dose of the treatment in this study was not sufficiently controlled to ensure generalized gains in overall vocabulary for all of the children. Future studies examining various dosages of dialogic book-reading treatment with larger samples and a greater focus on increasing overall vocabulary rather than individual target words are currently needed.

Fifth, the mothers’ input during the Spanish intervention sessions varied across families, while the primary investigators’ English input was more consistent because it was provided by the same instructor for all six children. While treatment fidelity procedures were in place to
ensure that the parents mastered the dialogic book-reading strategies, the degree of implementation of these techniques may have varied across families while the primary investigator was not present. These findings are similar to those reported in the meta-analysis by Mol et al., (2009) where it was found that oral language and vocabulary outcomes were greater in those dialogic book-reading studies in which the intervention was provided by researchers or graduate students as compared to trained educators. Future studies should include regular videotaping of parental reading sessions to ensure that the strategies are applied consistently by all adult participants.

Finally, certain biases inherent to this investigation need to be acknowledged. First, the primary investigator designed the study and also conducted both the intervention and the assessment of the learning of target words, which is typical for doctoral-level research but may have introduced bias into the study. Reliability of children’s productions of target words calculated on 25% of posttest and delayed posttest videotapes addressed this source of potential bias to some degree. The parent satisfaction questionnaire may also have reflected parental bias in that the mothers may have been more likely to report the intervention as having been beneficial for their children’s vocabulary learning, since they had conducted it themselves. The responses to the questionnaire also lacked complete anonymity as they were returned directly to the investigator, although they were not completed in the investigator’s presence.

**Future Directions**

The limitations outlined in the previous section should be addressed in conducting a full-scale efficacy study in order to yield more rigorous empirical evidence related to dialogic book-reading with bilingual preschool children who have vocabulary delays. A replication of the study with a larger and more homogeneous sample and including random assignment to experimental
and control groups may result in improved power for future statistical analyses and would likely also permit the application of parametric statistical procedures. It would be useful to include standardized measures of IQ, vocabulary, and language in the initial assessment of children. More stringent treatment fidelity procedures should be instituted, including the videotaping of individual sessions and maintaining logs of reading activity in the follow-up time period prior to the delayed posttest. While it may be of theoretical interest to conduct a dialogic book-reading study with bilingual children in which the Spanish component would be provided to all children by a single clinician, this would detract from the focus on parental involvement that was perceived to be an important benefit of the study. A finding of clinical importance in the current study was the fact that the mothers were able to effectively carry out the Spanish book-reading sessions based on models provided by the investigator. Increased methodological rigor could be achieved through analyses of videotaped parental reading interactions. In order to address some of the biases inherent to the current study, interventionists and assessors should be individuals who are not directly involved in the provision of the intervention and in the data collection associated with the study. Any data collected from parent questionnaires could be mailed to the investigator anonymously in an unidentifiable envelope.

There are also a number of directions for future research that build on the strengths related to the methodology of the present study. It may be important to examine the effectiveness of a bilingual intervention in which the English intervention is provided by early childhood educators, and the home language intervention is provided by parents. This may be a practical format for the delivery and evaluation of a dual language intervention in the current context of multilingualism and multiculturalism that exists in North America. It may also be of interest to replicate the current study using a control group of children provided with monolingual intervention to address the question of the effectiveness of monolingual versus
bilingual intervention. Parental outcomes also need to be investigated in further detail. More
quantitative measures of the actual impact of parental participation on the children’s outcomes in
early intervention would be needed. Videotaped intervention sessions may be analyzed to
examine changes in parental use of specific dialogic book-reading strategies pre- and post-
training.

Any study that aims to influence child language outcomes through parental training does
so through altering some aspect of the caregivers’ style of interaction with children. There are
important cultural implications for the success of such approaches when training is conducted
with caregivers who come from linguistically diverse populations. While the results of the
present study point to the appropriateness of dialogic book reading strategies for Spanish-
speaking mothers, it would be important to determine whether or not cultural differences may
exist in the application of dialogic book-reading strategies across the families from various
linguistic backgrounds and representing varying socio-economic status.

It would also be important to explore the possible differential effects of the targeting of
word classes on vocabulary learning of bilingual children in more detail. Several considerations
for the choice of target words were not applied to the study that may be of interest in future
research. Among these considerations are the phonological characteristics of target words and
any pre-existing receptive knowledge of these targets. Furthermore, it was intentionally decided
not to use any translation equivalents as intervention targets because the implications of doing so
were not clear. It may be an important direction for future research to investigate whether or not
teaching children translation equivalents is as an effective intervention strategy for facilitating
expressive vocabulary acquisition, as has been shown for receptive vocabulary by Perozzi
(1985), and Perozzi and Chavez-Sanchez (1992). It may also be of interest to investigate the
proposed theoretical model of lexical representation in bilingual children with and without vocabulary delays. Another possibly interesting direction for future research related to the issue of lexical and conceptual representations in the memory of bilingual individuals is to examine the potential use of cognates (translation equivalents that have a similar phonological form) in bilingual vocabulary interventions.

Finally, a very important future direction of research with bilingual children referred for language services would be to follow these children longitudinally, tracking their ongoing development in vocabulary as well as in other areas of language. Of the six children who received bilingual intervention as a part of this study, two children received subsequent treatment (ID1 and ID6), parents of two of the children declined treatment when it was offered (ID4 and ID5), and one child was found not to be at risk for language services at the time of assessment and was placed on the monitor list of a speech-language pathologist (ID3). It would also be important to examine what impact a bilingual dialogic book-reading intervention might have on children’s discourse with their mothers, and how well the mothers were able to continue with the dialogic book-reading strategies they were taught as part of the intervention.

Conclusions

This study was the first of its kind to examine the feasibility of using a dialogic book-reading intervention for the vocabulary acquisition of preschool Spanish-English bilingual children with slow expressive vocabulary development. The results of the study showed that these bilingual children were able to learn sets of target words in both of their languages following dialogic book-reading intervention. The findings of this study related to learning target words using dialogic book-reading were positive enough to warrant a future efficacy study
examining dialogic book-reading with bilingual children in both of their languages simultaneously.

Benefits of learning target words were observed in both English and Spanish. This suggests that even children who have difficulties in early vocabulary learning may benefit from continuing to learn two languages. This contrasts with previous views in the field of speech-language pathology that early vocabulary intervention should be limited to the language of the majority, as noted in a review Gutierrez-Clellen (1999). The study also demonstrated that dialogic-book reading is a potentially useful, family-centered approach for facilitating the learning of target words in bilingual children at risk for future vocabulary and language difficulties. It indicated that dialogic book-reading may also be relatively cost-effective, easy to learn, and results in feelings of empowerment for parents. Future studies examining the effectiveness of dialogic book reading using a more rigorous methodological paradigm are warranted based on the findings obtained in the current study.

The current study was unique in that it included training parents as agents of intervention in a bilingual dialogic book-reading intervention. This allowed them not only to participate in the program following a convenient schedule but also to provide an intervention for their child in a language that a speech-language pathologist may not speak. Educating parents in dialogic book-reading techniques while their children are on waiting lists for speech-language services may achieve two important goals. First, the home-based component of an intervention may begin as soon as the parents indicate their concern about their child’s language development. Second, parents may continue to expose their children to their home language in a format conducive to language learning, thereby potentially reducing or avoiding possible language loss when clinical services begin. This type of a service delivery for bilingual clients may have significant benefits
in multicultural and multilingual countries. Such an approach may contribute to enhancing bilingual vocabulary development in children at risk for reduced language, social, and academic outcomes related to their delayed vocabulary development.
References


Appendix A: Letter of Invitation for Parents of Children on the Waiting List

Padres de familia,

Su hijo(a) está en espera de los servicios de terapia de lenguaje que provee la organización de XXX. I.T. y Dra. A. E., las investigadores de la universidad de XXX, están evaluando un nuevo programa para los niños(as) que esperan estos servicios. Este proyecto es una investigación sobre un tratamiento para ayudar a los niños(as) a aprender palabras nuevas. Las investigadoras buscan niños(as) preescolares bilingües que hablen español e inglés y que tengan dificultades de lenguaje.

Este programa podría ser apropiado para su hijo. El programa podría empezar inmediatamente, y si su hijo participa no se removerá de la lista de espera de los servicios de XXX. La carta de información que explica el proyecto se incluye con este mensaje.

Para averiguar si este programa es apropiado para su hijo, y para explicarle a usted los detalles, los investigadores quisieran reunirse con usted y su hijo. Si usted esta de acuerdo, por favor llame D. B. del XXX a este numero de teléfono: XXX.

D. B. le dará su número de teléfono a las investigadoras del proyecto y ellas le contactarán para explicar el programa y responder a sus preguntas. Usted no debe decidir si su familia participará en la investigación antes de este momento, y su decisión no afectará los servicios que reciba de XXX

Atentamente,
Appendix B: Phone Call Script and Fax Form

Recruitment criteria--check all prior to reading script to parent:

<table>
<thead>
<tr>
<th>CRITERIA</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Primary Language Spoken at Home is Spanish</td>
<td></td>
</tr>
<tr>
<td>2. Child is between 18 and 36 months of age</td>
<td></td>
</tr>
<tr>
<td>3. Child is not speaking in sentences yet</td>
<td></td>
</tr>
<tr>
<td>4. No diagnosis of autism or developmental delays</td>
<td></td>
</tr>
</tbody>
</table>

SCRIPT:

“Your child is now on the wait list for the regular speech and language services provided by our quadrant. In addition to these regular services, we are also working with researchers from the University of XXX to develop and evaluate a new program for young children who are waiting for our service. The new treatment program teaches children words as well as teaching parents special book reading strategies that are known to facilitate language learning. Your answers to my earlier questions suggest that this new program might be appropriate for your child. A meeting with you and your child will be required to determine whether the new program is right for your child. If it is right for your child, it will begin immediately, without taking your child off the wait list for the regular services. I would like to include an information letter about this research program with the package I am sending you on our regular services. If you agree, I will also provide your name and phone number to the coordinator of the research project. Her name is I. T., and she will then contact you in 7-10 days to explain the research project and answer any questions you might have. You will then be able to decide whether or not you and your child wish to be involved in the research. You are under no obligation to take part in this project and your decision to participate in the project or not will not have any affect on the services we will be providing for your child. May I send you information on the research project and give your name and phone number to the research coordinator?”

INTAKE STAFF:

Please complete the following and fax to I. T. at XXX. Then file this form in child’s file.

<table>
<thead>
<tr>
<th>Parent provided verbal consent to share name and phone number with researcher</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date Permission obtained:</td>
<td>Mm/dd/yyyy:</td>
</tr>
<tr>
<td>Signature of Intake Staff:</td>
<td></td>
</tr>
</tbody>
</table>

CLIENT INFORMATION:

<table>
<thead>
<tr>
<th>Name of Parent:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of Child:</td>
<td></td>
</tr>
<tr>
<td>DOB of Child:</td>
<td></td>
</tr>
<tr>
<td>Telephone Number:</td>
<td></td>
</tr>
</tbody>
</table>
Appendix C: Parent Information Letters (in English and Spanish)

Introduction

I am conducting a study to investigate how reading books with preschool children using special reading techniques may affect children’s learning of new words. I am looking for pre-school aged bilingual children who speak Spanish and English and who are late talkers, and their parents, to participate in this study. This study is being undertaken in partial fulfillment of my Ph.D. degree requirements.

What will the intervention include?

The intervention will consist of reading books to your child using special reading techniques. These techniques are designed to make reading to your children more enriching, more fun, and they have been shown to help children build early reading skills. You will be trained to use these techniques.

You will be given a set of three books in Spanish, with pictures that will be used to talk about the words your child will be learning. You will be asked to read and discuss pictures of the book using the strategies you will be trained in and focusing on the new vocabulary items, for 15 minutes every working day during six weeks (30 sessions in total). Also, I (the primary investigator) will read to your child in English, for 15 minutes every working day during six weeks (30 sessions in total).

Half of the families that agree to participate in the project will be assigned to an intervention group. The rest of the families will participate in the control group. If your family is assigned to the control group, you will still be trained to use the special reading techniques, but only at the end of the study (with an option of training the child’s English speaking caregiver as well if they desire to do so).

What will we do before the start of the intervention?

I will meet with you and your child (you can speak English or Spanish during the session). All the meeting sessions will be scheduled at your convenience. We will have two meetings before the start of the intervention.

1. At the first meeting, you will be asked to complete these reports (45 minutes in total):
   - A questionnaire about your child and your family
   - English and Spanish language report
   - Development report

   While you are completing these reports, your child will have a hearing screening (5 minutes).

2. After obtaining this information from the language reports, I will choose ten target words in each language that your child does not know as a focus of the intervention. At the second meeting, you will be asked to participate in these word verification activities, to confirm if your child does not know the chosen words:
   1. Your child will play with you speaking Spanish, and with me speaking English (15 minutes for each activity). These activities will be videotaped.
2. Your child will have a book read to him or her by you in Spanish and by me in English (15 minutes for each activity). These activities will be videotaped.

These activities are designed to be enjoyable for children. During testing, your child will be encouraged with verbal praise and will be provided with stickers for his/her participation.

3. After these activities, you will have an option of having a separate training session to learn the intervention techniques, or you can have the training as a part of the second meeting. At this point, you will be introduced to the reading strategies only if your child is assigned to the intervention group. If not, you will receive this training after the completion of the study. The training will include watching a videotape and discussing it with me (30 minutes).

*What else happens during the intervention time?*

Since I will be visiting your family every working day to read to your child, I will be available to answer any questions you might have. If your child does not receive all the 30 sessions during six weeks, or if you do not follow the procedures correctly, the treatment will be extended.

At the end of the third week, your child’s progress of learning the new words will be assessed using the same verification procedures as at the beginning of the study.

*What will happen after the intervention (in six weeks)?*

At the end of these six weeks, the assessment procedures outlined above will be repeated. There will be another final assessment, consisting of the same procedures, six weeks after the completion of the program.

*What will be my total time commitment?*

The total time commitment for parents will be approximately three hours and 30 minutes of assessment and training (distributed over four or five short meetings) and seven hours and thirty minutes of book-reading.

*Are there any risks or benefits to my child participating?*

- There are no risks or discomforts to your child
- The benefits to the children in the study include potentially facilitating their word learning in general, and learning the target words in particular
- The benefits to parents include receiving training in dialogic book reading strategies, with a certificate of training completion from the University of Toronto
- Your child’s and your own participation is completely voluntary. All of the activities your child will be asked to participate in are designed to be enjoyable for preschool children. It is up to you whether or not your child participates. Should you agree to have your child participate and then change your mind, you are free to withdraw your child at any time without affecting you or your child in any way

*Who will have access to the videotapes, and will the tapes and information collected on my child be confidential?*

All information will be kept strictly confidential. The children’s names will be replaced with numbers on all materials collected. Videotapes will be used only for the research purpose described and will not be used by anyone other than the research team, unless the signed, written permission is obtained from the children’s parents. All
collected and recorded information will be stored in a locked cabinet in Dr. A. E.’s Lab at the University of XXX. The primary investigator will destroy the tapes after seven years.

If you have any further questions or concerns regarding your child’s participation in this study, please do not hesitate to contact me at any time.

Sincerely,

Carta De Información

Introducción

Este proyecto es una investigación sobre un tratamiento que propongo para ayudar a los niños(as) a aprender palabras nuevas. Busco niños(as) preescolares bilingües que hablen español e inglés y que tengan dificultades de lenguaje. Los padres también participarán en el tratamiento. Este proyecto es un requisito para mi tesis de doctorado.

¿Qué incluye la intervención?

La intervención consiste de lectura con niños(as) usando técnicas de lectura especiales. Estas técnicas de lectura son designadas para enriquecer la lectura y hacerla más divertida. Ha sido demostrado que estas técnicas ayudan la lectura a temprana edad. Le entrenaré a usted en estas estrategias de lectura interactiva.

Le daré tres libros ilustrados en español para que usted los use para practicar las palabras nuevas. Le pediré que le lea a su hijo(a) y hable con el (ella) sobre las imágenes, enfocando palabras nuevas y usando las técnicas en las que le entrenaré. Leerá de esta manera durante 15 minutos 5 días por semana, durante 6 semanas (30 sesiones en total). También, leeré con su hijo(a) en inglés, por 15 minutos 5 días por semana, durante 6 semanas.

A la mitad de las familias que acepten participar en la investigación, les pediré que participen en el grupo del tratamiento. La otra mitad de las familias participarán en el grupo de control. Si su familia es asignada para el grupo de control, también será entrenada, pero al final de la investigación. También, podría entrenar las personas que hablen inglés con su hijo(a) para leer con su hijo(a) en inglés.

¿Qué haremos antes del comienzo de la intervención?

Me reuniré con usted y su hijo(a) (puede hablar español o inglés durante las reuniones). Todas las reuniones van a ser de acuerdo a su tiempo disponible. Tendremos 2 reuniones antes del comienzo de la intervención.

1. Durante la primera reunión, le pediré que complete estos reportes (45 minutos en total):
   - Un cuestionario de información sobre su niño(a) y su familia
   - Un reporte del conocimiento de español e inglés de su niño(a)
   - Un reporte del desarrollo de su niño(a)

   Mientras esta completando los reportes, la audición de su hijo(a) será chequeada (5 minutos).
2. Después de que tenga esta información, seleccionaré 10 palabras que su hijo(a) no sepa en cada idioma para enfocar el tratamiento, usando los reportes de conocimiento de español e inglés. Durante la segunda reunión, confiraremos que no sabe las palabras seleccionadas usando estas actividades:

- Su hijo va a jugar con usted hablando español, y conmigo hablando inglés. Le pediré a su hijo decir los nombres de algunos juguetes en inglés, y usted hará lo mismo en español (15 minutos por cada actividad).
- Usted leerá a su hijo hablando español, y yo leeré a su hijo hablando inglés (15 minutos por cada actividad)

Los niños(as) disfrutarán con estas actividades. Le daré a su hijo(a) stickers (calcomanías) para mantener su interés durante las actividades. Su hijo(a) puede descansar cuando lo necesite. Las actividades serán filmadas.

3. Después, usted tendrá la opción de tener una sesión separada para el entrenamiento (la tercera reunión) o usar la segunda reunión para este propósito también. Usted será entrenada a este punto solo si su niño(a) es asignado en el grupo que recibe la intervención. Si no, será entrenada al final de la investigación. El entrenamiento en las estrategias de lectura interactiva incluirá ver un video y hablar sobre este conmigo (30 minutos).

¿Qué más ocurrirá durante del periodo de la intervención (6 semanas)?

Como visitaré a su familia 5 veces por semana, tendrá varias oportunidades para resolver cualquier pregunta que usted tenga. Si su niño(a) no recibe las 30 sesiones durante 6 las semanas del periodo de intervención, la intervención se extenderá.

El progreso de aprendizaje de nuevas palabras será examinado al fin de la semana tercera, usando los mismos procedimientos de verificación que se usaron al comienzo de la investigación.

¿Qué ocurrirá después de la intervención (6 semanas)?

Después de 6 semanas de intervención, repetiremos la evaluación de aprendizaje de nuevas palabras con estos procedimientos. En 6 semanas más será la reexaminación final.

¿Cuanto tiempo toma este proyecto?

Le pedirá investir aproximadamente 3.5 horas para los reportes, actividades de verificación y entrenamiento (distribuido en cuatro o cinco reuniones cortas). La lectura va a tomar 7 horas y 30 minutos distribuido en 6 semanas.

¿Hay algunos riesgos o beneficios al participar?

Su hijo(a) no correrá ningún riesgo ni se sentirá incomodo durante la intervención.

Los beneficios para su hijo incluyen la ayuda en lenguaje en general y especialmente el aprendizaje de las palabras seleccionadas. Los beneficios para usted incluyen recibir el entrenamiento en las técnicas de lectura interactiva, y un certificado de la Universidad de Toronto.
La participación de usted y de su hijo(a) en este estudio es completamente voluntaria. Todas las actividades son designadas para ser divertidas. Si usted acepta participar y cambia su opinión, tendrá la libertad de retirar a su hijo(a) en cualquier momento sin que hayan consecuencias para el (ella).

¿Quién va a tener el acceso de la información obtenida de mi hijo?

Toda la información será estrictamente confidencial. El nombre de su hijo(a) ó cualquier información que lo identifique serán removidos de todos los formatos recolectados. Las videos de su hijo se van a usar solamente para este proyecto y ninguna persona diferente de los investigadores del proyecto las usará sin su consentimiento. Toda la información recolectada se va a mantener en el gabinete cerrado en la oficina de la Dr. A. E., en la Universidad de XXX. Destruiré los videos después de 7 años.

Si tiene alguna pregunta sobre la participación de su hijo(a) en este estudio, por favor no dude en contactarme.

Atentamente
Appendix D: Consent Forms (English and Spanish)

Name of a parent: ________________

Child’s name: ________________ Date of Birth: ________________

I, __________________________, relationship to child _____________ agree to allow my child ________________ (child’s name) to participate in this study on the effects of dialogic book reading on my child’s vocabulary learning, conducted at my home and at my child’s childcare.

I understand that I am being asked to read books to my child using the dialogic book-reading techniques proposed by the investigators. I understand that my child will be videotaped by the primary investigator in his or her interactions with me and with the primary investigator.

I understand that I am under no obligation to agree to have my child participate in this study. I understand that my decision to have my child participate in this study will not affect my child’s registration or participation in the preschool. I further understand that I may decide to withdraw my child from this study at any time without consequence to myself or to my child. I understand that my child’s name and any identifying information will be removed from all materials collected and that all information will be kept strictly confidential. I understand that I may obtain a copy of the results of the study upon request.

I understand that my child’s participation will not be requested if his or her language, hearing or development do not match the recruitment requirements.

I understand that while I will be given compensation in the form of the children’s books at the completion of the study, I am required to return the books provided for my child for the duration of the study.

I understand what this study involves and have been given a copy of the information form. My questions have been answered to my satisfaction. I agree to allow my child to participate in this study. I have been given a copy of this consent form.

_____________________________                         ______________________
Signature of Parent                             Date

_____________________________                         ______________________
Countersigned                                                  Date
Consent Form for Videotaping

Adult’s name: ____________________

Child’s name: ____________________

I, __________________________, relationship to child ____________________ agree that I and my child (if applicable) __________________ (child’s name) be videotaped in the course of this study on the effects of dialogic book reading on children’s vocabulary learning.

I understand that the videotapes may be used for future studies of communication of bilingual children with expressive language delay and their caregivers.

I understand that I am under no obligation to agree that I and my child (if applicable) be videotaped in this study. I understand that my decision to allow that I and my child (if applicable) will be videotaped in this study will not affect my child’s registration or participation in the preschool, or my employment. I further understand that I may decide to withdraw myself and my child (if applicable) from this study at any time without any consequence. I understand that all the names and any identifying information will be removed from all materials collected and that all information will be kept strictly confidential. I understand that I may obtain a copy of the results of the study upon request.

I understand what this study involves and have been given a copy of the information form. My questions have been answered to my satisfaction. I agree to allow that I and my child (if applicable) be videotaped in this study. I have been given a copy of this consent form.

_____________________________                     ______________________
Signature of caregiver                     Date

_____________________________                     ______________________
Countersigned                     Date
Consentimiento

Nombre del padre/madre: ________________

Nombre del niño: ________________  Fecha de nacimiento: ________________

Yo, __________________________, (relación con el niño) _____________ le doy permiso a mi hijo(a) ________________ (nombre del niño(a) para que participe en la investigación sobre lectura interactiva para aprender vocabulario que se llevará a cabo en mi casa.

Entiendo que se requiere que yo le lea libros a mi hijo(a) usando las técnicas de lectura interactiva que proponen los investigadores. Entiendo también que el investigador principal filmará a mi hijo(a) algunas veces durante las interacciones conmigo y los investigadores.

Entiendo que no estoy en obligación de aceptar la participación de mi hijo(a) en este estudio. Entiendo que puedo decidir retirar a mi hijo(a) en cualquier momento sin que hayan consecuencias para el (ella). Entiendo que el nombre de mi hijo(a) y cualquier información que lo identifique será removida de todos los formatos recolectados y que esa información será estrictamente confidencial. Entiendo que puedo obtener una copia de los resultados si lo solicito.

Entiendo que la participación de mi hijo(a) no será requerida en caso de que su lenguaje, audición, o desarrollo no estén de acuerdo con los requerimientos de este estudio.

Entiendo que aunque seré compensado con libros infantiles cuando termine el estudio, se requiere que retorne los libros que se le dieron a mi hijo(a) durante el estudio.

Entiendo que se trata este estudio y se me ha proporcionado una copia de la hoja de información. Mis preguntas han sido resueltas. Permito que mi hijo participe en este estudio. Se me ha proporcionado una copia de esta forma de consentimiento.

____________________________                         ______________________
Firma de la madre/padre                             Fecha

_____________________________                         ______________________
Countersigned                                                              Fecha
Appendix E: Medical History Form

GENERAL DEVELOPMENT

A. Pregnancy and birth history
What illnesses and/or accidents occurred during pregnancy?
Did the mother have any miscarriages or stillbirths?
Length of labor
Age of the mother at child’s birth
Any unusual problems at birth?
Were drugs used?
Instruments?
Were there bruises or abnormalities on the child’s head?
Other abnormalities?
Birth weight?
Did infant require oxygen?
Was infant “blue” at birth?
Jaundiced?
Any health problems during the first week of life?
At what age did the infant regain birth weight?
B. Developmental history
At what ages did the following occur?
Held head erect while lying on stomach
Smiled
Sat alone unsupported
Crawled
Dressed or undressed him or herself
Fed him or herself with a spoon
Maintained bowel and bladder control while awake
Maintained bowel and bladder control while asleep
Had first tooth
Does the child seem awkward or uncoordinated?
Does the child have chewing or swallowing difficulties?

MEDICAL HISTORY

At what ages did any of the following illnesses or operations occur: whooping cough, mumps, scarlet fever, measles, chicken pox, pneumonia, diphtheria, croup, influenza, polio, headaches, sinus problems, meningitis, rheumatic fever, cleft palate, earaches, running ears, chronic colds, head injuries, venereal disease/AIDS, asthma, allergies, convulsions, encephalitis, high fevers, typhoid, tonsillitis, tonsillectomy, adenoidectomy, mastoidectomy, and kidney disease.
Describe any other operations the child had
Where has the child been hospitalized? When?
Describe any serious illness the child has had
What illnesses have been accompanied by extremely high fever? Temperature and duration?
Describe any deformities the child has
Have the child’s eyes been examined? When, by whom, results?
Is the child now under special care of a physician? Why?
Is the child now under special care of a dentist? Why?
Is the child now taking any medication? Why, what?

DAILY BEHAVIOR

Does the child have sleeping problems?
Does the child have eating problems?
Does the child have difficulty concentrating?
If given a choice, does the child tend to play alone or with other children?
Ages of playmates, how well does the child get along with other children? With adults?
Is it difficult to discipline the child?
Describe the child’s favorite activities?
Describe any unusual behavior

SPEECH LANGUAGE AND HEARING HISTORY

Did the child babble and coo during the first six months?
When did the child use first words meaningfully (not in imitation)?
Estimate how many words are presently in the child’s vocabulary: under 25, 25 – 75, over 75?
Has the child’s vocabulary increase or decreased?
When did the child begin to use two-word sentences?
Indicate how often the child uses speech: frequently, occasionally, seldom, never?
Indicate how the child prefers to communicate: gesture, sound, one or two words, phrase, complete sentence?
If the child prefers gestures to speech, give example
How well is the child understood by parents, brothers, sisters, playmates, others?
Does the child point to common objects when asked, “Show me the…”, “Where is the…”?
Will the child follow simple directions such as, “Get me the…”?

Please answer the following with a “yes” or “no” for each age:

<table>
<thead>
<tr>
<th></th>
<th>1st year</th>
<th>2nd year</th>
<th>3rd year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generally indifferent to sound</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of response when spoken to</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response to noise and not voice</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than normal amount of crying</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than normal amount of laughing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Head banging or foot stomping</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yelling or screeching to attract attention or express annoyance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marked alertness to gesture, facial expression, and movement</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Do you think the child hears adequately?
If not, what do you feel is the reason?
Does the child’s hearing or speech appear to be constant or does it vary?
Is the child’s hearing poorer when he or she has a cold?
Appendix F: Family Characteristics Form

Date:____________
Name of person completing the form:_______________________________________
Relationship to the child:       Mother       Grandmother      Other ________________
Phone number home:______________________ work:_________________________
Address:______________________________________________________________
E-mail:________________________________________________________________
Structure of your family:    Single parent      Two parent     Other___________________
Parent A:   Mother   Father
Years of schooling: _____Post secondary ______Diploma________________
Current job: _____________________________________________________
Parent B:   Mother   Father
Years of schooling: _____Post secondary _____Diploma________________
Current job: _____________________________________________________
What is your combined family income from all sources before taxes (for example, wages and salaries, income from self-employment, employment insurance, pensions, child support, alimony etc.)?

<table>
<thead>
<tr>
<th>Income Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below $20,000</td>
</tr>
<tr>
<td>$20,000 to less than $30,000</td>
</tr>
<tr>
<td>$30,000 to less that $40,000</td>
</tr>
<tr>
<td>$40,000 to less than $50,000</td>
</tr>
<tr>
<td>$50,000 to less than $60,000</td>
</tr>
<tr>
<td>$60,000 to less that $70,000</td>
</tr>
<tr>
<td>$70,000 to less than $80,000</td>
</tr>
<tr>
<td>more than $80,000</td>
</tr>
</tbody>
</table>

Languages of your home:         Spanish       English       Other___________________
How many hours is Spanish spoken, and by whom? ____________________________
How many hours is English spoken, and by whom? ____________________________
Who cares for your child during the day: ___________________________________
Language used with your child during the day:      Spanish       English   Other________
How many hours a day is Spanish spoken to your child, and by whom?___________
How many hours a day is English spoken to your child, and by whom?______________

Child’s name:___________________________________________________________

Date of birth:  DAY______MONTH_______YEAR______

Birth order: ______________________   Gender:  Male          Female

Are there any other children in the home (please indicate their age/gender/fist language)______________________________________________________________

Problems with the pregnancy, delivery, after birth, or premature birth _______________

Any significant health problems_____________________________________________

Has your child had any hearing problems?         Yes         No

How many ear infections has your child had in the past 12 months?  _______________

Do you have any concerns about your child’s development (if yes, please explain)____
                                                                                   ____________________________________________________________

What type of problem with speech or language does your child have (please check all that apply)?

_   Does not understand me and/or others
_   Started to talk late
_   Does not say many different words
_   Speaks only one word at a time
_   Does not say words so others could understand

Other________________________________________________

How long has your child attended English childcare? _________________________

Type of childcare:       Day-care center        Baby-sitter        Other relatives

Is your child currently attending English childcare?           Part time   Full time      No

Type of childcare:       Day-care center    Baby-sitter    Other relatives

How many hours a day in each setting? __________________________
### Appendix G: Children’s Vineland-II Scores (Four Domains of Skills)

<table>
<thead>
<tr>
<th></th>
<th>Daily Living</th>
<th>Socialization</th>
<th>Motor</th>
<th>Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intervention Group</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ID1</td>
<td>98</td>
<td>84</td>
<td>88</td>
<td>86</td>
</tr>
<tr>
<td>ID2</td>
<td>102</td>
<td>96</td>
<td>117</td>
<td>103</td>
</tr>
<tr>
<td>ID3</td>
<td>109</td>
<td>96</td>
<td>111</td>
<td>87</td>
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<td>ID4</td>
<td>105</td>
<td>80</td>
<td>102</td>
<td>91</td>
</tr>
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<td>ID5</td>
<td>98</td>
<td>95</td>
<td>102</td>
<td>84</td>
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<tr>
<td>ID6</td>
<td>94</td>
<td>88</td>
<td>97</td>
<td>67</td>
</tr>
<tr>
<td><strong>Mean</strong></td>
<td>101</td>
<td>89.8</td>
<td>102.8</td>
<td>86.3</td>
</tr>
<tr>
<td><strong>Median</strong></td>
<td>100</td>
<td>91.5</td>
<td>102</td>
<td>86.5</td>
</tr>
<tr>
<td><strong>Min. – Max.</strong></td>
<td>94 – 109</td>
<td>84 - 96</td>
<td>97 - 117</td>
<td>67 – 103</td>
</tr>
<tr>
<td><strong>Control Group</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ID7</td>
<td>91</td>
<td>80</td>
<td>127</td>
<td>91</td>
</tr>
<tr>
<td>ID8</td>
<td>102</td>
<td>89</td>
<td>93</td>
<td>110</td>
</tr>
<tr>
<td>ID9</td>
<td>96</td>
<td>86</td>
<td>90</td>
<td>89</td>
</tr>
<tr>
<td>ID10</td>
<td>95</td>
<td>81</td>
<td>88</td>
<td>57</td>
</tr>
<tr>
<td>ID11</td>
<td>95</td>
<td>87</td>
<td>105</td>
<td>76</td>
</tr>
<tr>
<td>ID12</td>
<td>85</td>
<td>75</td>
<td>84</td>
<td>57</td>
</tr>
<tr>
<td><strong>Mean</strong></td>
<td>94</td>
<td>83</td>
<td>97.8</td>
<td>80</td>
</tr>
<tr>
<td><strong>Median</strong></td>
<td>95</td>
<td>83.5</td>
<td>91.5</td>
<td>82.5</td>
</tr>
<tr>
<td><strong>Min. - Max.</strong></td>
<td>91 – 102</td>
<td>75 - 89</td>
<td>84 - 127</td>
<td>57 – 110</td>
</tr>
</tbody>
</table>
# Appendix H: English, Spanish, and Conceptual Expressive Vocabularies at Intake (Based On Parent Reports)

<table>
<thead>
<tr>
<th>Intervention Group</th>
<th>English</th>
<th>Spanish</th>
<th>Ratio of English to Spanish</th>
<th>Conceptual</th>
<th>Percentage of translation equivalents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Intervention</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ID1</td>
<td>26</td>
<td>6</td>
<td>4.3</td>
<td>31</td>
<td>3%</td>
</tr>
<tr>
<td>ID2</td>
<td>4</td>
<td>18</td>
<td>0.2</td>
<td>21</td>
<td>5%</td>
</tr>
<tr>
<td>ID3</td>
<td>24</td>
<td>39</td>
<td>0.6</td>
<td>52</td>
<td>17%</td>
</tr>
<tr>
<td>ID4</td>
<td>162</td>
<td>59</td>
<td>2.7</td>
<td>191</td>
<td>14%</td>
</tr>
<tr>
<td>ID5</td>
<td>5</td>
<td>3</td>
<td>1.7</td>
<td>6</td>
<td>25%</td>
</tr>
<tr>
<td>ID6</td>
<td>335</td>
<td>90</td>
<td>3.7</td>
<td>349</td>
<td>18%</td>
</tr>
<tr>
<td>Mean</td>
<td>92.7</td>
<td>35.8</td>
<td></td>
<td>108.3</td>
<td>13.7</td>
</tr>
<tr>
<td>Median</td>
<td>25</td>
<td>28.5</td>
<td></td>
<td>41.5</td>
<td></td>
</tr>
<tr>
<td>Min. – Max.</td>
<td>4 – 335</td>
<td>3 – 90</td>
<td>0.2 – 4.3</td>
<td>6 – 349</td>
<td>3 – 25</td>
</tr>
<tr>
<td><strong>Control</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ID7</td>
<td>38</td>
<td>52</td>
<td>0.7</td>
<td>88</td>
<td>2%</td>
</tr>
<tr>
<td>ID8</td>
<td>41</td>
<td>157</td>
<td>0.3</td>
<td>199</td>
<td>1%</td>
</tr>
<tr>
<td>ID9</td>
<td>17</td>
<td>9</td>
<td>1.9</td>
<td>22</td>
<td>15%</td>
</tr>
<tr>
<td>ID10</td>
<td>96</td>
<td>76</td>
<td>1.3</td>
<td>142</td>
<td>17%</td>
</tr>
<tr>
<td>ID11</td>
<td>0</td>
<td>0</td>
<td>N/A</td>
<td>0</td>
<td>n/a</td>
</tr>
<tr>
<td>ID12</td>
<td>137</td>
<td>16</td>
<td>8.6</td>
<td>143</td>
<td>7%</td>
</tr>
<tr>
<td>Mean</td>
<td>54.8</td>
<td>51.7</td>
<td></td>
<td>99</td>
<td>8.4</td>
</tr>
<tr>
<td>Median</td>
<td>39.5</td>
<td>34</td>
<td></td>
<td>115</td>
<td></td>
</tr>
<tr>
<td>Min. – Max.</td>
<td>0 – 137</td>
<td>0 – 157</td>
<td>0.3 – 8.6</td>
<td>0 – 199</td>
<td>1 – 17</td>
</tr>
</tbody>
</table>
## Appendix I: Estimates of Receptive Vocabulary (Words), Based on Parent Reports

<table>
<thead>
<tr>
<th></th>
<th>English Receptive</th>
<th>Spanish Receptive</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intervention Group</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ID1</td>
<td>89</td>
<td>36</td>
</tr>
<tr>
<td>ID2</td>
<td>145</td>
<td>324</td>
</tr>
<tr>
<td>ID3</td>
<td>39</td>
<td>124</td>
</tr>
<tr>
<td>ID4</td>
<td>372</td>
<td>397</td>
</tr>
<tr>
<td>ID5</td>
<td>46</td>
<td>46</td>
</tr>
<tr>
<td>ID6</td>
<td>388</td>
<td>124</td>
</tr>
<tr>
<td>Mean</td>
<td>180</td>
<td>175.2</td>
</tr>
<tr>
<td>Median</td>
<td>117</td>
<td>124</td>
</tr>
<tr>
<td>Min. – Max.</td>
<td>39 – 372</td>
<td>36 – 324</td>
</tr>
<tr>
<td><strong>Control Group</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ID7</td>
<td>39</td>
<td>55</td>
</tr>
<tr>
<td>ID8</td>
<td>109</td>
<td>217</td>
</tr>
<tr>
<td>ID9</td>
<td>257</td>
<td>125</td>
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<tr>
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<td>76</td>
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<td>ID12</td>
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<td>Mean</td>
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<td>111.2</td>
</tr>
<tr>
<td>Median</td>
<td>102.5</td>
<td>100.5</td>
</tr>
<tr>
<td>Min. – Max.</td>
<td>39 – 313</td>
<td>52 – 142</td>
</tr>
</tbody>
</table>
### Appendix J: Target Words

#### A. English Target Words

<table>
<thead>
<tr>
<th>% of total number of words</th>
<th>Experimental</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>(by word class)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bird Cat Fly Star Airplane Banana</td>
<td>23</td>
<td>✓</td>
</tr>
<tr>
<td>Book Glasses Hat Ice-Cream Pig Brush</td>
<td>40</td>
<td>✓</td>
</tr>
<tr>
<td>Apple Ball Bee Bunny Bus Comb</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>Cookie Dog Door Fish Leg Towel Mouth Sink Sock Stove Train Duck Bear Eye Tree</td>
<td>37.5</td>
<td></td>
</tr>
<tr>
<td>Bug Can Egg Flower Horse Mouse Noodles Orange Pineapple Pizza Sheep Shovel Truck Yoghurt Grapes Pajamas Scissors Chair Bed</td>
<td>37.5</td>
<td></td>
</tr>
<tr>
<td>Eat Go Fall Hop Sleep Read</td>
<td>37.5</td>
<td>✓</td>
</tr>
<tr>
<td>(6 verbs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cook Drive Dry Swim</td>
<td>25</td>
<td>✓</td>
</tr>
<tr>
<td>(4 verbs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dance Jump Run Sit Walk Write</td>
<td>37.5</td>
<td></td>
</tr>
<tr>
<td>(6 verbs)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### B. Spanish Target Words

<table>
<thead>
<tr>
<th>Spanish</th>
<th>% of total number of words (by word class)</th>
<th>Experimental</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>☒</td>
<td>☒</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>☒</td>
<td>☒</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>☒</td>
<td>☒</td>
<td></td>
</tr>
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</table>
## Appendix K: Toy Set Used for the Verification of Targets

<table>
<thead>
<tr>
<th>Toys</th>
<th>Additional words elicited</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Vehicles</strong></td>
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</tr>
<tr>
<td>Airplane</td>
<td>Fly</td>
</tr>
<tr>
<td>Bus, car, (fire)truck, train, boat</td>
<td>Go, drive, door, window, wheel</td>
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<tr>
<td><strong>Outside Objects</strong></td>
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<tr>
<td>Tree, rock (stone), flower, star</td>
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</tr>
<tr>
<td><strong>Characters</strong></td>
<td></td>
</tr>
<tr>
<td>Mr. Potato-head</td>
<td>Nose, eyes, teeth, mouth, ears, hat, shoes, glasses</td>
</tr>
<tr>
<td>Caillou (baby)</td>
<td>Pajamas, short, shirt, socks</td>
</tr>
<tr>
<td>Boots (monkey)</td>
<td>Balloons</td>
</tr>
<tr>
<td>Dora, Diego</td>
<td>Items of clothing and parts of the body</td>
</tr>
<tr>
<td><strong>Food</strong></td>
<td></td>
</tr>
<tr>
<td>Banana, orange, carrot, grapes, ice cream, pizza, egg, apple, pumpkin</td>
<td>Eat</td>
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<td>Cookie</td>
<td>Open</td>
</tr>
<tr>
<td><strong>Household Items and Furniture</strong></td>
<td></td>
</tr>
<tr>
<td>Glass, bottle</td>
<td>Drink</td>
</tr>
<tr>
<td>(Paint)brush</td>
<td>Paint</td>
</tr>
<tr>
<td>Pen</td>
<td>Write</td>
</tr>
<tr>
<td>(Hair)brush, (tooth)brush</td>
<td>Brush</td>
</tr>
<tr>
<td>Book</td>
<td>Read</td>
</tr>
<tr>
<td>Scissors</td>
<td>Cut</td>
</tr>
<tr>
<td>Comb, shovel, hammer</td>
<td></td>
</tr>
<tr>
<td>Chair</td>
<td>Sit</td>
</tr>
<tr>
<td>Bed</td>
<td>Sleep, pillow, blanket</td>
</tr>
<tr>
<td><strong>Animals</strong></td>
<td></td>
</tr>
<tr>
<td>Rabbit</td>
<td>Hop, jump</td>
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<tr>
<td>Owl, goose, chicken, duck, bird</td>
<td>Fly</td>
</tr>
<tr>
<td>Penguin and elephant (wind-up)</td>
<td>Walk</td>
</tr>
<tr>
<td>Cats (wind-up)</td>
<td>Dance</td>
</tr>
<tr>
<td>Donkey, zebra, moose, deer, horse (wind-up), sheep, cow, pig, dog, frog, bear, tiger, lion, monkey, giraffe, turtle, mouse</td>
<td>Run, parts of the body</td>
</tr>
</tbody>
</table>
Appendix L: Parent Handout Summarizing Dialogic Strategies

Las Estrategias de Lectura Interactiva

¡Leer los libros ilustrados con su niño(a) es una actividad muy buena para enseñar las palabras nuevas!
Se familiarice con cada libro antes de leerlo con su hijo por la primera vez. Cada vez leyendo el libro juntos, esté segura que enfoque en 3 palabras nuevas que su hijo(a) aprenderá con el libro. Haga los siguientes para cada objeto/acción que usted llamara:

- **Pida las preguntas que empiezan con “que”:** muestre el objeto de enfoque en el imagine del libro y pida: “¿Que es esto?” o “¿Cuál es el nombre de esto?”

- **Puede pedir las preguntas mas generales:** “¿Que puedes ver en este pagina?” o “¿Qué ocurre en este imagine?”. Evite pedir las preguntas a que su hijo(a) pueda responder con “sí” o “no” o con los gestos.

- **Sigue las respuestas con más preguntas:** “¿Que más puedes ver aquí?”. Cuando su hijo(a) diga el nombre de un objeto, pida la pregunta sobre el. Por ejemplo: “¿que está haciendo?”, “¿para que lo usamos?”.

- **Ayude a su hijo(a) cuando es necesario:** si su hijo(a) no puede responder a su pregunta, da la respuesta correcta y pédale repetir lo que usted dije.

- **Felicite y anime a su hijo(a):** dígame a su hijo(a) cuando está haciendo bien: “¡Muy bien!”

- **Agrande lo que dice su hijo(a):** cuando su hijo(a) diga algo sobre el imagine, le felicite y suplemente un poco a lo que ha sido dicho. Por ejemplo, si su hijo(a) diga “Perro corre”, podría decir “sí, el perro corre por el gatito”. En este manera, suplementará las palabras pequeños y las terminaciones que su hijo no use, y dales mas información. Después, podría preguntar algo sobre esta información nueva: “¿Por quien esta el perro corriendo?”. Esté segura que suplemente solamente pocos palabras a lo que su hijo diga, para que el (ella) pueda imitarle.

- **Sigue el interés de su hijo(a):** si su hijo muestra el interés en el imagen (hablando o puntando a el), síguelo inmediatamente con preguntas.

- **Puede hablar sobre todos temas usando los libros, pero esté segura** que enfoque en las palabras nuevas cuando está leyéndolos.

**Disfrútense!** Trate hacer su lectura más divertida y parecida un juego.
Appendix M: List of Books Used in the Study

<table>
<thead>
<tr>
<th>Book Title</th>
<th>Author</th>
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<tbody>
<tr>
<td>“Fire Engines”</td>
<td>Anne Rockwell</td>
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<tr>
<td>“Golden Bear”</td>
<td>Ruth Young and Rachel Isadora</td>
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<tr>
<td>“Good Night, Gorilla”</td>
<td>Peggy Rathmann</td>
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<tr>
<td>“Over in the Meadow”</td>
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<tr>
<td>“Peace at Last”</td>
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<tr>
<td>“Pigs Aplenty, Pigs Galore!”</td>
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<tr>
<td>“Rabbits and Raindrops”</td>
<td>Jim Arnosky</td>
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<tr>
<td>“Road Builders”</td>
<td>B. G. Hennessy and Simms Taback</td>
</tr>
<tr>
<td>“A Summery Saturday Morning”</td>
<td>Margaret Mahy and Selina Young</td>
</tr>
<tr>
<td>“The Tale of Peter Rabbit”</td>
<td>Beatrix Potter</td>
</tr>
<tr>
<td>“The Wolf’s Chicken Stew”</td>
<td>Keiko Kasza</td>
</tr>
<tr>
<td>“Animal-Go-Round”</td>
<td>Johnny Morris</td>
</tr>
<tr>
<td>“See How They Grow” series</td>
<td>Angela Royston</td>
</tr>
<tr>
<td>“Bob-the-Builder” series</td>
<td>Various authors</td>
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<tr>
<td>“Clifford: the Big Red Dog” series</td>
<td>Norman Bridwell</td>
</tr>
<tr>
<td>“Dora-the-Explorer” series</td>
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</tr>
<tr>
<td>“The Backyardigans” series</td>
<td>Various authors</td>
</tr>
<tr>
<td>“P.B. Bear” series</td>
<td>Lee Davis</td>
</tr>
<tr>
<td>“Corduroy” series</td>
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Appendix N: Treatment Fidelity Measure of Adults’ Conformity to the Dialogic Book-Reading Interaction Pattern

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</table>

Mothers

| ID1 | √   | √   | √   | √   | √   | √   |
| ID2 | √   | √   | √   | √   | √   | √   |
| ID3 | √   | √   | √   | √   | √   | √   |
| ID4 | √   | √   | √   | √   | √   | √   |
| ID5 | √   | √   | √   | √   | √   | √   |
| ID6 | √   | √   | √   | √   | √   | √   |

Investigator | √ | √ | √ | √ | √ | √ |

Note: √ = Dialogic book-reading interaction pattern observed at least three times per target word in a session
Appendix O: Parent Satisfaction Questionnaire

Please circle the word below each statement that best describes your feeling about the statement:

1. I enjoyed this reading program:
   Strongly Disagree  Disagree  Agree  Strongly Agree

2. The child in my care enjoyed this reading program:
   Strongly Disagree  Disagree  Agree  Strongly Agree

3. This book reading program helped to improve the child’s language:
   Strongly Disagree  Disagree  Agree  Strongly Agree

4. This book reading program helped to improve my conversations with the child:
   Strongly Disagree  Disagree  Agree  Strongly Agree

5. It was easy to learn new book reading strategies from this program:
   Strongly Disagree  Disagree  Agree  Strongly Agree

6. I learned something new from this program:
   Strongly Disagree  Disagree  Agree  Strongly Agree

7. I learned something useful from this program:
   Strongly Disagree  Disagree  Agree  Strongly Agree

8. I feel I can apply the book reading strategies I learned to any book in the future:
   Strongly Disagree  Disagree  Agree  Strongly Agree

9. I will continue using this program with children in my care:
   Strongly Disagree  Disagree  Agree  Strongly Agree

Please fill in the blanks:

10. What I do differently while reading to my child now is:
    a. ____________________________________________________
    b. ____________________________________________________

11. What the child does differently while reading with me now is:
    a. ____________________________________________________
    b. ____________________________________________________

12. The important ways in which the child’s language improved are:
    a. ____________________________________________________
    b. ____________________________________________________

13. The important ways in which my conversations with the child improved are:
    a. ____________________________________________________
    b. ____________________________________________________
## Appendix P: Target Words Acquired by the End of the Intervention Phase

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<th>Targets Learned</th>
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</tr>
<tr>
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<td>3.5</td>
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<tr>
<td>Min. – Max.</td>
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<td>0 – 6</td>
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<tr>
<td><strong>Control Group</strong></td>
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<td>0</td>
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<td>2</td>
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<td>ID9</td>
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</tr>
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</tr>
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<td>Mean</td>
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<td>0.5</td>
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<td>0</td>
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<tr>
<td>Min. - Max.</td>
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<td>0 – 2</td>
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<td>$p = .012$</td>
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# Appendix Q: Maintenance of Target Words

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<td>7</td>
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<td>ID4</td>
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</tr>
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</tr>
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<td>ID6</td>
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<tr>
<td>Mean</td>
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</tr>
<tr>
<td>Median</td>
<td>6</td>
<td>1.5</td>
</tr>
<tr>
<td>Min. – Max.</td>
<td>2 - 9</td>
<td>0 – 7</td>
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## Appendix R: Expressive Vocabulary Sizes at the End of the Intervention

<table>
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<tr>
<th>Intervention Group</th>
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<th>Ratio of English to Spanish</th>
<th>Conceptual</th>
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<td>-</td>
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<td>83.3</td>
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<td>-</td>
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<td>0.2 – 4.2</td>
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## Appendix S: Gains in Overall Expressive Vocabularies after Six Weeks of Intervention

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<thead>
<tr>
<th></th>
<th>English gains</th>
<th>Spanish gains</th>
<th>Conceptual gains</th>
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Appendix T: Mothers’ Comments Regarding the Benefits of the Intervention

**Question 10:** What I do differently while reading to my child now is…

“Reduce the amount of words and use simpler sentences and lots of repetitions, give him more time to say the new words and structures” (Mother ID2).

“I add new words to the words he is saying, encourage him through better understanding of what he is trying to say” (Mother ID3).

“I try to find more interesting books and look for books that have less text and more pictures” (Mother ID6).

**Question 11:** What my child does differently while reading with me now is…

“Looks at the pictures and uses words for them, uses his imagination and uses language as a means of expression, stays more focused, listens and repeats, enjoys looking at all the pictures” (Mother ID1).

“Focuses to find the new word and repeat it” (Mother ID2).

“Points and says many more words, says small phrases and expressions” (Mother ID3).

“Wants to read all the time, asks for new words” (Mother ID6).

**Question 12:** The important ways in which the child’s language improved are…

“He learned more new words and repeats them, enjoys reading and looking at the pictures” (Mother ID1).

“Has more self-confidence and because of that uses the new words all the time, seems to be happier, we are very pleased with his progress, it is amazing to hear him say lots of new words” (Mother ID2).

“Many new words, some phrases, interest in books, words, and reading” (Mother ID3).

**Question 13:** The important ways in which my conversations with the child improved:

“He uses words to express himself, likes to imitate the actions that the pictures show” (Mother ID1).

“We all enjoy reading more than ever before” (Mother ID2).

“I can understand him better, help him to repeat more and add new things to what he knows” (Mother ID3).

“I repeat the words several times without causing stress” (Mother ID6).