

Spanish and English Development in Three-Year-Old
Dual Language Learners

by

Virginia L. Dubasik

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Graduate Supervisory Committee:

M. Jeanne Wilcox, Chair
David Ingram
Addie Lafferty
Jeff MacSwan

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ABSTRACT

Minimal information exists concerning dual language acquisition of three-year-old dual language learners (DLLs) during their first school experience and first systematic exposure to English. This study examined the Spanish and early English language development of young DLLs in the context of standardized measures and a story retell task. Participants included eight Spanish-English DLLs (7 females, 1 male, *M* age = 3 years, 8 months) attending Head Start, and their classroom teachers. Outcome measures for the children included composite and scaled scores on the *Clinical Evaluation of Language Fundamentals Preschool-2 Spanish* (CELF Preschool-2 Spanish; Wiig, Secord & Semel, 2009) and the parallel English measure (CELF Preschool-2; Wiig, Secord & Semel, 2005), and measures of lexical (NVT, NNVT, TNV, NW, NDW, TNW and TTR) and grammatical (MLUw) development. Proportion of classroom teachers' and paraprofessionals' Spanish, English and mixed language use was measured to contextualize the children's learning environment with regard to language exposure. Children's mean standardized Spanish scores at school entry were not significantly different from their mean scores in May; however, an increase in total number of verb types was observed. Children's English receptive, content, and structure mean standardized scores in May were significantly higher than their scores at school entry. Children were exposed to a high proportion of mixed language use and disproportionate amounts of English and Spanish exclusively. Children's performance was highly variable across measures and languages. The findings of the current study provide a reference point for future research

regarding language development of three-year-old Spanish-English dual language learners.

DEDICATION

To my children, with love ~

If at first you don't succeed, try, and try again.

Tatum & Noah ~ There has never been a day when I have not been proud of you,
though some days I'm louder about other stuff so it's easy to miss that ~

Jeremy ~ I still remember the day the world took you back and there was never
time to thank you for the thousand scattered moments you left behind
to watch us while we slept ~

~ Brian Andreas

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TABLE OF CONTENTS

	Page
LIST OF TABLES.....	x
A COMPREHENSIVE REVIEW OF LANGUAGE DEVELOPMENT.....	1
Introduction.....	1
Literature Review.....	3
Spanish Language Acquisition	4
Lexical development.....	4
Phonological development.....	7
Syntactic development	10
Morphological development	15
Bilingual Language Acquisition	25
Lexical development.....	25
Phonological development.....	29
Morpho-syntactic development	31
Program Effectiveness for Dual Language Learners	35
History.....	37
Narrative reviews	39
Narrative/meta-analytical reviews	42
Meta-analyses	43
School-aged English language learners	46
Preschool-aged English language learners.....	51

	Page
Second language acquisition theories	58
Summary and Conclusions	62
REFERENCES	64
SPANISH AND ENGLISH DEVELOPMENT IN THREE-YEAR-OLD.....	77
Introduction.....	77
Language Development of Young DLLs.....	79
Lexical Development	81
Grammatical Development	83
Summary and Purpose of the Present Investigation	84
Method	87
Sample.....	87
Teachers, Paraprofessionals, and Classroom Language Environment	88
Procedures.....	89
Standardized Language Measures.....	90
Language Sampling Procedures.....	92
Elicitation.....	93
Transcription and analyses.....	93
Teacher Language Use.....	95
Reliability.....	96
Transcription	96
Classroom language use.....	97

	Page
Results.....	97
Teacher Language Use.....	98
Standardized Tests	98
Language Sampling	100
Language of elicitation	100
Lexical development.....	100
Grammatical development	103
Discussion.....	106
Children’s Language Development in Spanish.....	107
Children’s Language Development in English.....	109
Teacher Language Use in the Classroom.....	111
Limitations and Directions for Future Research.....	112
REFERENCES	115

LIST OF TABLES

Table	Page
1 Summary of Findings of Reviewed Studies of Morpho-syntactic Development	74
2 Proportion of Spanish, English and Mixed Language Used by Teachers and Paraprofessional by Context	122
3 Means, Standard Deviations and Min-Max by Language and Time for Clinical Evaluation of Language Fundamentals Preschool – 2 Composite Scores.....	123
4 Means, Standard Deviations and Min-Max by Language and Time for Clinical Evaluation of Language Fundamentals Preschool – 2 Subtest Scaled Scores	124
5 Absolute Frequencies for Spanish Verb Measures Collapsed Across Elicitation Sessions by Child and Time.....	125
6 Spanish New Words and Lexical Complexity Scores Collapsed Across Spanish and English Elicitation Sessions by Child and Time	126
7 English New Words and Lexical Complexity Scores Collapsed Across Spanish and English Elicitation Sessions by Child and Time	127
8 Lexical Scores for Retest Task at Time 4b Collapsed Across Elicitation Sessions by Child and Language	128
9 Spanish Mean Length Utterance in Words (Semester Average in Parentheses) by Time	129

A COMPREHENSIVE REVIEW OF LANGUAGE DEVELOPMENT

Introduction

The number of dual language learners (DLLs) enrolled in schools nationwide has increased exponentially over the past two decades (NCES, 2004). These children who are referred to in the literature as English language learners (ELLs), children who are learning English as a second language (ESL) and/or language minorities (LMs), are in the process of continuing to build a foundation in their first language in addition to learning a second language. While many non-English languages are spoken across the United States, Spanish is spoken by (75%) of DLLs enrolled in elementary and preschools (NCES, 2009). More than 20% of children under the age of five are Hispanic (Collins & Ribeiro, 2004) and, therefore, are likely to speak Spanish. When compared with their non-Hispanic peers, a disproportionate number of Hispanic DLLs live in impoverished conditions (Fry & Gonzales, 2008). Consequently, it is not surprising that Spanish-speaking children comprise the largest group of DLLs served in Head Start preschool programs (Collins & Ribeiro, 2004; Edmondson, 2005). It is projected that this trend in the Hispanic population will continue to grow for decades to come (NCES, 2006; Suarez-Orozco & Pérez, 2002).

Given the increasing number of young DLLs, efforts have been undertaken to understand the education needs of this group. Evidence suggests that members of this group are at-risk for school failure due to their English language acquisition status as emergent or new learners (August & Shanahan, 2006). According to the National Task Force on Early Childhood Education,

when comparing Hispanic children to their non-Hispanic peers on measures of English oral language, studies have found that children with limited skills at the start of kindergarten are more likely to have low achievement at the end of fifth grade (Reardon & Galindo, 2006). Increasingly, educational institutions expect children to enter and exit kindergarten with certain precursor English language and literacy skills, and DLLs are challenged to acquire these key skills. As a result, it is necessary to understand how to prepare these children for a successful schooling experience.

Several studies have focused on testing the effectiveness of instructional practices used in classrooms with DLLs (Rolstad, Mahoney, & Glass, 2005) and have examined the effects of different program types and/or approaches in terms of children's general educational outcomes (Barnett, Yarosz, Thomas, Jung, & Blanco, 2007; Winsler, Díaz, Espinosa, & Rodriguez, 1999), and others have examined specific aspects of language and/or literacy development (Dickinson, McCabe, Clark-Chiarelli, & Wolf, 2004; Proctor, Carlo, August, & Snow, 2006; Restrepo et al., 2010). Studies of the language and literacy skills of DLLs have established cross-linguistic relationships between language and literacy and language of instruction and child language outcomes (August et al., 2005; Páez, Tabors, & López, 2007; Restrepo et al., 2010). Further, evidence suggests significant relationships between first language (L1) skills and second language (L2) skills in sequential preschool age DLLs (Castilla, Restrepo, Perez-Leroux, 2009). Despite the increased attention on language outcomes of DLLs, there continues to be minimal descriptive data on the early language development

patterns of this group and how these patterns may relate to later language development and academic outcomes.

In the United States, many young DLLs begin daily systematic exposure to a second language (English) upon entry to preschool (Tabors & Snow, 2001) with Head Start preschool programs being a typical setting. Whether becoming bilingual is a simultaneous process, with both languages acquired at the same time, or a sequential process, with one language acquired prior to the other during early childhood (Kohnert, 2004; Patterson & Pearson, 2004), children acquiring two languages exhibit patterns in linguistic development that may differ from those of their monolingual peers. Research has determined that language experiences and exposure are common variables that influence the language development of dual language learners (Barnett et al., 2007; Bialystok, 2001; Rodríguez, Díaz, Duran, & Espinosa, 1995). Further research is needed to enhance understanding of the dual language acquisition process for this population of young children. Although the importance of planning early childhood education programs to address the needs of DLL children clearly is recognized, limited information about the dual language acquisition process constrains appropriate educational planning.

Literature Review

This research requires a review of several bodies of literature due to the relevance to Dual Language Learners. This review includes an examination of typical Spanish language acquisition, bilingual Spanish-English acquisition, and the effectiveness of primary language support on language outcomes of dual

language learners. This section also presents a short overview of several theories of second language acquisition that may help explain the findings from studies of bilingual children.

Spanish Language Acquisition

Monolingual Spanish-speaking children are those children who have been exposed exclusively to Spanish from birth and throughout early development. These children receive input from their families and caregivers in a single language (Hammer, Miccio, & Rodríguez, 2004). The following section is devoted to the linguistic aspects of Spanish language acquisition including lexical, phonological, and syntactic development that are observed in all children as they acquire the simple structure of language. Comparison with English data is made when appropriate. The intention here is not to discuss theoretical issues of first language acquisition, but rather to describe the early linguistic patterns of development of Spanish-speaking children so that their second language acquisition can later be discussed with their first language in mind.

Lexical Development. Early lexical acquisition in Spanish has been investigated with speakers of various Spanish dialects. While a fair amount of research has been conducted with special populations such as children with delayed/impaired language and children with Down syndrome, few studies have exclusively focused on the lexical acquisition patterns of typically developing young monolingual Spanish-speaking children (Jackson-Maldonado, Thal, Marchman, Bates, & Gutiérrez-Clellen, 1993; Thal, Jackson-Maldonado, & Acosta, 2000). Jackson-Maldonado et al. (1993) examined early lexical

acquisition in a large sample ($N = 328$) of typically developing children ages 8 to 32 months during the development of a parent/caregiver report measure of children's vocabulary. While the total sample size included a comparison group of English-speaking age-matched peers, the actual sample of Spanish-speaking children consisted of 114 children, in two age groups, 8 to 16 months ($n = 56$) and 15 to 32 months ($n = 68$). Researchers obtained the Spanish-speaking children's vocabulary comprehension and production scores and compared them to those of English speaking age-matched peers. Results of the initial analyses indicated that comprehension skills preceded production skills in Spanish and skills increased steadily as children aged. At 15 months of age, Spanish-speaking children reportedly comprehended 161 words (median) yet produced a mere 14 (median). Similar to monolingual English children, by 25 months of age, 90% of the sample was using at least 50 words. A secondary analysis, which analyzed the composition of the lexicon, revealed that children demonstrated a statistically significant preference for nouns compared to predicates and closed class items and that nouns continued to develop at a steady rate over time (Jackson-Maldonado et al., 1993, Montrul, 2004). They further noted that in terms of item frequency, the majority of children reportedly produced *papa* and *mama*, animal sounds, objects, and manipulatives frequently. Additionally, personal pronouns, possessives, quantifiers, and *sí* and *no* were among the most frequently produced.

A similar, but wider-scope study, conducted by Thal et al. with 20- and 28- month old toddlers ($N = 39$), included an account of early grammatical development (Thal et al., 2000). Thal and colleagues examined the validity of a

parent report measure of Spanish vocabulary and grammar development with Spanish-speaking toddlers with typical language. The measure had two parts: expressive vocabulary and grammatical complexity. Part one required that parents provide information about whether their child produced specific words within 23 semantic categories and answer questions pertaining to whether the child spoke about past and future events. Part two of the measure elicited information concerning verb conjugation, grammatical complexity, and whether or not early phrases had emerged. Thal et al. derived children's mean length utterance (MLU) and grammatical complexity scores and analyzed them, then compared results with data collected through language sampling; findings were comparable. Researchers used the total number of words (TNW) as an estimate of expressive vocabulary and MLU (derived using the three longest utterances) to estimate grammatical complexity. Both measures suggested significant variability among 20- to 28-month-old children. The mean number of words produced by each group was 237 and 432, respectively. The 20- and 28- month-old children's MLU (2.12 and 4.39) suggested the presence of multiword structures and emergence of early sentences.

Findings from studies examining early lexical acquisition in Spanish-speaking Mexican toddlers have confirmed a spurt in vocabulary production around 20 months of age with steady growth thereafter and emergence of early sentences around age two. These studies are informative with regards to the increasing grammatical complexity in young children's Spanish utterances. Although limited in number and scope, studies of early Spanish lexical acquisition

have provided a starting point from which research can build upon to better understand the patterns of grammatical acquisition in typically developing Spanish-speaking children.

Phonological Development. The majority of studies on the phonological development of young monolingual Spanish-speaking children have been conducted with children of Cuban, Puerto Rican, and/or Mexican descent between the ages of one and five. The focus of these studies has been specific to syllable structure (Macken, 1978; Oller & Eilers, 1982), interactions of consonant-vowel features (Lléo, 1996), consonant acquisition (Jimenez, 1987a; Linares, 1981), acquisition patterns, or error patterns in typically developing children (Anderson & Smith, 1987; Goldstein, 2005; Goldstein & Iglesias, 1996; Jimenez, 1987b).

Studies examining syllable structure have consistently found that consonant vowel consonant vowel (CVCV) and consonant vowel (CV) shapes are the most preferred word shapes in children ranging in age from 12 to 30 months (Macken, 1978; Manrique & Massone, 1985; Oller & Eilers, 1982). Macken (1978) explored the gradual development of word complexity by measuring syllable structure and phonetic similarity of co-occurring consonants in a longitudinal case study of one child from age 1;9 to 2;6. Researchers collected twenty-eight 15- to 30- minute samples over a 6-month period. They elicited spontaneous and imitated productions, which they used to measure the a) segmental system, b) syllable structure, c) co-occurrence of consonants, and d) minor processes of the child. Results indicated that the child's consonant inventory was characterized by some nasals, voiceless stops, glides, and emerging

fricatives toward the end of data collection. Additionally, researchers noted a preference for CV syllable structure. However, when children produced CVCV structures, the two consonants were identical or similar in place and manner. The majority of consonants in CVCV structures were voiceless stops or nasals. Finally, the study found a high incidence of final consonant deletion and cluster reduction. Findings suggest that children attempt words with structure and segments similar to adult targets thus suggesting a self-selection process and gradual development of complex segments and syllables.

In a study examining consonant-vowel feature interactions, Lléo (1996) examined the interaction of consonants and vowels as measured by whole-word properties in typically developing Spanish-speaking children ($N = 3$) ages 1;4 to 1;11. Specifically, patterns of assimilation from consonant to consonant, and consonant to vowel, palatalization (producing a palatal consonant before a front vowel), and spirantization (producing a fricative consonant between vowels) occurred. Results of the study indicated variations in phonological acquisition. However, all children consistently preferred disyllabic over multisyllabic words from age 1;6-1;10 and assimilated consonants to adjacent vowels in words. Further, while segmental differences occurred across children, they maintained syllable structure in all cases.

Multiple studies of consonant production patterns in Puerto Rican and Mexican Spanish-speaking children have yielded similar results (Goldstein, 2005; Jimenez, 1987a; Jimenez, 1987b; Linares, 1981). Across studies, participants consistently produced Spanish consonants at the 90% criterion level by age 4;7.

However, studies reported persistent production variability of /s/ and /r/, which met criterion after age 5;0. Specifically, /s/ occurred by age 5;7 and /r/ shortly thereafter. With regard to /r/, tap /r/ reached 90% criterion by age 4;7, and trilled /r/ did not reach 50% criterion until age 4;7 (Jimenez, 1987b). Normative data is limited; however, although small in scale, the children sampled in these studies were typically developing and of Mexican descent; therefore, the results are appreciated as they inform the knowledge base of patterns of acquisition of typically developing Spanish-speaking Mexican children.

Several studies have examined phonological error patterns in typically developing children (Goldstein, 2005; Goldstein & Iglesias, 1996; Jimenez, 1987b) with similar findings. Across studies, results suggest that processes occur at a low rate in general, but when evident, cluster reduction is the only process consistently evident >10% of the time by 3-year-olds. By age four, processes are eliminated >10% of the time. Of the identified process errors, backing and de-affrication are second to cluster reduction in terms of rate. Substitution errors most often occur in children's production of the tap or trilled /r/. A high percentage (85%) of all substitutions is replacements of fricatives, tap and trill /r/, and /s/. Specific substitution patterns occurring between the ages of three and five included /d/ and /l/ for /r/, /t/ for /s/, /b/ and /d/ for /x/ and for /g/, /l/ for /r/, /r/ for /r/, /k/ for /x/, and /n/ for /ŋ/ (Jimenez, 1987b). Jimenez (1987b) further noted that voicing errors were uncommon in his sample. In addition to these findings, studies of Spanish-speaking children of Mexican descent have provided information on characteristics specific to Mexican dialects of Spanish. Children as

well as adult speakers of various Mexican dialects have consistently been observed to substitute /β/ for /v/ (huebos for huevos), delete /s/ in weak syllables or final word position, and/or produce /x/ for /h/.

Syntactic development. Studies of grammatical acquisition in Spanish have generally differed with respect to grammatical feature of interest, dialect and age of participants, and elicitation method. Spanish dialects that have been examined include, but are not limited to, Puerto Rican (Anderson, 1998; Linares-Orama, 1977), Mexican (González, 1975, 1983; Kernan & Blount, 1966; Merino, 1992; Radford & Ploennig-Pacheco, 1994), and American (Kvaal, Shipstead-Cox, Nevitt, Hodson, & Launer, 1998). Given the relevance to the current study of 3-year-olds, the majority of studies that will be discussed here have focused on early syntactic acquisition in children ranging in age from 24 to 48 months, as significant acquisition has been observed to occur during this time.

Sera (1992) investigated adults' and children's acquisition of the Spanish forms of *to be*, the copulas *ser* and *estar*, in four related studies. Of particular interest were the differences between the two with regards to form, distribution of the forms, and the patterns of use. It should be noted that *ser* and *estar* carry different meanings, the former denoting a permanent condition and the latter a temporary one. This discussion will be limited to the first of the four studies given that the interest here is to provide information relative to early Spanish grammatical acquisition. Sera's initial study examined the frequency of occurrence of the copulas when used with nouns, adjectives, and locatives and as auxiliaries. The researcher collected spontaneous speech samples from two

Spanish speaking young (ages 18 through 42 months) boys over a 2-year period, and elicited speech samples from 3-year olds ($n = 11$), 4-year olds ($n = 12$), 5-year olds ($n = 11$), 9-year olds ($n = 12$), and adults ($n = 5$). The spontaneous samples consisted of 497 copular occurrences (71 occurrences in child utterances and 426 occurrences in parent utterances) compared to 500 occurrences recorded in the story elicitation samples. There were 150, 132, 82, 85, and 51 occurrences from the 3-, 4-, 5-, and 9- year-old children and adults, respectively. Results indicate that occurrences of *ser* and *estar* differed depending on the elicitation method. In general, young monolingual Spanish speakers acquired and used *ser* and *estar* contrastively at an early age. That is, the children demonstrated a preference of *ser* with nouns and *estar* with auxiliaries. The story task elicited a greater frequency of *estar* forms than the spontaneous samples. Additionally, fewer copulas occurred with nouns and adjectives compared with locatives and auxiliaries in the story task.

Radford and Ploennig-Pacheco (1994) conducted a case study to examine morpho-syntax acquisition. Researchers analyzed spontaneous language samples from a Spanish-speaking child from Mexico (26 to 32 months of age) during interactions in a natural setting between the child and family members. In particular, the focus of the study included word order, null categories, pronoun usage, and verb inflections (present indicative, preterit, and imperative). Results indicated that the child's utterances contained various word order combinations including subject verb compliment (SVC), verb compliment subject (VCS), and compliment verb subject (CVS) structures. Within those structures, the child used

declaratives, wh- question forms, and clitics. Examination of the productive null categories indicated that more than half (58%) of the child's productions did not contain the actual wh- word. Null subjects occurred in statements as well as questions. Additionally, the child consistently used pronouns *tu*, *me*, *mi*, and *yo* without error and *yo* and *mi* interchangeably by 32 months (Radford & Ploennig-Pacheco, 1994).

A descriptive study conducted by Gustavo González (1970) examined Mexican children ages 24 to 60 months ($N = 24$) acquiring Spanish as a first language. González was interested in the development of grammatical structures in terms of frequency of occurrence in addition to word order. Findings from the study indicated that children develop some verb tenses prior to others, suggesting a predictable order of emerging tenses: present indicative, preterit, present progressive, future, present subjunctive, imperfect, present perfect, past subjunctive, and, lastly, conditional. In a subsequent study, González (1983) examined the development of verb tenses and temporal expressions across time in a small sample of Spanish-speaking children from Mexico: ages 2;0 to 4;6. The researcher analyzed parent reports of early and later productions and compared them with observed production of verb tenses and use of temporal expressions. Children demonstrated productive command of verbs in the present indicative tense (*ser* and *estar*) as well as an emergent preterit tense by age 2;0. Further, temporal adverbs *ya* and *horita* [already and right now] occurred at this age. At 2;6, children continued to favor *ser* and *estar* and demonstrated an increase in frequency and forms of the preterit tense. Newly evident at this age were the

present progressive and periphrastic future tenses in addition to a small number of new temporal expressions. No new tenses emerged at age 2;9; however, the tenses in use increased in frequency, and the researcher assumed many to be mastered. At age 3;0, the imperfect tense emerged followed by the periphrastic past and future tenses at 3;3. González considered temporal adverb clauses to be mastered. No new forms were observed to emerge at 3;6, and at 4;0, fewer new verb forms were observed. The final point of measurement occurred at age 4;6, and was marked by fewer productions in all tenses and temporal expressions which had increased steadily over the course of the study, decreased. In general, by age 3;6 children had acquired the majority of verb forms and the frequency of use stabilized.

In 1975, Gustavo González conducted a cross-sectional study investigating early linguistic performance of Mexican-American Spanish-speaking children over a 3-year period (2;0 to 3;0). By examining a small number of children ($N = 3$) at nine time points, González was able to record their acquisition process of syntactic structures. Results suggested that by the ages of 2;0, 2;6, and 3;0, children had mastered production of present indicative, preterit indicative/present progressive/periphrastic future, and present subjunctive, respectively. At the age of 3;3, he noted the presence of imperfect indicative, and by 4;0 children had mastered past progressive and *andar* progressive. Past subjunctive emerged at 4;6, and additional structures followed. In addition to these structures, children produced negation by 3;6, all interrogatives by 4;6, and imperatives and temporal adverb clauses by 3;3. Interestingly, González noted

that children with fewer structures demonstrated difficulty imitating sentences containing the yet-to-be mastered structures.

Few studies have discussed the null subject (pro drop) feature of Spanish and its occurrence in the initial stages of grammatical acquisition of young children (Austin, Blume, Parkinson, Nunez del Prado, & Lust, 1997; Grinstead, 1994; López-Ornat, 1997); however, some have done so to a greater extent than others. In a study examining pro, Grinstead (1994) argued that children do not have adequately developed systems of morphology to permit pro. Grinstead asserted that knowledge and use of pro might only occur if a child's verbal morphology is sufficiently developed. The study measured the frequency of sentences without subjects and verbal morphology in a small sample of children ($N = 4$) 19 to 26 months of age. Results of the study indicated that prior to 24 months, most sentences did not contain subjects (98%) and that after 24 months the proportion of sentences without subjects decreased to 74%. Further, children in the study demonstrated a dramatic increase of use of subjects across age.

With contradictory findings to those of Grinstead (1994), Austin et al. (1997) examined children's early grammatical awareness of pro-drop and the necessary knowledge critical to the mastery of pro-drop in a study comparing the frequency of occurrence of pro-drop in eight Spanish-speaking children, ranging in age from 14 months to 34 months, and age-matched English-speaking peers. The experimental group included three children each from Spain and Puerto Rico and one child each from Ithica and Peru. The comparison group included English-speaking children sampled in a prior study. Researchers analyzed utterances ($N =$

1,083) from language samples for MLU and the occurrences of pro-drop productions. Results indicated that Spanish-speaking children were generally more likely to use null subjects than English-speaking children and at a greater relative amount. Overt pronouns did not appear in the Spanish samples until MLU had reached 2.0 and did not account for greater than 40% of subject types. That is, subject use in Spanish appeared to be directly related to MLU. Grammatical knowledge of pro-drop appeared to be present early in grammatical acquisition. Contrary to findings of Grinstead (1994), indicating that children acquire pro later in their grammatical development (after 24 months), Austin et al. (1997) observed children to acquire pro at the onset of grammatical development (before 24 months).

The reviewed studies of early grammatical acquisition in Spanish indicate that there are grammatical forms that emerge and that children master prior to other forms; however, variability in age of acquisition is to be expected. In general, typically developing Spanish-speaking children acquiring Spanish as a first language appear to experience a significant amount of syntactic development between the ages of 2;0 and 4;0. However, development continues until the syntactic system is fully acquired.

Morphological development. The productivity of early Spanish morphology has been the attention of several studies (Gathercole, Sebastián, & Soto, 1999a; 1999b; Johnson, 1996; Kvaal et al., 1988; Perez-Pereira, 1989; Vivas, 1979). The focus of most studies has been related to noun phrases or verbs. Studies examining nouns have measured the acquisition of order of agreement

(gender and number morphology), masculine and feminine, plurality, and/or the Spanish pronoun system. Studies of verb acquisition have examined the acquisition of verbal inflection, finiteness, and/or agreement. As the interest here is typical acquisition of Spanish morphology and research that has been conducted to better understand the order of and/or age at which children acquiring Spanish as a first language develop morphology (grammatical morphemes) is reviewed. This section first covers studies of the acquisition of grammatical morphemes followed by specific studies of noun phrase and verbal morphology.

In a study examining the order of acquisition of Spanish grammatical morphemes, Dolores Vivas (1979) used the obligatory context technique to determine morpheme acquisition patterns in four children. The study measured the production of morphemes (MLU) in two children ages 2;4 and 3;10, of Mexican descent, and two children ages 2;4 and 3;5, from Venezuela. Vivas derived the MLU by assigning one point to each morpheme based on all utterances produced. Additionally, the researcher derived the percent of time each of the 23 morphemes of interest appeared in obligatory contexts, based on linguistic and nonlinguistic contexts. To reach criterion, morphemes had to have been produced by at least three participants in more than 90% of five obligatory contexts. Results indicated that the participants acquired present and third person singular first, followed by gender (masculine), past (regular and irregular), imperative, the preposition *en*, by gender (feminine), and finally 1st person singular and plural. Copulas (*ser* and *estar*), articles, and possessive *de* were the last to be acquired on average.

Kvaal et al. (1988) investigated Spanish morpheme acquisition in Spanish-speaking Mexican American children between the ages of 2;0 and 4;8 ($N = 15$). Researchers obtained spontaneous language samples in 40-minute play sessions and analyzed them in order to establish the acquisition order of 10 morphemes according to children's MLU. Children were grouped by MLU for purposes of analyses. The morphemes of interest included regular present indicative, irregular present indicative, regular preterit indicative, irregular preterit indicative, copulas *ser/estar*, preposition *en*, plurals, possessive *de*, articles, and demonstratives. Findings revealed that children acquired (80% accuracy) demonstratives, articles, copulas, and regular present indicative followed by irregular present indicative, regular preterit indicative, plurals, and possessive *de*. The preposition *en* and irregular preterit indicative were among the last to be acquired.

In a related cross-sectional study, Perez-Pereira (1989) examined the acquisition of plurals, diminutive, augmentative, gerund, imperfect, and preterit in Spanish-speaking children from Spain ($N = 109$) between the ages of 3 and 6. The researcher used two elicitation tasks to elicit 59 target utterances based on 29 Spanish words and 61 target utterances based on artificial words. The task required that children demonstrate understanding and correct grammatical usage of target items following presentation of text and pictures. Results indicated that children had not yet mastered many morphemes by age 6. However, children reached significance (70% accuracy on real word tasks) of gerund (1st and 2nd conjugations) and imperfect (1st conjugation) by age 3, and by age 4 had added significantly to their morpheme repertoire by including all conjugations of gerund

and imperfect as well as 1st and 2nd conjugations of preterit. While slightly lagging in real word achievement, children's performance on artificial word tasks reached 70% significance on gerund (1st conjugation), imperfect (1st and 3rd conjugation), and preterit (1st conjugation) by age 4. The participants mastered all other forms by age 6 with the exception of the 2nd conjugation form of all targeted morphemes.

In Spanish, nouns take on feminine or masculine forms. That is, typically, words that end in *-o* are masculine, and words that end in *-a*, feminine. However, exceptions include words ending in *-l*, *-r*, or *-e*, which are masculine, and those ending in *-d* *-s*, or *-z*, which are feminine. Additionally, nouns are marked for gender and number, and these elements contained within the determiner phrase must agree. For example, in the construction *quiero muchas manzanas rojas*, 'I want many red apples,' the feminine form of 'many,' *muchas*, is correct as it agrees with 'apples,' *manzanas*, which is also feminine. Spanish plurality is marked within the noun phrase in the noun and in the determiner: with *-s* as in *manzanas* 'apples' or *-es* as in *flores* 'flowers.' It is necessary to keep these points in mind when considering the order or age of acquisition in young children.

In a study examining the acquisition of Spanish noun phrases, López-Ornat (1997) analyzed simple noun and early verb phrase constructions of a girl from age 1;7 to 2;1. In an effort to establish the nature of children's transition from pre-grammatical to grammatical knowledge, López-Ornat followed the advancement of noun phrases from noun or vowel + noun (pronominal is a vowel that precedes a noun) to determiner + noun (N). López-Ornat hypothesized that

children progressed stepwise through grammar as opposed to acquiring structures all at once. The author suggested that as age increased, the frequency of occurrences of N + determiner structures would increase and the occurrence of noun or vowel + noun would likely decrease. Results of the study supported López-Ornat's hypothesis. During the earlier stages of grammatical acquisition (1;7-1;10), a higher frequency of noun and vowel + noun structures were present. In the later stages (1;11-2;1), these constructions decreased as adult-like noun phrases emerged. That is, the incidence of N + determiner constructions increased with age. Results of the early verb phrase constructions of this study are in a following section devoted to verb phrase acquisition.

Several studies have included plurality as a morpheme of interest (Kvaal et al., 1988; Merino, 1992; Perez-Pereira, 1989); however, only one study examined plurality exclusively (Marrero & Aguirre, 2003). In a 2003 study, Marrero and Aguirre (2003) examined plurality in three young Spanish-speakers from Spain ($N = 2$) ages 1;7 to 2;0 and 2;9 to 4;7, and the Canary Islands ($N = 1$) age 1;9 to 3;10. Based on the presence of plurality in the children's utterances, results, while not generalizable, indicated that plurality was evident in early morphological development. The three children in the study acquired plural as early as 1;8 with articles, by 1;10 with nouns, and finally by 1;11 with pronouns. Despite not having controlled for the phonological effects on plural acquisition (-s as a later developing phoneme), these results provide a basis for staging the acquisition of plurality. That is, the presence of plurals in articles, nouns, and finally pronouns allowed the authors to stage the children in their acquisition.

While additional studies included plurality as a morpheme of interest, it was not the sole focus of those studies and therefore was not the focus in earlier discussions. A discussion of Perez-Pereira's (1989) findings on plurality is earlier in this document.

While agreement appears to be evident early on, productive mastery is not expected until between the ages of 3 and 4. In fact, there is consensus that gender agreement is almost always completely mastered by age 4 (Montrul, 2004). As with gender, Spanish-speaking children appear to acquire plurality as early as 1;8, although the age of mastery is inconsistent at best (Marrero & Aguirre, 2003; Merino, 1992; Perez-Pereira, 1989). Findings suggest that the emergence and productive mastery of plurality occur as early as 1;8 and as late as 4;0. Based on the findings of noun phrase acquisition studies, it appears that children demonstrate understanding of the noun phrase structure despite not using the structure productively. The acquisition of the noun phrase is without question a process of hierarchical evolution. As children learn the linguistic system of the language, they begin to demonstrate greater productivity of the essentials that make up the noun phrase, which includes gender then number agreement by age 3 and plurality by age 2;0.

Spanish verbs are organized in three main classes by the vowel preceding the final *r*. These classes comprise the three conjugations that end all Spanish verbs: *-ar*, *-ir* and *-er*. In addition to these three conjugations, Spanish verbal inflection is a rule-based system in which verbs are inflected for tense, mood and aspect, and person and number. The inflected verbs derive from a stem, which

consists of the root and a vowel (vowels noted above) and two added suffixes, which mark the verb for tense, mood and aspect, and person and number. Studies investigating the acquisition of the Spanish verb phrase have focused on the early acquisition of the verb phrase, specifically, verbal inflection (finiteness, tense, aspect, and mood) and/or the order of which children acquire elements within the Spanish verb phrase.

Ingram, Welti, and Priem (2008) provided an account of early verb acquisition in children acquiring Spanish, English, and German as evidenced by language sampling. The authors proposed a model suggesting that children acquire verbs in stages: (a) holophrases, (b) early word combinations, (c) verbal combinations, and (d) early paradigms. Additionally, the researchers introduced a method to place children into these stages. Prior to acquiring verbal paradigms, they suggest that children experience a holophrastic period in which they learn how to pair meanings with phonetic sequences. They subsequently learn that these pairings of words are meaningful when organized in different ways. This stage occurs when they begin to produce early word combinations. During the third stage, children recognize verbs as the center of word combinations. From stage three, children transition to early verbal paradigms at which the verbal lexicon has increased as have the forms of these verbs: verbal staging, based on an analysis of 50 intelligible utterances is intended to be a representative estimate of the child's productions; and selected utterances, based on predetermined criteria. The researchers determined verbal categories, number of syntactic types, and verb paradigms and measured frequency of occurrence. Results of the analyses suggest

that Spanish-speaking children acquire verbs in a predictable pattern and the method employed demonstrated the potential for verbal staging. An increase of verb types then verb forms indicated verb acquisition, which occurred as syntactic types increased. Verb paradigms developed across time as children progressed through stages. It should be noted that the Spanish data used came from Spanish-speaking children with language delay, therefore the results do not endorse acquisition ages of typically developing children; therefore, of interest here are the stages of verb acquisition, which are not expected to differ for typical children (Ingram et al., 2008).

Gathercole et al. (1999a, 1999b) investigated patterns of early verbal morphology in two children (between 18 and 30 and 20 and 25 months of age), exploring usage of verbs and verb forms. Specifically, the study was designed to determine the extent to which children's knowledge of individual lexical items and general knowledge of verbs contributed to the acquisition of verbs. Language samples provided information regarding each child's use of each verb and its forms, and use of clitics, which researchers recorded from onset to later usage. In the earliest stages of acquisition, the researchers observed children to use a single form of each verb in a rather restricted manner in terms of number of inflections. Both children demonstrated the acquisition of verbal morphemes in a gradual pattern. Researchers considered early inflection productive if occurring with a minimum of two verbs and if a single verb appeared with more than one inflection. By the age of 25 months, the first child demonstrated productive use of 3rd person singular present and present perfect, and the second child showed use

of infinitive, imperative, and third person singular present. Person and tense contrasts and present perfect became productive for both children by 30 months followed by periphrastic future, present continuous, and present subjunctive. The authors assert that productivity of verbal inflections occurs in a “piecemeal” manner (Gathercole et al. 1999a, p. 5). Results of the analysis of clitics revealed a similar “piecemeal” acquisition process. Clitics emerged slowly and at the same time as use of noun phrase objects.

In addition to noun phrase constructions, López-Ornat (1997) conducted a subsequent analysis examining the preVerbal forms produced by a single participant. Recall that the collection of the child’s data occurred from age 1;7 to 2;1. Similar to the noun phrase analyses, the researcher analyzed exclusively different lexical items ($N = 185$). Form functions of interest include infinitive, present, imperative, and past perfect. Results of the analyses indicated that the forms changed across age. Specifically, as age increased from 1;7 to 1;9, the infinitive form stabilized, the present stabilized, and then the addition of an unstressed syllable emerged. The imperative form stabilized, and then the unstressed syllable evolved from optional to consistently present. Finally, the past perfect emerged at 1;9.

Johnson (1996) conducted a study examining error patterns of children acquiring Spanish and found that the most common errors in Spanish-speakers are due to overregularization. The researcher obtained the initial 100 utterances containing at least one verb via spontaneous language sampling from 42 monolingual Spanish-speaking children, between the ages of 24 and 48 months,

from Mexico and Spain. Children were grouped according to their mean length utterance in words (MLUw). A total of four groups emerged according to the division, with 12 children in the first group and 10 in the remaining three groups. MLUs ranged from 1.75 to 5.50. Results indicated that the most frequent verbal errors produced by Spanish-speaking children were errors of overregularization and overirregularization, errors with clitics, and errors with number agreement. Of the error types, generalization errors occurred most frequently. Generalization errors occurred consistently across groups; however, clitic errors were more frequent in younger participants compared to number errors, which occurred more frequently in the groups with higher MLU. Based on these reported findings, error types, and patterns changed depending on MLU and age. Findings suggest generalization was an occurrence of normal morphological development.

Studies of syntactic and morphological acquisition have indicated the early presence and productivity of 3rd present indicative, preterit, present progressive, past tense, imperfect, and periphrastic future. It has been shown that 3rd present indicative occurs most frequently in the production of very young children, likely due to its simple form. Ages and/or MLU at the time of acquisition vary across studies and participants although general ranges of acquisition are consistent. In general, Spanish-speaking children acquiring Spanish as a first language can be expected to have productive command (criterion at 75%) of most grammatical features by age 4;0 as shown in Table 1. In most cases, children tend to acquire morphemes for the forms presented here around 2;5. In these early stages of morphological acquisition, errors are rare but

do occur, mostly with overgeneralization of early forms (3rd present indicative and imperatives). Number and gender agreement appear to be consistently present in the productions of young children and are among the first features to be acquired followed by articles and pronouns, which children also acquire in an ordered manner.

Bilingual Language Acquisition

Second language acquisition and the factors that influence this process have been a focus of several studies of late, possibly due to the increasing number of dual language learning children in the United States. Whether it is a simultaneous process, where children acquire both languages at the same time, or a sequential process, where children acquire one language during infancy and the other during early childhood (Kohnert, 2004; Patterson & Pearson, 2004), linguistic development patterns in bilingual children may differ from those of their monolingual peers. It is important to understand this process in Spanish-speaking children acquiring English (sequential bilinguals) so that instructional strategies that support this process can be implemented at an early age. To maintain uniformity with the discussion of Spanish language acquisition, the following section is organized by linguistic aspect and includes bilingual lexical development, phonological development, and morpho-syntactic development.

Lexical development. A major difference between monolingual and bilingual children is the type of input they receive. Whereas monolingual children typically receive input in a single language, bilingual children generally receive input that is separated between the two languages that they are acquiring. For

example, children may be exposed to Spanish one-half of their day, and English the other half of the day. Studies have shown that the amount of language input they receive in each language (Oller & Eilers, 2002) and the contexts in which they receive this input (Patterson, 1998; Patterson & Pearson, 2004) impact bilingual children's lexical development. Specifically, bilingual children may receive varying amounts of input in the two languages or they may receive equal input, both cases producing different outcomes. The situational contexts in which bilingual children receive input have been explored, and researchers suggest that exposure to both languages can vary from school to home and person to person. Thus, patterns of lexical acquisition may take different forms given these factors.

Studies of lexical development of bilingual children have examined the ratio of bilingual language input to vocabulary size (Patterson, 2002), lexical diversity (Gathercole, 2002), and vocabulary growth (Pearson & Fernández, 1994; Pearson, Fernández, & Oller, 1993). Results of studies examining the relationship between language input and vocabulary size have found statistically significant relationships between the two variables in young bilingual children (Marchman & Martínez-Sussmann, 2002; Patterson, 1998). Across studies, results have indicated that bilinguals tend to produce English words at a higher rate than Spanish words irrespective of the proportion of bilingual language input.

Patterson (2002) investigated the relationship between vocabulary size and the frequency of being read to in bilingual Spanish-English toddlers ($N = 64$). The researcher interviewed parents, who provided information regarding language input at home and the expressive vocabulary of their children per a checklist.

Additionally, parents provided information regarding the frequency of book reading and television watching in their homes. Results showed that the mean number of words used in English was nearly twice that of Spanish (98 and 50, respectively) and that frequency of reading in each language was positively related to vocabulary sizes in the corresponding languages.

Studies examining lexical diversity in bilingual Spanish-English children (Dale, Dionne, Eley, & Plomin, 2000; Gathercole, 2002) have found a relationship between input and vocabulary acquisition with regards to content words but not to function words. While studies differed in age of participants (preschool and school age, respectively), findings were similar. The input children received in either language was directly related to the use of noun, verb, and adjective classes. That is, increased language input in either language correlated with increased production of word types. However, productive use of articles, prepositions, and bound morphemes was found to be unrelated to input. Positive effects decreased gradually over time.

Two studies have examined lexical acquisition in very young bilingual Spanish-English children (Pearson & Fernández, 1994; Pearson et al., 1993). Both studies were methodologically similar (likely due to a common author) in that parent report was used to measure receptive and expressive vocabulary as well as vocabulary growth in bilingual children from 8 to 30 months ($Ns = 25$ and 18 , respectively). Pearson et al. (1993) compared the receptive and productive vocabulary of bilingual children to same age monolingual norms using the vocabulary size in each language, the total vocabulary for both languages, and the

conceptual range as indicated by concepts labeled in either language but not both (Bialystok, 2005). Results suggested that bilingual children's lexicons were smaller than monolingual children's lexicon in general. Researchers thought this to be due to measurement methodology. Pearson and Fernández (1994) examined patterns of vocabulary growth in bilingual children when compared to monolingual children ($N = 20$) between the ages of 10 and 30 months. Researchers measured children's total and conceptual vocabulary within and across languages by parent report at multiple time points. Although they observed variability within bilingual children, findings indicated that the group's lexical patterns were similar to patterns observed in monolingual children in terms of rate and pace.

In general, bilingual children experience vocabulary growth in both languages; while some vocabulary items are exclusive to one language, others occur in both (Pearson et al. 1993; Peña, Bedore, & Rappazo, 2003). Studies suggest that typically developing bilingual children use ~60 words by 26 months, similar to monolingual children. The use of conceptual scoring has allowed examiners to evaluate responses regardless of the language produced while considering knowledge/concepts unique to each language and across both languages (Pearson et al., 1993). This method is in contrast to other studies that have considered languages independently. Researchers have suggested that conceptual scores may provide a more accurate description of a bilingual child's vocabulary than do language specific scores in that both languages of the child are taken into account. This method makes it more difficult for vocabulary knowledge

in this group to be underestimated (Bedore, Peña, García, & Cortez, 2005; Peña, Bedore, & Zlatic-Guinta, 2002) due to measures of estimation.

Phonological development. Typically, irrespective of the languages children are acquiring, consistencies are evident in terms of patterns of phonological acquisition. Because bilingual children are acquiring two languages, it is necessary to consider the phonological input these children receive as input influences cross-linguistic transfer, accuracy in production, and patterns of development in each language. Recall that monolingual children receive input in a single language different from the input bilingual children receive from two languages, which often influences bilingual children's production in each language (Goldstein, 2004). Phonological influences on one system to the other may occur with respect to segmental aspects and also to suprasegmental features. Cross-linguistic influences occur with segmental aspects of a language, including consonant production (phonemes occurring exclusively in one language), vowel production (vowel variations), and dialectal variations (deletions of phonemes in one language). Suprasegmental features that can be influenced by cross-linguistic transfer include variations in pitch, stress, and intonation (Hochberg, 1988).

One of the earliest studies of bilingual language acquisitions was a longitudinal case study conducted by Jon Amastae (1982). Amastae's diary account documented all aspects of his daughter's bilingual development from 0;8 to 4;0, and one of the areas described was her phonological development. By 20 months of age, the child produced all vowels /i, e, ε, u, a, o/ (not diphthongs) and consonants /p, t, k, b, d, g, f, s, x, h, m, n/. The early consonant inventory was the

same in Spanish and English, and participants produced vowels notably as Spanish vowels. Additionally, the child demonstrated a preference for open syllables. At 26 months, /l/ in the syllable-initial position began to emerge in both languages. Researchers thought language separation began at this time as phonological differences began to emerge in the form of language-dependent aspiration and alveolar and dental consonants. Between 28 and 30 months, she began to use Spanish penultimate stress and [d] for [l] in Spanish but not in English.

The majority of studies on phonological development of Spanish-English bilinguals have compared bilingual phonological acquisition with monolingual phonological acquisition in either language. Because studies have differed in methodology, it is difficult to compare findings. In general, studies of phonological acquisition have indicated that bilingual children tend to (a) be less intelligible (Gildersleeve, Davis, & Stubbe, 1996), (b) make greater production errors (segmental) (Gildersleeve et al., 1996), (c) exhibit atypical patterns and higher incidence of phonological processes (Goldstein & Washington, 2001), and (d) use uncommon patterns. These studies were limited in focus as they did not examine children under the age of three and primarily focused on the English phonology of the bilingual participants rather than both phonologies (English and Spanish).

In a more recent study, (Goldstein, Fabiano & Washington, (2005) examined phonological skills in typically developing English- ($N = 5$), and Spanish-speaking monolingual ($N = 5$) as well as Spanish-English-speaking

bilingual ($N = 5$) children between the ages of 5:0 and 5:5. Researchers analyzed children's single word productions for overall percentage of consonants correct, percentage of consonants correct by manner and class, phonological patterns, and syllable types, and then they compared results between groups. Investigators compared phonological skills to percentage of child output to determine whether a relationship existed. Results indicated that the amount of children's output was not related to their phonological skills. Additionally, the phonological measures demonstrated similar skills across languages. Researchers attributed the lack of differences to negative cross-linguistic effects. In general, the bilingual children did not demonstrate more errors than monolingual children, higher percentages of occurrence of phonological patterns, or limited production accuracy on later sounds as had previously been shown (Gildersleeve et al., 1996; Goldstein & Washington, 2001).

Morpho-syntactic development. Studies of bilingual language acquisition of Spanish-English speakers have focused primarily on the manner in which children acquire two languages or the phenomenon of cross-linguistic transfer. While some researchers contend that bilingual acquisition occurs differently than the acquisition of one language, others propose that bilingual children acquire two languages in a similar manner to how monolingual children acquire one. That is, patterns of morpho-syntactic development in bilingual children seem to parallel patterns of monolingual children (Bialystok, 2001; Padilla & Liebman, 1975; Padilla & Lindholm, 1976). In each respective language, however, this assertion has been made regarding simultaneous rather

than sequential bilingual children (Meisel, 1993). A vast amount of research has explored the phenomenon of cross-linguistic transfer; thus, the following discussion will be limited to morpho-syntactic patterns that have been observed in bilingual Spanish-English children as this is the group of interest here.

Several early studies of bilingual morpho-syntax have examined the acquisition of morphemes or syntactic structures present in each language independently (Bland-Stewart & Fitzgerald, 2001; Padilla & Liebman, 1975; Padilla & Lindholm, 1976), and results have supported the notion of language differentiation with respect to morpho-syntactic development. Padilla and Liebman (1975) examined rate of bilingual language acquisition in three children ranging in age from 1;5 to 2;2. Researchers obtained weekly language samples over the course of three to six months and analyzed them using an adapted version of Brown's (1973) method for computing total mean length of utterance (MLU-T) and language specific and mixed language mean length of utterance (MLU). Results indicated patterns of bilingual acquisition consistent with patterns observed in monolingual children in each language. The researchers found no evidence to support delayed development or mastery of skills. Specifically, all children used imperatives, negatives, and plurals in Spanish by 20 months, consistent with monolingual children acquiring Spanish (see review of González, 1970). Further, by 24 months all children were productively using articles and possessives, and by 25 months, reflexives pronouns and definite articles emerged, again consistent with monolingual Spanish speakers. The eldest two participants showed productive mastery of verbal inflection by 26 months.

Using similar methodology, in a study examining the acquisition of interrogatives, negatives, and possessives in Spanish-English bilingual children, Padilla and Lindholm (1976) analyzed spontaneous language samples from children of Mexican descent, ranging in age from 2;0 to 6;4 ($N = 19$). Participants were exposed to equal amounts of both languages and were verbal. Researchers coded language sample utterances as a complete thought process, a single word utterance, a grammatical phrase, an incomplete grammatical phrase, or a repetition of an utterance. Results indicated that the acquisition of interrogatives occurred in two developmental stages in Spanish as compared with three stages in English; however, similar acquisition occurred with negatives and possessives.

Bland-Stewart & Fitzgerald, 2001 investigated English morphological development in Spanish-speaking children ($N = 15$) attending a bilingual preschool. They analyzed spontaneous language samples from children ranging in age from 2;6 to 5;0 according to Miller's (1981) criteria for the purpose of obtaining children's MLU. The investigators examined children's computed MLUs for evidence of Brown's grammatical morphemes (14) in obligatory contexts and then compared them to the expected MLUs of Standard American English-speakers. Results indicated that bilingual children were slower to acquire grammatical morphemes in English when compared to monolingual children, with the exception of *-ing*, which 90% of children mastered with >80% accuracy by 3;9. Children mastered plurals by 4;4. Study limitations include interpretability of conclusions as children's use of parallel morphemes in Spanish was not measured, nor was their linguistic syntactic competence estimated. It remains unclear

whether children's productions reflected a limited phonological system or a true lack of mastery.

The above referenced studies suggest limited variability in bilingual language acquisition and monolingual language acquisition. In fact, studies consistently show a comparable rate of acquisition (Padilla & Liebman, 1975; Padilla & Lindholm, 1976). As indicated previously, cross-linguistic transfer is not the topic of interest here, but one study is particularly noteworthy as it supports the findings reported earlier. Lindholm and Padilla (1978) investigated the phenomenon of *language mixing*, an occurrence exclusive to bilingual language acquisition. Language mixing, as they described, concerns the imposition of grammatical structures of one language on the form of the other language being acquired. Researchers investigated the frequency of language mixing instances in the productions of Spanish-English bilingual children of Mexican descent between the ages of 2;10 and 6;2 ($N = 5$), recording instances of language mixing, which they subsequently categorized by type (lexical or phrasal). Results indicated limited occurrence of mixing in general, and of all occurrences, lexical mixing was the most common. Children in the sample inserted a lexical item from one language into an utterance produced in the other language.

Differing in context from the studies reviewed previously, Dato (1975) compared the development of syntactic structures of eight children learning Spanish as a second language from an earlier study to that of four children learning Spanish as a first language in Madrid, Spain. The researcher obtained

bimonthly language samples from eight children ages 2 ($n = 1$), 5 ($n = 1$), 6 ($n = 4$), and 8 ($n = 3$) and compared them to samples of four native Spanish speakers (ages assumed to be young given the nature of the study) to determine acquisition of structures. Dato analyzed the samples for occurrence of grammatical structures, including aspects of the noun and verb phrases. Findings suggest a similar order of acquisition of verb tenses to that of González (1970; 1983) in that present indicative emerged first followed by present perfect, preterit and future, and finally present progressive. The imperfect, present subjunctive, future inflected, past subjunctive, and conditional tenses emerged later.

Based on the studies reviewed here, bilingual Spanish-English morpho-syntactic development is more similar to, than different from, monolingual morph-syntactic development. As with monolingual children, bilingual children's patterns of acquisition are predictable though variability in development is expected. Spanish-speaking children acquiring English as a second language exhibit unique yet expected language characteristics as they are acquiring two languages. We have seen that input is a key factor in their bilingual language development and that it is necessary to understand the processes these children undergo so that underestimation of their skills is minimized.

Program Effectiveness for Dual Language Learners

Whether or not to provide dual language learning children with primary language support in U.S. educational programs has been a controversial and loaded question for policy makers, educators, and families. Proponents of each side of this question have examined data and reported findings on what they

believe to be evidence of the effectiveness of instruction that supports the primary language and/or English-only instruction for English language learners (ELLs). In general, the program effectiveness research on primary language support has yielded promising results in many areas of outcome.

Positive effects of programs that support primary language development have been demonstrated with respect to cognitive, literacy, and academic achievement; first and second language development and acquisition rate; and vocabulary outcomes. While effectiveness research has indeed found positive effects and promising results for programs that provide English-only instruction, the context in which these programs have been implemented and shown to be favorable is generally limited to immersion programs in which majority language children are educated in a minority language. Unlike the participants in the studies favoring English-only instruction, minority language children in the United States are different in that they are immersed in majority language programs. Thus, the findings cannot be equivocally compared, nor can the effectiveness of these English-only programs be substantiated per se. In fact, as stated by Greene (1997), the results of these studies “offer more noise than signal” in the arena of program effectiveness research.

This section provides a brief overview of the history of bilingual instruction in the United States and a synthesis of the effectiveness research conducted with school-age children. It also includes review of the effectiveness of program alternatives for preschool age children, and discussion of theoretical alternatives that explain the descriptive findings in this area. Due to the variation

in educational program definitions, for the purpose of this review a distinction is made among bilingual programs and English-only programs only when necessary for the interpretation of results. Programs referred to as bilingual programs are programs that provide any extent of primary language support, unless otherwise noted. English-only programs are programs providing exclusively English support, unless otherwise specified.

History. In order to understand the ongoing bilingual education and English-only dilemma and to make sense of the ongoing effectiveness research, it is necessary to understand the events that led to the current state of education for minority language children in the United States. While “accountability” has been the buzzword of late, the roots of accountability far precede its new-found popularity, and the concept of accountability can be seen throughout history in education politics. The notion of providing language minority children with educational opportunities equal to those of their language majority peers initiated the development of policies intended to support these learners in their educational endeavors.

In 1968, the first Bilingual Education Act (BEA) (Title VII of Elementary and Secondary Education Act) was enacted as an attempt to address and meet the unique educational needs of language minority, limited English proficient (LEP) children and youth. Subsequently, in 1974, 1978, 1984, and 1988, the BEA was reauthorized, each time slightly deviating from its original intent to support non-English speakers by altering the nature of its emphasis and adding specifications and/or restrictions to funding. In 1974, the reauthorization deemphasized the

importance of using the primary language and culture of students to support LEP children in programs that were federally funded. In 1978, primary language maintenance was prohibited and federal funding was limited to transitional bilingual programs. In 1984, additional reduction in funding occurred, and the available funds, however limited, were afforded exclusively to developmental bilingual programs and alternative programs (English-only). The final reauthorization of the BEA occurred in 1994, and with it came a congressional consideration to repeal the law, thus further limiting funding and reducing the number of primary language support programs. Budgets were to be exclusively supportive of English-only methodologies (Crawford, 1997). To date, the desired outcomes of the repeal have been negligible.

In the congressional findings on the Bilingual Education Act (BEA) (P.L. 103-382, Oct. 30, 1994), the federal government acknowledged its responsibility to ensure that states and local school districts provide equal opportunities to children and youth of limited English proficiency. Pertinent to this discussion are statements that were written to establish a foundation for federally supported bilingual programs. While the foundations of the BEA are seemingly rooted in descriptive educational research, statements such as “it is the purpose of this title to ensure that limited English proficient students master English and develop high levels of academic attainment in content areas” and “quality bilingual education programs enable children and youth to learn English and meet high academic standards including proficiency in more than one language” have further paved the way for outcomes-based research.

Narrative reviews (Baker & de Kanter, 1981; Rossell & Baker 1996; Slavin & Cheung, 2003) and meta-analyses techniques (Greene, 1997; Rolstad, Mahoney, & Glass, 2005; Willig, 1985) have been employed repeatedly to examine bilingual education and English-only program effectiveness research. While some analyses of selected studies have indicated that bilingual education is favorable, others have concluded that English-only instruction produces more desirable outcomes for English language learning students. Due to the researchers' varying inclusionary criteria for methodologically sound studies, the following chronologically ordered section defines specific criteria and includes a discussion of a synthesis of the conclusions.

Narrative reviews. Keith Baker and Adriana de Kanter (1981) conducted one of the most referenced reviews of the effectiveness of language of instruction for non-English speakers more than two decades ago. After examining more than 300 studies that compared the effects of language of instruction, their final review consisted of 28 studies that they opined were methodologically sound. To be included in the review, studies needed to have (a) addressed the research questions of interest (whether transitional bilingual programs led to better performance in English and whether transitional bilingual programs led to better performance in non-language subject areas), (b) had randomly assigned participants to treatment and control conditions, (c) employed statistical analyses to determine program effects, (d) compared gains over a year to a control group, and (e) not used grade-equivalent scores. The primary goal of the study was to compare traditional bilingual education (TBE) to alternative programs, which

included submersion, English as a second language (ESL), and structured immersion (SI). The included studies presented confounds that did not appear to be addressed appropriately and/or adequately by the researchers. Included studies seemingly varied in programs tested, intervention duration, and inconsistent or not significant results. Other researchers have noted these problematic issues in subsequent reviews and analyses (Rolstad et al., 2005). Based on their review of the literature, and with regards to program effectiveness, Rolstad et al. concluded that (a) proper programs were essential to the academic achievement of language minority children, (b) insufficient evidence was available to determine the effectiveness of TBE programs, (c) primary language support was not justified or necessary for teaching non-language subjects, and (d) immersion programs were promising. Of interest is that all approaches, with the exception of the submersion programs, were approaches that utilized a range of primary language support for instructional or second language development purposes. Hence, if the goal of the review had been to compare programs that support primary language development to submersion programs, it seems that the conclusions would have favored primary language support programs without question.

A subsequent review of the literature conducted by Cynthia Rossell and Keith Baker (1996) noted similar findings as the Baker and de Kanter study. Posing a slightly different question than Baker and de Kanter, Rossell and Baker were interested in examining whether bilingual education as an approach to teaching English as a second language effectively transitioned non-English speaking learners from L1 to L2 with high achievement in English, as well as

other academic subjects. Rossell and Baker reviewed 72 studies that they deemed methodologically sound. Their inclusionary criteria differed only slightly from the previous study and further required that acceptable studies (a) were experimental with randomly assigned participants, (b) had non-random matched participants in groups or statistically controlled for factors influencing variables, (c) included a similar ethnicity and language comparison group of LEP students, (d) used English outcome measures and did not use grade equivalents, and (e) controlled for, or did not evidence, additional treatments. Additionally, they required appropriate statistical analyses for a study to be considered methodologically acceptable.

A rather significant departure from the original study was the change in description of SI. While the original description of SI portrayed programs in which “L1 is never spoken by the teacher and subject area instruction is given in L2 from the beginning” (Baker & de Kanter, 1981), the new description suggested minimal L1 instruction in language arts. This seemingly subtle departure may have biased their results and conclusions in favor of SI programs. Consistent with the results from the original review, Rossell and Baker concluded that TBE programs did not offer any additional contribution to the language achievement of language minority children. That is, similar to the original review, TBE programs were not generally found to be superior to the alternative programs proposed based on standardized language achievement outcomes and math and reading (in some cases, language) outcomes.

A point of interest here is that all but four of the structured immersion studies were Canadian studies in which majority language children were immersed in a minority language instructional setting. These studies differed from studies in the United States in that minority language children were immersed in a majority language program. Despite criticisms of including these studies due to the differences in socioeconomic level of the program participants, Rossell and Baker acknowledged this contention and argued that the Canadian studies were appropriately included due to the working class socioeconomic level of the participants. Further, the authors addressed a potential confound of self-selection in the Canadian immersion programs (unlike in the United States) and suggested that because the Canadian students were self-selected, they were more likely to be better language learners. What was not discussed were the differences between majority compared to minority language immersion programs and the societal implications, such as positive views of bilingualism, which may have contributed to positive outcomes for those participants.

Narrative/meta-analytical reviews. Slavin and Cheung (2003) conducted a review of experimental studies that compared bilingual and English-only reading programs for ELLs. Unlike a strictly narrative review, where no statistical analyses are performed, in addition to a meticulous discussion of critical studies, the authors computed effect sizes (when possible) to quantify outcomes, thus resulting in a pseudo-narrative/meta-analytical study. Seventeen methodologically adequate and relevant studies met the predetermined inclusionary standards (see Slavin & Cheung for review). These studies (a) compared bilingual reading

instruction to English-only instruction, (b) used random assignment to conditions or pretesting/matching criteria prior to treatment, (c) used participants who were elementary or secondary age ELLs in countries whose majority language is English, and (d) used quantitative outcome measures of English reading performance. It should be noted that researchers used the reading measures in computing effect sizes. In general, of the 17 studies included in the analysis, researchers found positive effects favoring bilingual instruction in 12 and no differences in 5 (Slavin & Cheung, 2003).

Meta-analyses. Ann Willig conducted one of the earliest meta-analytical studies on the effectiveness of bilingual education in 1985. In her study, Willig conducted what she referred to as a “statistical synthesis [re-synthesis] of the literature” that had been “reviewed narratively” by Baker and de Kanter (Willig, 1985). By subjecting their review to statistical methods, Willig not only intended to compare the two methods and contend the conclusions of the original review, but also sought to better understand the effects of bilingual programs and to ascertain where further research was needed. In addition to the Baker and de Kanter inclusionary criteria, Willig required that study programs were located in the United States and were implemented in kindergarten through secondary grade. With the added restrictions, Willig excluded three of Baker and de Kanter’s Canadian studies, and one study conducted in the Philippines, from the review, leaving 23 methodologically sound studies to be reviewed and included in the meta-analysis. Results of the analysis favored bilingual education programs over English-only programs for English tests in all major academic content areas

including math, reading, language, and overall achievement. Results also showed a favoring of bilingual programs for tests in other languages in all content areas as well as listening comprehension and attitudes toward school. Findings differed slightly from Baker and de Kanter's results, which suggested that the evidence to support the effectiveness of bilingual programs was insufficient. While the meta-analysis controlled for most methodological shortfalls of individual studies, the researcher cautioned that the obtained results favored bilingual programs but were still less than definitive due to methodological inadequacies. It seems then that because the same studies were reviewed by Willig (with the exception of four), Baker and de Kanter's conclusions favoring alternative programs such as English-only should have also been considered less than definitive.

Asserting that the results of the 1996 Rossell and Baker analysis were "lacking in rigor and consistency" and questioning these results in an effort to determine the reliability of the review, Greene (1997) applied additional standards, which resulted in a review and analysis of 11 of the original 75 Rossell and Baker studies (see Greene, 1997 for a full review). In his meta-analysis, Greene additionally required that all included studies used random assignment to experimental and control conditions (5 studies) or had statistically controlled for group pre-test scores and a background characteristic (SES or parent education) (6 studies). The 11 studies were analyzed following conventional meta-analysis techniques, which consisted of calculating an effect size for (a) all results measured in English, (b) reading and math results measured in English, and (c) Spanish measures when available. Additionally, a z-score for each subject area for

each study was calculated. Results of the analysis revealed an average gain for bilingual students relative to English-only students on all tests measured in English. Specifically, in reviewing the English test scores, Greene concluded that (a) having some primary language instruction produced positive effects on English and Spanish test scores and (b) bilingual instruction regardless of amount was beneficial.

More recently, Rolstad, Mahoney, and Glass (2005) also examined bilingual program effectiveness research on ELLs using meta-analysis. Differing from earlier analyses that excluded studies based on predetermined criteria (Greene, 1997; Slavin & Cheung, 2003; Willig, 1985), Rolstad et al. narrowed the focus of their study to studies published after 1985 and opted to include as many studies as possible. In their analysis, they included 17 studies conducted between 1985 and 1995 (see Rolstad et al., 2005 for a full review). Similar to earlier studies, they noted variability in programs, participants, and outcome measures. Results of the analysis indicated that bilingual education was favorable to English-only programs when controlling for ELLs' statuses. That is, when studies statistically controlled for the English proficiency status of participants, those in programs that supported the primary language outperformed those in English-only programs. Researchers also observed positive effects for bilingual education on native language outcome and academic achievement outcomes.

The previously discussed narrative reviews and meta-analysis studies comparing the effectiveness of educational programs that provide primary language support with programs that provide English-only instruction generally

have differed methodologically with regards to questions of interest. Because of the methodological inconsistencies in the studies included in these reviews and analyses, this researcher does not assume findings and conclusions to be definitive. The descriptive nature of this research has guided further studies and identified areas of weakness in the program effectiveness research arena.

School-aged English language learners. Studies supporting the use of primary language instruction to facilitate second language acquisition skills have found advantages of bilingual treatment conditions when compared with English-only conditions across ages and linguistic ability levels. Studies have noted positive effects in second language achievement and/or acquisition (Collier & Thomas, 2004; de la Garza & Medina, 1985; Gersten & Woodward, 1995; Medina & Escamilla, 1992), vocabulary acquisition and/or word learning (school age and preschool) (Bruck, 1978; Perrozi & Chavez-Sanchez, 1992), and psychosocial development (Auerbach, 1993; Lucas & Katz, 1994). While participant ages, linguistic ability levels, and outcomes measured have differed across studies, all studies discussed here pertain to the effectiveness literature in that they compared the effects of (a) bilingual and English-only experimental conditions or (b) multiple instructional models that support primary language development. Across studies, investigators consistently have found that bilingual experimental conditions or bilingual instructional models were effective in facilitating learning in both the primary and second language.

Collier and Thomas have conducted longitudinal research on the effectiveness of dual language enrichment programs nationwide in excess of a

decade (Collier & Thomas, 2004; Thomas & Collier, 1997). They define dual language programs as programs where the curricular content areas are taught through two languages. That is, bilingual teachers are the medium through which children receive daily lessons in separate languages. The focus of their research has been to determine ways in which the achievement gap between minority- and majority-language children can be narrowed and even closed. Specifically, ongoing longitudinal studies have compared the effects of one-way and two-way dual language programs on school-aged children. One-way programs, that teach single language groups in two languages, are defined by (a) a minimum of six years of bilingual instruction, (b) separation of the two languages of instruction, (c) a focus on a core curriculum with high cognitive demands at grade level, and (d) collaborative learning approaches. Contrastively, two-way programs are fully bilingual classrooms with both native English speakers and non-English speakers of any level. These programs are designed to foster the natural second language acquisition process through balanced bilingual instruction and an equal ratio (when possible) of students from both language backgrounds (Collier & Thomas, 2004). Results of their work have consistently suggested that dual language programs are effective in facilitating academic achievement on English reading measures for ELLs. Participants have been shown to achieve at or above grade level second language achievement by seventh or eighth grade after only four years in the dual language context. Further, when comparing the achievement of students in dual language programs to those in same state English-only programs,

the English-only participants' achievements declined as the cognitive requirements of schooling became more challenging.

De la Garza and Medina (1985) measured academic outcomes of two groups of Mexican-American children in primary grades one through three. One group of children was Spanish-dominant, and the other was English-dominant. The Spanish-dominant group received bilingual instruction, and the English-dominant group received English-only instruction. Results indicated that the participants in the bilingual experimental condition achieved statistically significantly higher vocabulary scores in second grade as measured by standardized achievement tests. Researchers did not observe any other differences. However, participants in the bilingual group developed English proficiency at a faster rate than reported nationally while maintaining primary language proficiency in math and reading.

Gersten and Woodward were interested in achievement gains on the Iowa Test of Basic Skills (ITBS) in minority language children in grades four through seven. They measured the achievement of participants in transitional and immersion bilingual programs to determine which program facilitated more favorable outcomes on the ITBS. Transitional programs were characterized by primary language instruction in the content area and concepts initially, with the goal of increasing oral and written language and literacy skills. The bilingual immersion programs were characterized by English-only instruction for content area material yet with primary language support for the purpose of clarification, concept development, and culture. Results indicated that the bilingual immersion

programs yielded favorable effects for language and reading in grades four to six and that students benefited from total English-only instruction at an earlier rate than the comparison group (Gersten & Woodward, 1995). Although primary language instruction was not afforded in the academic content areas, participants in the bilingual immersion condition may have benefitted from primary language support provided (although minimal) for clarification and conceptual development purposes.

Medina and Escamilla (1992) investigated the effects of maintenance bilingual programs (programs that support fluency and literacy in the first and second language) on the development of English for children with limited English proficiency in primary grades. Researchers grouped participants by language proficiency level according to district proficiency measures. Medina and Escamilla classified participants as fluent Spanish speakers or limited Spanish speakers with further classification as most fluent and most limited. Oral proficiency levels were the outcome of interest. While researchers observed positive effects on English acquisition across groups, results indicated significant differences in English acquisition for all groups. Participants classified as limited Spanish and limited English were statistically superior to the fluent Spanish speakers at acquiring English. Medina and Escamilla posit that the reason for these unexpected findings may be explained by the nature of cross-linguistic influence.

While slightly different in context, research in Canada also suggests that bilingual children with language disorders benefit from bilingual instruction.

Bruck (1978) examined English-speaking, kindergarten through third grade children who had language disorders and were learning French in a French immersion program. Results indicated that in spite of their language disorders, the children did progress and even benefited from dual language programs. Further, the children were able to gain second language proficiency while continuing to develop their native language (Bruck, 1978). Bruck (1978) asserted that although the children with language disorders required more time to develop a second language than their typical peers, he did observe successful overall outcomes.

Word learning and vocabulary acquisition research with school-aged children suggests that primary language support is essential to language development and reading comprehension. In a study investigating whether primary and second language vocabulary contributed to the ability to define words as well as reading comprehension, Carlisle, Beeman, Davis & Spharim (1999) found that stronger skills in one language were predicted by word knowledge in that language and the other language regardless of proficiency level. Further, vocabulary development in the primary language accounted for a significant amount of the total variance in reading comprehension in English. Expectedly, participants with stronger vocabulary skills in both languages were more likely to achieve greater reading comprehension scores (Carlisle et al., 1999). In a study investigating the most effective condition in which to learn new words, Perrozi and Chavez-Sanchez (1992) measured the rate of receptive acquisition of English pronouns and prepositions in first-grade bilingual children with language disorders. One group of participants received instruction in Spanish

prior to English (bilingually), and the other received instruction in English-only. Results indicated that the participants in the bilingual condition mastered English receptive vocabulary in fewer trials than the participants who received instruction in English-only.

Advantages of supporting the primary language extend well beyond educational achievement. While subjective in nature yet rooted in theory, opinions on the issue raise points worth considering. It is suggested that benefits of supporting the native language while developing the second language include positive influence on psychosocial development. Researchers concur that by easing the cultural transition for minority language children and using their primary language to facilitate assimilation into a new environment, children's overall educational experience may improve (Auerbach, 1993; Lucas & Katz, 1994). Lucas & Katz (1994) suggested that positive self-esteem and English development were likely to occur as a result of primary language support and instruction.

Preschool-aged English language learners. While limited in scope, program effectiveness research with preschool-aged ELLs of varying linguistic levels and socioeconomic backgrounds has yielded similar findings to research with school-aged ELLs. There is a consensus that primary language support is an effective instructional strategy for teaching young children. Researchers have observed positive effects of primary language support on bilingual language outcomes (Rodríguez, Díaz, Duran, & Espinosa, 1995; Winsler, Díaz, Espinosa, & Rodríguez, 1999), social and language development outcomes (Chang et al.,

2007), academic outcomes (Barnett, Yarosz, Thomas, Jung, & Blanco, 2007), and vocabulary and word learning outcomes (García; 1983; Kan & Kohnert, 2005; Kiernan & Swisher, 1990; Kohnert, Yim, Nett, Kan, & Duran, 2005; Leseman, 2000; Perrozi, 1985).

In 2008, the National Clearing House for English Language Acquisition released a report in which they examined early childhood programs for children acquiring English in the United States. The purpose of the report was to evaluate programs and better understand the efforts being put forth to educate these young language learners. Of primary interest was the success of programs in preparing ELLs for future academic success, specifically in kindergarten and first grade (NCELA, 2008). The report reviewed group risk factors by examining key factors known to influence school readiness for kindergarten and first grade and then explored appropriate ways to measure these factors. Findings suggested that early childhood programs focus attention on social, emotional, and cognitive development in ELLs in order to enhance their school experiences. Examiners further recognized the need for early childhood educators to effectively support the home language in order to foster literacy development. They concluded by summarizing the state of ELLs' performance to date and emphasized that young children without second language proficiency need primary language support to develop literacy skills in the second language (NCELA, 2008).

In studies of the effects of bilingual education on bilingual (Spanish-English) language development of language minority children, Rodriquez et al. (1995) and Winsler et al. (1999) examined language proficiency in two groups of

young Spanish-speaking children from low socioeconomic families: one that attended a bilingual preschool program ($n = 30$) and one that did not and stayed home ($n = 20$). Results of the Rodríguez et al. study indicated that children who attended preschool developed English proficiency, while at the same time maintaining their Spanish proficiency, at a faster rate than children who stayed at home. In a replication study, Winsler et al. examined 26 children ($M = 44.3$ months) who attended a full day 5 day/week preschool program and 20 control children ($M = 40.6$ months) who stayed at home. Researchers measured children's receptive and expressive language and language complexity to determine language proficiency using counterbalanced English and Spanish standardized measures. Results indicated that both groups of children made significant overall gains in both Spanish and English over a two-year period, with the preschool group achieving greater gains in English than the control group. Further, there were no detrimental effects on the preschool children's Spanish language proficiency. In a follow-up study, Winsler et al. examined children following their second year of bilingual preschool. The Researchers were interested in whether the children from their initial study maintained gains in English and Spanish or if exposure to English in preschool affected language development in either language. Results were consistent with the initial study.

Chang et al. examined social development and language development of 345 randomly selected Spanish-speaking children attending bilingual education preschool programs that varied in the extent of primary language support provided. The primary goal of the researchers was to measure the quantity and

quality of teacher-child language interactions and evaluate the interactions' effects on social and behavioral competence. Results of the study indicated that on average, Spanish-speaking participants in classrooms experienced 17% of their interactions in Spanish. In classrooms where the teacher spoke the primary language, the researchers observed increased overall interaction compared to classrooms where the teacher did not speak much Spanish. That is, children in those classrooms received a greater amount of individual interaction overall. In these classrooms, teachers tended to assign higher social skills and assertiveness ratings to children with whom they had had more teacher-child dominant language interactions. Expectedly, teachers perceived closer relationships between themselves and the children with greater use of Spanish. A higher incidence of English-language interaction was related to higher teacher ratings of problem behavior. The more primary language spoken by the teacher, the less likely a child was to fall prey to bullying and aggressive peers. Investigators observed no effects of proportion of teacher-child language interactions on Spanish language proficiency.

In a study comparing the effects of bilingual and English-only programs on academic outcomes, Barnett et al. (2007) examined 79 preschool children in bilingual two-way immersion (TWI) classrooms and 52 children in English-only classrooms. The children in the TWI programs received biweekly Spanish and English instruction, and the children in the English-only programs received primarily English instruction with an unspecified amount of support in the primary language. Results indicated that all children made significant gains in

language, literacy, and math in both programs, and researchers observed no significant group differences with respect to English measures. Significant effects in primary language vocabulary and Spanish language development occurred for the TWI group compared to the English-only group. Of interest here is that both groups made academic gains in English despite the fact that the TWI group received 50 percent less instruction in English.

Findings from vocabulary studies with bilingual children consistently suggest that supporting the native language is important to overall language development, whether it is in the home, preschool, or both (García, 1983; Kan & Kohnert, 2005; Kiernan & Swisher 1990; Leseman, 2000). Further, when native language instruction is not available, typically developing children are less likely to maintain or further develop the language of the home, thus impeding social, emotional, and academic development (Kohnert et al., 2005). Various researchers have found positive effects across languages when primary language support is provided.

Kan and Kohnert (2005) investigated receptive, expressive, and total vocabulary skills in preschool children ages 3; 4 to 5; 2 ($M = 4; 4$) learning Hmong and English sequentially. The investigators examined composite vocabulary scores as a function of age (older/younger), language (Hmong/English), and modality (receptive/expressive). Composite scores reflected the composition of the children's bilingual vocabulary in terms of distribution of concepts across the two languages or concepts with translation equivalents. Results indicated that older children scored significantly higher in

English vocabulary than younger children, but there were no differences in Hmong. Additionally, all children demonstrated higher scores in Hmong in the receptive modality when compared with the expressive modality. Investigators observed no loss or gains in their native language.

Leseman (2000) compared the vocabulary scores of Turkish immigrant children in a bilingual/Dutch immersion preschool program to native Dutch-speaking age-matched peers. Leseman tested participants on three occasions, separated by six months, to measure receptive and expressive vocabulary in Turkish and Dutch for the Turkish children and in Dutch for the Dutch children. Results of the study revealed positive growth in Dutch vocabulary in both groups of children. However, performance in Turkish vocabulary did not change and, in some cases, lagged behind. The author speculated that first, limited support of native language development at home and/or school may have contributed to the negative effects on overall vocabulary in the Turkish children and second, immersion in a second language context during preschool may negatively affect native language development. Leseman suggested that true bilingual preschool programs may be a viable solution to fostering native and second language development.

Kiernan and Swisher (1990) compared the effectiveness of bilingual and monolingual training conditions in the receptive learning of novel English words. Four Spanish-speaking and three Navajo-speaking children, ages 4;11 to 6;3, learning English as a second language participated in two experiments. Investigators presented pictures of nonsense words to the participants and

recorded the number of trials needed to demonstrate receptive mastery in a bilingual Navajo-English or Spanish-English condition or an English-only condition. Both groups of children demonstrated mastery of new words in fewer trials under the bilingual condition than in the monolingual condition. Results of the study support the hypothesis that a bilingual condition facilitates English word learning when compared with a monolingual training condition.

In a study measuring the effect of English language acquisition on existing Spanish language syntactic forms, García (1983) compared bilingual children ages 3;0 to 4;0 in two different training conditions. In the first condition participants received instruction in prepositions in English, and in the second condition participants received instruction in prepositions in English with Spanish support. Children scored significantly higher in the identification of prepositions under the bilingual condition than in the English-only condition. Results suggested that using the native language in training conditions may lead to better word learning generalizations over time.

Like their typically developing peers, studies show bilingual preschool children with language disorders benefit from vocabulary instruction in their native language. Studies supporting the facilitative effect of native language instruction on second language acquisition have demonstrated advantages of bilingual treatment conditions compared to English-only conditions, at least with regards to vocabulary acquisition and/or word learning (García, 1983; Perrozi, 1985; Perrozi & Chavez-Sanchez, 1992). While the types of words studied differed in each study—prepositions (García, 1983), English nouns (Perrozi,

1985), and prepositions and pronouns (Perrozi & Chavez-Sanchez, 1992)—all studies examined the effects of bilingual and English-only training conditions. Across studies, investigators found that bilingual training conditions facilitate learning of unknown words in both the native language and the second language.

Second language acquisition theories. Prior to relating the program effectiveness research findings to theory, it is necessary to consider (a) the contexts in which the second language acquisition process occurred in these studies, (b) the methods and tasks at hand, and (c) the outcomes measured. Theoretical proposals put forth to explain the program effectiveness research findings have generally supported more than one theory of second language acquisition. In considering proposed hypotheses that might explain these findings (Cummins, 1978, 1979; Porter, 1990; Rossell & Baker, 1996), this author finds that no individual hypothesis can explain the entirety of evidence although some provide better explanations than others. Of interest here are theoretical perspectives that best explain the role of the first language in second language acquisition given that experimental studies have consistently found positive effects for bilingual programs or training conditions when compared to English-only programs for English language learners.

Effectiveness research findings indicate that bilingual programs, in which primary language support is provided, and bilingual treatment or training conditions are effective at increasing second language skills across domains, as well as positively influencing outcomes in the primary language (Collier & Thomas, 2004; de la Garza & Medina, 1985; Gersten & Woodward, 1995;

Medina & Escamilla, 1992; Thomas & Collier, 1997). Bilingual programs effectiveness when compared with programs that do not support the primary language is presumably due to the facilitative effect of primary language instruction on second language acquisition or skills. Theoretical perspectives that do not consider or attempt to explain the nature of this interaction, or this facilitative phenomenon, are not useful to consider here as they exclude critical variables.

The Monitor Model, which Steve Krashen proposed in the 1970s and later in the 1980s, was built upon a set of premises; only one, however, has the potential to somewhat explain the relationship between first and second language acquisition. While plausible, Krashen's hypothesized model consisting of explanations for acquisition and learning, monitoring output, the predictable order of grammar, comprehensible input, and a learner's receptiveness to input does not consider language transfer or learner variability and, therefore, is not a viable option to consider for the purpose of this study. The results of many studies reported here support the idea of comprehensible input as participants in programs where oral language or vocabulary outcomes exceeded expectations when primary language support was provided; however, the theory remains impossible to verify. That is, it is unfeasible to assume that one can measure input that is comprehensible.

The "time on task" principle has been explored to explain achievement in ELLs (Porter, 1990; Rossell & Baker, 1996). Porter (1990) asserted that "the more time spent learning a language, the better you do in it, all other factors being

equal” (Porter, 1990, p. 119). Supporting this notion, Rossell and Baker (1996) proposed that the greatest predictor of achievement in a subject is the amount of time spent learning that particular subject. Proponents of this principle assume that more “time on task” translates into greater success for ELLs learning English and, thus, more successful academic progress (Rossell & Baker, 1996). Several studies presented in this review provide results refuting this principle, and, as with Krashen’s hypotheses, the time on task principle has not been verified.

Two hypotheses have been suggested to explain effects of the interaction between academic outcomes, a child’s background, input, and educational experience (Cummins, 1979). First, the Developmental Interdependence Hypothesis, proposed by Jim Cummins (1978; 1979) puts forth that second language competence is a function of first language competence at the time the second language is introduced. It suggests that primary language instruction facilitates second language learning and further that learning in the primary language facilitates learning outcomes in the second language. Cummins proposed that when a child possesses conceptual knowledge in his or her primary language, he or she may more easily learn concepts in the second language by using native language knowledge to facilitate use of the second language. Second, the Threshold Hypothesis, also proposed by Cummins (1976), asserted that for children to experience positive academic achievement, they must reach threshold levels of competence in the primary language, and only then will they reap the benefits of bilingualism and minimize cognitive consequences.

While many effectiveness research findings support the Developmental Interdependence Hypothesis, of the studies here, the Threshold Hypothesis cannot definitively explain any findings. That is, in support of the Interdependence Hypothesis, children in programs that provided primary language instruction demonstrated similar, if not superior, achievement on English measures compared to children in English-only programs. Positive effects on many outcome measures occurred across ages and varying linguistic levels, thus arguing against the Threshold Hypothesis. Similar to their higher level primary language proficiency peers, children with less primary language proficiency benefited from bilingual instruction and acquired the second language in equal time or faster than children with greater proficiency. Further, academic achievement gains occurred despite varying levels of linguistic competence.

A third theory of second language acquisition is devoted entirely to explaining the facilitative effect that primary language proficiency presumes to have on second language learning and academic achievement. The Facilitation Theory (Rossell & Baker, 1996) has been aligned with Cummins's theoretical perspective and linked to the Interdependence and Threshold Hypotheses described above (MacSwan & Rolstad, 2005). The facilitative effect of the primary language development on second language learning and academic achievement can reasonably explain the findings of several, if not all, studies discussed here. Researchers concur that children learning two languages may develop conceptual knowledge more easily through native language instruction than through instruction exclusively in the second language.

As has been demonstrated by this review of ELL program effectiveness literature, outcomes-based research has identified a way to enhance and enrich the school experience of ELLs both socially and academically through facilitating second language acquisition and academic achievement by supporting primary language development. While language immersion programs appear to have found their place in Canada, they are not proven to be overwhelmingly effective with language minority children in the United States given our socio-political climate and the deviations from the original structure of immersion programs. Given the dearth of evidence to support English-only instruction as a medium through which to address the educational needs of ELLs in the United States, it seems that programs that support the primary language are the most viable option for this group, based on empirical support for the programs. The outcome-based empirical evidence cited was established across ages and linguistic levels, with typically and atypically developing children. Study participants demonstrated positive cognitive outcomes, literacy and academic achievement outcomes, first and second language development and acquisition rate outcomes, and vocabulary outcomes. Regardless of the extent of primary language support provided, the effectiveness of these programs has been established and the results are impressive.

Summary and Conclusions

To date, second language acquisition research with young children is limited in scope. In particular, there is a scarcity of normative research on second language acquisition in very young children attending preschool programs that

provide primary language support. In order for preschool programs to maximize opportunities for young children, it is necessary to consider the characteristics and specific needs of the children who comprise preschool programs. With the ultimate goal of school readiness and later success, program planning requires thoughtful consideration regarding the developmental processes non-English-speaking children undergo, specifically language acquisition, and the early experiences they are afforded in preschool that may support or hinder this development.

References

- Amastae, J. (1982). Aspects of bilingual acquisition of English and Spanish. *Journal of the Linguistic Association of the Southwest*, 5(1-2), 5-19.
- Anderson, R. T. (1998). The development of grammatical case distinctions in the use of personal pronouns by Spanish-speaking preschoolers. *Journal of Speech, Language and Hearing Research*, 41(2), 394-406. Retrieved from <http://www.ebscohost.com>
- Anderson, R., & Smith, B. L. (1987). Phonological development of two-year-old monolingual Puerto Rican Spanish-speaking children. *Journal of Child Language*, 14, 57-78. doi:10.1017/S0305000900012733
- Auerbach, E. R. (1993). Reexamining English only in the ESL classroom. *TESOL Quarterly*, 27(1), 9-32. Retrieved from <http://www.jstor.org.ezproxy1.lib.asu.edu/stable/3586949?seq=1>
- Austin, J., Blume, M., Parkinson, D., Nunez del Prado, Z., & Lust, B. (1997). The status of pro-drop in the initial state: Results for a new analysis of Spanish. In A. Perez-Leroux & W. Glass (Eds.), *Contemporary perspectives on the acquisition of Spanish: Volume 1, developing grammars* (pp. 37-54). Somerville, MA: Cascadilla.
- Baker, K. A. & de Kanter, A. A. (1981). *Effectiveness of bilingual education: A review of the literature*. Washington, DC: U.S. Department of Education.
- Barnett, W. S., Yarosz, D. J., Thomas, J., Jung, K., & Blanco, D. (2007). Two-way and monolingual English immersion in preschool education: An experimental comparison. *Early Childhood Research Quarterly*, 22(3), 277-293. doi:10.1016/j.ecresq.2007.03.003
- Bedore, M., Peña, E. D., García, M., & Cortez, C. (2005). Conceptual versus monolingual scoring: When does it make a difference? *Language, Speech, and Hearing Services in Schools*, 36, 188-200. doi:10.1044/0161-1461(2005/020)
- Bialystok, E. (2001). *Bilingualism in development: Language, literacy and cognition*. Cambridge: Cambridge University Press.
- Bialystok, E. (2005). *Bilingualism in development: Language, Literacy & Cognition*, (p.64). New York, NY: Cambridge University Press.
- Bland-Steward, L. M., & Fitzgerald, S. M. (2001). Use of Brown's 14 grammatical morphemes by bilingual Hispanic preschoolers. *Communication Disorders Quarterly*, 22(4), 171-186. doi:10.1177/152574010102200403

- Brown, R. (1973). *A first language: The early stages*. Cambridge, Massachusetts: Harvard University Press.
- Bruck, M. (1978). The suitability of early French immersion programs for the language-disabled child. *Canadian Journal of Education*, 3(4), 51-72.
- Carlisle, J. F., Beeman, M., Davis, L. H. & Spharim, G. (1999). Relationship of metalinguistic capabilities and reading achievement for children who are becoming bilingual. *Applied Psycholinguistics*, 20, 459-478.
- Castilla, A. P., Restrepo, M. A., & Perez-Leroux, A. (2009). Individual differences and language interdependence: a study of sequential bilingual development in Spanish-English preschool children. *International Journal of Bilingual Education and Bilingualism*, 12(5), 565-580. doi:10.1080/13670050802357795
- Chang, F., Crawford, G., Early, D., Bryant, D., Howes, C., Burchinal, M. . . .Pinata, R. (2007). Spanish-speaking children's social and language development in pre-kindergarten classrooms. *Early Education and Development*, 18(2), 243-269. doi:10.1080/10409280701282959
- Collier, V. P., & Thomas, W. P. (2004). The astounding effectiveness of dual language education for all. *NABE Journal of Research and Practice*, 2(1), 1-20. Retrieved from Retrieved from <http://citeseerx.ist.psu.edu/>
- Collins, R., & Ribeiro, R. (2004). Toward an early care and education agenda for Hispanic children. *Early Child Research & Practice*, 6(2). Retrieved from <http://ecrp.uiuc.edu>
- Crawford, J. (1997). Best Evidence: Foundations of the Bilingual Education Act. National Clearinghouse for Bilingual Education, March 1997.
- Cummins, J. (1976). The influence of bilingualism on cognitive growth: A synthesis of research findings and explanatory hypotheses. *Working Papers on Bilingualism*, 9, 1-43.
- Cummins, J. (1978). Educational implications of mother-tongue maintenance in minority-language children. In S. T. Carey (Ed.), *The Canadian Modern Language Review*, 34, 395-416.
- Cummins, J. (1979). Linguistic interdependence and the educational development of bilingual children. *Review of Educational Research*, 49 (2), 222-251. doi:10.3102/00346543049002222
- Dale, P., Dionne, G., Eley, T., & Plomin, R. (2000). Lexical and grammatical development: A behavioral genetic perspective. *Journal of Child Language*, 27, 619-642. Retrieved from <http://journals.cambridge.org>

- Dato, D. P. (1975). On psycholinguistic universals in children's learning of Spanish. In D. P. Dato (Ed.), *Developmental psycholinguistics: theory and applications* (pp. 235-254). Washington, DC: Georgetown University Press.
- De La Garza, J. V., & Medina, M. (1985). Academic achievement as influenced by bilingual instruction for Spanish-dominant Mexican American children. *Hispanic Journal of Behavioral Sciences*, 7(3), 247-259.
doi:10.1177/07399863850073003
- Fernández, M. C., Pearson, B. Z., Umbel, V. M., Oller, D. K., & Molinet-Molina, M. (1992). Bilingual receptive vocabulary in Hispanic preschool children. *Hispanic Journal of Behavioral Sciences*, 14, 268-276.
- Fry, R. & Gonzales, F. (2008). One-in-five and growing fast: A profile of Hispanic public school students. Washington, DC: Pew Hispanic Center.
- García, E (1983). Early childhood bilingualism with special reference to the Mexican-American child. Albuquerque, NM: University of New Mexico Press.
- Gathercole, V. M. (2002). Grammatical gender in bilingual and monolingual children: A Spanish morphosyntactic distinction. In D. K. Oller & R. E. Eilers (Eds.), *Language and literacy in bilingual children* (pp. 207-219). Clevedon, UK: Multilingual Matters.
- Gathercole, V. C., Sebastián, E., & Soto, P. (1999a). The early acquisition of Spanish verbal morphology: Across-the-board or piecemeal knowledge? *International Journal of Bilingualism*, 3(2-3), 133-182.
doi:10.1177/13670069990030020401
- Gathercole, V. C., Sebastián, E., & Soto, P. (1999b). Lexically specified patterns in early verbal morphology in Spanish. In M. R. Perkins & S. J. Howard (Eds.), *New Directions in Language Development and Disorders*. London: Plenum.
- Gersten, R., & Woodward, J. (1995). A longitudinal study of transitional and immersion bilingual education programs in one district. *The Elementary School Journal*, 95(3), 223-239. Retrieved from <http://www.jstor.org.ezproxy1.lib.asu.edu/stable/1001932?seq=1>
- Gildersleeve, C., Davis, B., & Stubbe, E. (1996, November). When monolingual rules don't apply: Speech development in a bilingual environment. Paper presented at the annual convention of the American Speech Language Hearing Association, Seattle, WA.

- Goldstein, B.A. (2004). Bilingual language development and disorders in Spanish-English speakers. Baltimore, MD: Brookes Publishing.
- Goldstein, B. (2005). Substitution patterns in the phonology of Spanish-speaking children. *Journal of Multilingual Communication Disorders*, 3(3), 153-168. doi:10.1080/147696705000967
- Goldstein, B. A., Fabiano, L., & Washington, P. S. (2005). Phonological skills in predominantly English-speaking, predominantly Spanish-speaking and Spanish-English bilingual children. *Language, Speech, and Hearing Services in Schools*, 36, 201-218. doi:10.1044/0161-1461(2005/021).
- Goldstein, B., & Iglesias, A. (1996). Phonological patterns of normally developing Spanish-speaking 3- and 4-year olds. *Language, Speech, and Hearing Services in Schools*, 27, 82-90. Retrieved from <http://www.ebscohost.com>
- Goldstein, B. A. & Washington, P. (2001). An initial investigation of phonological patterns in 4-year-old typically developing Spanish-English bilingual children. *Language, Speech and Hearing Services in Schools*, 32, 153-164.
- González, G. (1970). *The acquisition of Spanish grammar by native Spanish speakers*. Dissertation, University of Texas at Austin.
- González, G. (1975). The acquisition of grammatical structures by Mexican-American children. In E. Hernandez-Chavez, A. D. Cohen, & A. F. Beltramo (Eds.), *El Lenguaje de los chicanos: Regional and Social Characteristics of Language used by Mexican Americans*. Arlington, VA: Center for Applied Linguistics.
- González, G. (1983). Expressing time through verb tenses and temporal expression in Spanish: Age 2.0-4:6. *NABE Journal*, 7, 69-82.
- Grinstead, J. (1994). The emergence of nominative case assignment in child Catalan and Spanish. *Proceedings of BUCLD*, 19, 216-227.
- Greene, J. P. (1997). A meta-analysis of the Rossell and Baker review of bilingual education research. *Bilingual Research Journal*, 21(2-3).
- Hammer, C. S., Miccio, A. W., & Rodríguez, B. (2004). Bilingual language acquisition and the child socialization process. In B. Goldstein (Ed.), *Bilingual language development and disorders in Spanish-English speakers* (pp. 21-52). Baltimore: Brookes.
- Hochberg, J. (1988). First steps in the acquisition of Spanish stress. *Journal of Child Language*, 15, 273-292. doi:10.1017/S030500090001237X

- Ingram, D., Welti, A., & Priem, C. (2008). The early stages of verb acquisition in Spanish, German & English. In N. Gagarina & I. Guzlow (Eds.), *The Acquisition of Verbs and their grammar: The Effect of Particular Languages* (pp. 151-171). Netherlands: Springer.
- Jackson-Maldonado, D., Thal, D. J., Marchman, V., Bates, E., & Gutiérrez-Clellen, V. (1993). Early lexical development in Spanish-speaking infants and toddlers. *Journal of Child Language, 20*, 523-549.
doi:10.1017/S0305000900008461
- Jimenez, B. C. (1987a). Acquisition of Spanish consonants in children aged 3-5 years, 7 months. *Language, Speech, and Hearing Services in Schools, 18*, 357-363.
- Jimenez, B. C. (1987b). Articulation error patterns in Spanish-speaking children. *Journal of Childhood Communication Disorders, 10*(2), 95-106.
- Johnson, C. M. (1996). Verb errors in the early acquisition of Mexican and Castilian Spanish. *Proceedings of the Twenty-Seventh Annual Child Language Research Forum*.
- Kan, P. F., & Kohnert, K. (2005). Preschoolers learning Hmong and English: Lexical-semantic skills in L1 and L2. *Journal of Speech, Language, and Hearing Research, 48*, 372-383. doi:10.1044/1092-4388(2005/026)
- Kernan, K. T., & Blount, B. G. (1966). The acquisition of Spanish grammar by Mexican children. *Anthropological Linguistics, 8*(9), 1-14. Retrieved from <http://www.jstor.org/stable/30029193>
- Kiernan, B., & Swisher, L. (1990). The initial learning of novel English words: Two single-subject experiments with minority language children. *Journal of Speech and Hearing Research, 33*, 707-716.
- Kohnert, K. (2004). Processing skills in early sequential bilinguals. In B. A. Goldstein (Ed.), *Bilingual Language Development and Disorders in Spanish-English Speakers* (pp. 21-76). Baltimore, MD: Brookes Publishing.
- Kohnert, K., Yim, D., Nett, P., & Duran, L. (2005). Intervention with linguistically diverse preschool children: A focus on developing home language(s). *Language, Speech, and Hearing Services in Schools, 36*, 251-263. doi:10.1044/0161-1461(2005/025)
- Kvaal, J. T., Shipstead-Cox, N., Nevitt, S. G., Hodson, B. W., & Launer, P. B. (1988). The acquisition of 10 Spanish morphemes by Spanish-speaking children. *Language, Speech, and Hearing Services in Schools, 19*, 384-394.

- Leseman, P. (2000). Bilingual vocabulary development of Turkish preschoolers in the Netherlands. *Journal of Multilingual and Multicultural Development*, 21, 93-112.
- Linares, T. (1981). Articulation skills in Spanish-speaking children. In R. Padilla (Ed.), *Ethnoperspectives in bilingual education research: Bilingual education technology* (pp. 363-367). Ypsilanti, MI: Eastern Michigan University.
- Linares-Orama, N. & Sanders, L. J. (1977). Evaluation of syntax in three-year-old Spanish-speaking Puerto Rican children. *Journal of Speech and Hearing Research*, 20, 350-357.
- Lindholm, K. J., & Padilla, A. M. (1978). Language mixing in bilingual children. *Journal of Child Language*, 5, 327-335. doi:10.1017/S0305000900007509
- Lléo, C. (1996). To spread or not to spread: Different styles in the acquisition of Spanish phonology. In B. Bernhardt, J. Gilbert, & D. Ingram (Eds.), *Proceeding so the UBC International Conference on Phonological Acquisition* (pp. 215-228). Somerville, MA: Cascadilla Press.
- López-Ornat, S. (1997). What lies in between a pre-grammatical and a grammatical representation? Evidence on nominal and verbal form-function mappings in Spanish from 1;7 to 2;1. In A. T. Perez-Leroux and W. R. Glass (Eds.), *Contemporary Perspectives on the Acquisition of Spanish, Volume, Developing Grammars* (pp. xxx-xxx). Somerville, MA: Cascadilla.
- Lucas, T., & Katz, A. (1994). Reframing the debate: The roles of native languages in English-only programs for language minority students. *TESOL Quarterly*, 28(3), 537-561.
- Macken, M. A. (1978). Permitted complexity in phonological development: One child's acquisition of Spanish consonants. *Lingua*, 44(2-3), 219-253. doi:10.1016/0024-3841(78)90077-3
- MacSwan, J., & Rolstad, K. (2005). Modularity and the facilitation effect: Psychological mechanisms of transfer in bilingual students. *Hispanic Journal of Behavioral Sciences*, 27(2), 224-243. doi:10.1177/0739986305275173
- Manrique, A., & Massone, M. (1985). Estrategias de organización fonológica durante el proceso de adquisición de lenguaje. *Lenguas Modernas*, 12, 149-162.

- Marchman, V. A., & Martínez-Sussmann, C. (2002). Concurrent validity of caregiver/parent report measures of language for children who are learning both English and Spanish. *Journal of Speech, Language and Hearing Research, 45*, 983-997. doi:10.1044/1092-4388(2002/080)
- Marchman, V. A. Martínez-Sussmann, C. & Dale, P. S. (2004). The language-specific nature of grammatical development evidence from bilingual language learners. *Developmental Science, 7*(2), 212-224.
- Marrero, V., & Aguirre, C. (2003). Plural acquisition and development in Spanish. In S. Montrul and F. Ordonez (Eds.), *Theoretical linguistics and language development in Hispanic languages* (pp. 275-296). Somerville, MA: Cascadilla Press.
- Medina, M., & Escamilla, K. (1992). English acquisition by fluent- and limited Spanish- proficient Mexican Americans in a 3-year maintenance bilingual program. *Hispanic Journal of Behavioral Sciences, 14*(2), 252-267. doi:10.1177/07399863920142005
- Meisel, J. M. (1993). Simultaneous first language acquisition: A window on early grammatical development. *D.E.L.T.A., 9*, 353-385.
- Merino, B. J. (1992). Acquisition of Syntactic and phonological features in Spanish. In H.W. Langdon & L. L. Cheng (Eds.), *Hispanic Children and Adults with Communication Disorders: Assessment and Intervention* (pp. 57-98). Gaithersburg, MD: Aspen.
- Miller, J. F. (1981). Assessing language production in children: Experimental procedures. Needham Heights, MA: Allyn & Bacon.
- Montrul, S. (2004). The acquisition of Spanish: Morphosyntactic development in monolingual and bilingual L1 acquisition and adult L2 acquisition. Amsterdam: John Benjamins.
- National Clearing House for English Language Acquisition (2008). The growing number of limited English proficient students, 1991/92-2001/02 [Poster]. Washington, DC: Author. Retrieved February 20, 2008 from <http://www.ncela.gwu.edu/policy/states/stateposter.pdf>
- Oller, D. K., & Eilers, R. E. (1982). Similarity of babbling in Spanish- and English-learning babies. *Journal of Child Language, 9*, 565-577. doi:10.1017/S0305000900004918
- Oller, D. K., & Eilers, R. E. (2002). *Language and literacy in bilingual children*. Clevedon, U.K.: Multilingual Matters.

- Padilla, A. M., & Liebman, E. (1975). Language Acquisition in the bilingual child. *The Bilingual Review*, 2, 34-55.
- Padilla, A. M., & Lindholm, K. J. (1976). Development of interrogative, negative and possessive forms in the speech of young Spanish/English bilinguals. *The Bilingual Review*, 3, 122-152.
- Páez, M. M., Tabors, P. O., & López, L.M. (2007). Dual language and literacy development of Spanish-speaking preschool children. *Journal of Applied Developmental Psychology*, 28, 85-102.
- Patterson, J. L. (1998). Expressive vocabulary development and word combinations of Spanish-English bilingual toddlers. *American Journal of Speech-Language Pathology*, 7, 46-56.
- Patterson, J. L. (2002). Relationships of expressive vocabulary to frequency of reading and television experience among bilingual toddlers. *Applied Psycholinguistics*, 23, 493-508. doi:10.1017/S0142716402004010
- Patterson, J. L., & Pearson, B. Z. (2004). Bilingual lexical development. In B. A. Goldstein (Ed.), *Bilingual language development and disorders in Spanish-English speakers* (pp. 77-104). Baltimore, MD: Brookes Publishing Company.
- Pearson, B. Z., Fernández, S. C., & Oller, D. K. (1993). Lexical development in bilingual infants and toddlers: Comparison to monolingual norms. *Language Learning*, 43, 93-120. doi:10.1111/j.1467-1770.1993.tb00174.x
- Pearson, B. Z., & Fernández, S. C. (1994). Patterns of interaction in the lexical growth of bilingual infants and toddlers. *Language Learning*, 44(4), 617-653. doi:10.1111/j.1467-1770.1994.tb00633.x
- Peña, E., Bedore, L. M., & Rappazo, C. (2003). Comparison of Spanish, English, and bilingual children's performance across semantic tasks. *Language, Speech, and Hearing Services in Schools*, 34, 5-16. doi:10.1044/0161-1461(2003/001)
- Peña, E. D., Bedore, L. M., & Zlatic-Guinta, R. (2002). Category generation performance of young bilingual children: The influence of condition, category and language. *Journal of Speech, Language and Hearing Research*, 45, 938-947. doi:10.1044/1092-4388(2002/076)
- Perez-Pereira, M. (1989). The acquisition of morphemes: Some evidence from Spanish. *Journal of Psycholinguistic Research*, 18(3), 289-312. Retrieved from <http://pao.chadwyck.com>

- Perrozi, J. (1985). A pilot study of language facilitation for bilingual language-Handicapped children: Theoretical and intervention implications. *Journal of Speech and Hearing Disorders*, 50, 403-406.
- Perrozi, J. A., Chavez-Sanchez, M. L. (1992). The effect of instruction in L1 on receptive acquisition of L2 for bilingual children with language delay. *Language, Speech, and Hearing Services in Schools*, 23, 348-352. Retrieved from <http://commfaculty.fullerton.edu>
- Porter, R. P. (1990). The fresh breeze of innovation in U.S. alternative programs. In R. P. Porter (Ed.), *Forked tongue: The politics of bilingual education* (p. 119). New York, NY: Basic Books.
- Radford, A., & Ploennig-Pacheco, I. (1994). The morphosyntax of subjects and verbs in child Spanish. *Essex Research Reports in Linguistics*, 5, 23-67.
- Rodríguez, J. L., Díaz, R. M., Duran, D., & Espinosa, L. (1995). The impact of bilingual preschool education on the language development of Spanish-speaking children. *Early Childhood Research Quarterly*, 10(4), 475-490. doi:10.1016/0885-2006(95)90017-9
- Rolstad, K., Mahoney, K., & Glass, G. V. (2005). Weighing the evidence: A meta-analysis of bilingual education in Arizona. *Bilingual Research Journal*, 29(1), 43-67.
- Rossell, C. H., & Baker, K. (1996). The educational effectiveness of bilingual education. In M. Dressman, S. McCarthy, & P. Prior (Eds.), *Research in the teaching of English*, 30(1), 7-74. Retrieved from <http://www.jstor.org/stable/40171543>
- Sera, M. D. (1992). To be or not to be: Use and acquisition of the Spanish copula. *Journal of Memory and Language*, 31, 408-427. Retrieved from <http://pao.chadwyck.com/home.do>
- Slavin, R. E., & Cheung, A. (2003). A synthesis of research on language of reading instruction for English language learners. *Review of Educational Research*, 75(2), 247-284
- Tabors, P. O., & Snow, C. E. (2001). Young bilingual children and early literacy development. In S. Neuman, & Dickinson (Eds.), *Handbook of early literacy research* (pp. 159-179).
- Thal, D., Jackson-Maldonado, D., & Acosta, D. (2000). Validity of a parent-report measure of vocabulary and grammar for Spanish-speaking toddlers. *Journal of Speech-Language-Hearing Research*, 43, 1087-1100. Retrieved from <http://donna.jackson.weebly.com>

- Thomas, W. P., & Collier, V. P. (1997). *School effectiveness for language minority students*. Washington, DC: National Clearinghouse for Bilingual Education.
- Vivas, D. (1979). Order of acquisition of Spanish grammatical morphemes: Comparison to English and some cross-linguistic methodological problems. *Kansas Working Papers in Linguistics* 4(1), 77-105.
- Willig, A. (1985). A meta-analysis of selected studies on the effectiveness of bilingual education. *Review of Educational Research*, 55, 269-317.
- Winsler, A., Díaz, R. M., Espinosa, L., & Rodríguez, J. L. (1999). When learning a second language does not mean losing the first: Bilingual language development in low-income, Spanish-speaking children attending bilingual preschool. *Child Development*, 70(2), 349-362.
doi:10.1111/1467-8624.t01-1-00026

Table 1

Summary of Findings of Reviewed Studies of Morpho-syntactic Development

Study	Type of Study	Grammatical Feature(s) (Focus)	MLU or Age of Acquisition or (emergence)	Notes
Anderson (1998)	Cross-sectional	Nominative Object case/clitic	3;1 ..	Pronouns ..
Dato (1975)		Present indicative Preterit Present progressive Periphrastic future Present subjunctive	2;0 2;6 2;6 2;6 3;0	Verbs
Gathercole, Sebastian & Soto (1999a 1999b)	Diary	3 rd Person sing. present 1 st Person plur. present 3 rd Person singular periphrastic future Imperative Infinitive 1 st Person sing. present 3 rd Person sing present perfect 3 rd Person sing imperfect 1 st Person sing. periphrastic future 1 st & 3 rd person sing. present subjunctive	2;0 (2;0) (2;0) 2;1 (2;1) (2;1) (2;1) (2;1)	Verbs
Gonzalez (1970)	Descriptive	Present indicative Preterit Present progressive Future Present subjunctive Imperfect Present perfect Past subjunctive Conditional	Variable age but order consistent. Acquired before 4;0	Verbs

Study	Type of Study	Grammatical Feature(s) (Focus)	MLU or Age of Acquisition or (emergence)	Notes
Gonzalez (1975)	Cross-sectional	Progressive Preterit	2;0-2;6	Verbs "
Gonzalez (1983)	Longitudinal	Present indicative Preterit Present progressive Periphrastic future Temporal adverbs Imperfect tense Periphrastic past Periphrastic future Temporal Adv Clauses	2;0-2;6 (2;0) (2;0) (2;6) (2;6) (2;0) (3;0) (3;3) (3;3) 3.3	Verbs " " " " " " " "
Kvaal, Shipstead- Cox, Nevitt, Hodson & Laurer (1988)	Cross-sectional	Demonstratives Articles Copulas Regular pres indicative Irreg pres indicative Regular prèt indicative Plurals Possessive <i>de</i> Preposition <i>en</i> Irreg prèt indicative	2.6 2.6 2.6 2.7 2.8 2.8-4.2 3.2 3.2 4.2-4.5 4.6	
Merino (1992)	Cross-sectional	Plurals -s and -es Gender Number Progressive Preterit - reg and irreg Present perfect Present subjunctive Word order - active	4;0 4;0 4;0 4;0 4;0 4;0 4;0 4;0	Nouns " Verbs " " " " "

Study	Type of Study	Grammatical Feature(s) (Focus)	MLU or Age of Acquisition or (emergence)	Notes
Radford, Ploennig- Pacheco (1994)	Case Study	Word order Null Categories Pronoun use Present indicative Preterit Imperative	2;8	Verbs
Sera (1992)	Longitudinal	Copula <i>Ser</i> <i>Estar</i>	2;0	
Vivas (1979)	Diary	(Morphological Order)	2;0-3;6	

SPANISH AND ENGLISH DEVELOPMENT IN THREE-YEAR-OLD DUAL LANGUAGE LEARNERS

Introduction

The number of dual language learners (DLLs) enrolled in schools nationwide has increased exponentially over the past two decades (National Center of Education Statistics NCES, 2004). These children who are referred to in the literature as English language learners (ELLs), children who are learning English as a second language (ESL) and/or language minorities (LMs), are in the process of continuing to build a foundation in their first language in addition to learning a second language. While many non-English languages are spoken across the United States, Spanish is spoken by (75%) of DLLs enrolled in elementary and preschools (NCES, 2009). More than 20% of children under the age of five are Hispanic (Collins & Ribeiro, 2004) and, therefore, are likely to speak Spanish. When compared with their non-Hispanic peers, a disproportionate number of Hispanic DLLs live in impoverished conditions (Fry & Gonzales, 2008). Consequently, it is not surprising that Spanish-speaking children comprise the largest group of DLLs served in Head Start preschool programs (Collins & Ribeiro, 2004; Edmondson, 2005). It is projected that this trend in the Hispanic population will continue to grow for decades to come (NCES, 2006; Suarez-Orozco & Páez, 2002).

Given the increasing number of young DLLs, efforts have been undertaken to understand the education needs of this group. Evidence suggests

that members of this group are at-risk for school failure due to their English language acquisition status as emergent or new learners (August & Shanahan, 2006). According to the National Task Force on Early Childhood Education, when comparing Hispanic children to their non-Hispanic peers on measures of English oral language, children with limited skills at the start of kindergarten are more likely to have low achievement at the end of fifth grade (Reardon & Galindo, 2006). Increasingly, educational institutions expect children to enter and exit kindergarten with certain precursor English language and literacy skills, and DLLs are challenged to acquire these key skills. As a result, it is necessary to understand how to prepare these children for a successful schooling experience.

Several studies have focused on testing the effectiveness of instructional practices used in classrooms with DLLs (Rolstad, Mahoney, & Glass, 2005) and have examined the effects of different program types and/or approaches in terms of children's general educational outcomes (Barnett, Yarosz, Thomas, Jung, & Blanco, 2007; Winsler, Díaz, Espinosa, & Rodríguez, 1999), and/or specific aspects of language and/or literacy development (Dickinson, McCabe, Clark-Chiarelli, & Wolf, 2004; Proctor, Carlo, August, & Snow, 2006; Restrepo et al., 2010). Studies of the language and literacy skills of DLLs have established cross-linguistic relationships between language and literacy and language of instruction and child language outcomes (August, Carlo, Dressler & Snow, 2005; Páez, Tabors, & López, 2007; Restrepo et al., 2010). Further, evidence suggests significant relationships between L1 language skills and L2 language skills in sequential preschool age DLLs (Castilla, Restrepo, Perez-Leroux, 2009) and

school-age DLLs (Proctor et al., 2006). Despite the increased attention on language outcomes of DLLs, there continues to be minimal descriptive data on the early language development patterns of this group and how these patterns may relate to later language development and academic outcomes.

In the United States, many young DLLs begin daily systematic exposure to a second language (English) upon entry to preschool (Tabors & Snow, 2001) with Head Start preschool programs being a typical setting. Whether becoming bilingual is a simultaneous process, with both languages acquired at the same time, or a sequential process, with one language acquired prior to the other during early childhood (Kohnert, 2004; Patterson & Pearson, 2004), children acquiring two languages exhibit patterns in linguistic development that may differ from those of their monolingual peers. Research has determined that language experiences and exposure are common variables that influence the language development of dual language learners (Barnett et al., 2007; Bialystok, 2001; Rodríguez, Díaz, Duran, & Espinosa, 1995). Further research is needed to enhance understanding of the dual language acquisition process for this population of young children. Although the importance of planning early childhood education programs to address the needs of DLL children clearly is recognized, limited information about the dual language acquisition process constrains appropriate educational planning.

Language Development of Young DLLs

An individual's experiences with more than one language may result in bilingualism. However, with the exception of twins, these experiences are rarely

the same for any two bilingual children. Whereas one child's bilingualism may be the result of his or her country of residence or educational experiences, another child may be broadly defined as bilingual because his/her family has relocated or immigrated to a new region. Each of these circumstances may produce varying levels of knowledge of each of a child's multiple languages. Hence, it is common for children to demonstrate strengths and weaknesses in each language.

Some children are exposed to multiple languages simultaneously; however, the majority of DLLs in the United States are exposed to L1 from birth and L2 (English) at a later time, typically upon school entry. Early language experiences of sequential DLLs have been related to their later language outcomes (Páez et al., 2007). More specifically, maternal language, parental education, family SES, and exposure to literacy have been associated with later language and literacy outcomes and school readiness outcomes (Farver, Xu, Eppe, & Lonigan, 2006; Hammer, Davison, Lawrence & Miccio, 2009; Raver & Knitzer, 2002).

Irrespective of the particular language(s), studies have shown that comprehension and production skills of DLLs can vary in each language at any given time related to the time and/or the amount of L1 and L2 exposure (Butler & Hakuta, 2006; Genesee, Paradis, & Crago, 2004). Many DLLs reside in homes where family members speak their L1 exclusively; others live in linguistic environments that provide exposure to both L1 and L2 consistently but in varying amounts. In less common instances, such as international adoption, DLLs may be immersed in L2 and exposure to L1 may be withdrawn completely. Linguistic

experiences in each of these scenarios will likely result in variability in children's language outcomes.

Lexical Development

In general, studies of Spanish-English DLLs from low-income families have informed the knowledge base concerning lexical development of DLLs. These children have been observed to follow a similar sequence (De Houwer, 1995) and rate (Patterson & Pearson, 2004) of development when compared with monolingual children. Several studies have examined language as measured by receptive and/or expressive vocabulary in Spanish-English DLLs (Hammer, Lawrence, & Miccio, 2008; Páez et al., 2007; Uccelli & Páez, 2007; Uchikoshi, 2006). Results have shown that DLLs' Spanish and English mean vocabulary scores on standardized assessments tend to be below those of monolingual children in both languages when Spanish and English are measured separately. However, when comparing conceptual or total vocabulary, monolingual and bilingual (Spanish-English) children have demonstrated similar vocabularies when both languages of the bilinguals are considered (Conboy & Thal, 2006; Pearson & Fernández, 1994; Pearson, Fernández, & Oller, 1993). Although most studies report great variability in children's performance, raw scores are observed to increase over time and with age (Patterson, 1998, 2000) as is the number of different words used (Miller et al., 2006). Additionally, the words children know in each language are often influenced by the amount of exposure to each language (Marchman, Martínez-Sussmann & Dale, 2004).

In an investigation comparing the effects of dual language exposure ($n = 79$) and monolingual English immersion ($n = 52$) programs on children's language, literacy, and math outcomes, Barnett et al., (2007) found that three- and four- year old Spanish-English DLLs made significant gains in Spanish and English from pre- to post- on measures of Spanish and English receptive vocabulary. Results of studies investigating the lexical productivity of young DLLs using story elicitation tasks have indicated gains over time (~1 year between samples) in total number of words and number of different words in Spanish and English (Miller et al., 2006; Uccelli & Paéz, 2007). In general, researchers consistently noted that (a) patterns of vocabulary acquisition in two languages are distinctive and (b) dual language learning children's lexical development is influenced by language experiences and exposure (Bialystok, 2001; Genesee et al., 2004; Patterson & Pearson, 2004).

Several studies investigating typical and/or atypical monolingual (Bloom, 1991; Ingram, Kayser & Durfee, 2003; Ingram, Welti, & Priem, 2008) and bilingual (Sanz-Torrent, Serrat, Andreau & Serra, 2008; Silva-Corvalán & Montanari, 2008) children's verb use have found consistencies in patterns. In general, these studies have shown that (a) typically developing children's error rates generally tend to be low, (b) verb acquisition occurs in stages, and (c) cross-linguistic influence may play a role in the acquisition of some verb forms in children learning more than one language. Studies measuring developmental changes in children's verb use have noted an increase in the number of verb types used by children as they progress toward later stages of verb acquisition (Ingram

et al., 2008), thus regarding verb use as a lexical and grammatical developmental marker.

Grammatical Development

Grammatical development has been the focus in several studies of monolingual Spanish-speaking children (Aguado Alonso, 1989; Echeverría, 1979; as cited in Gutiérrez-Clellen, Restrepo, Bedore, Peña & Anderson, 2000), and Spanish-English preschool and/or school-aged DLLs (Bedore, Peña, Gillam, & Ho, 2010; Marchman & Martínez-Sussmann, 2002; Muñoz, Gillam, Peña, Gulley-Faehnle, 2003; Simon-Cerejido & Gutiérrez-Clellen, 2009). Research with Spanish-speaking children has shown that grammatical complexity as measured by mean length utterance in words (MLUw) increases over time with age (Gutiérrez-Clellen et al., 2000). For example, Echeverría (1979) reported a positive relationship between MLUw and age in a sample of preschool-aged monolingual Spanish-speaking Chilean children ($N = 102$). The mean MLUw for children in Echeverría's sample increased over time from 2.51 at age 2;0 to 5.67 at age 5;6 (as cited in Gutiérrez-Clellen, et al. 2000).

Although no MLUw norms are currently available for DLLs, cross-linguistic research has explored language outcomes (Bedore & Leonard, 2001; Simon-Cerejido & Gutiérrez-Clellen, 2009) and regarded mean length utterance/response in words as an accurate estimate of children's grammatical complexity for Spanish (Gutiérrez-Clellen, et al. 2000;), and an equivalent measure of languages in bilingual children (Miller et al., 2006). Studies have shown that young DLLs demonstrate increases in MLUw in preschool and

kindergarten (Muñoz et al., 2003; Simon-Cereijido & Gutiérrez-Clellen, 2009). Muñoz et al., (2003) documented statistically significant increases in MLUw (mean length of C unit in words) in a group of 24 children. In an oral narrative task, older children (M age 5;6) used longer sentences (M MLUw = 5.85) relative to younger children (M age 4;4) who produced shorter sentences (M MLUw = 4.84). In a group of 196 Spanish-English speaking children of Mexican descent (M age = 5;7, $SD = 11.45$) with typical language ($n = 126$) and language delays ($n = 70$), Simon-Cereijido & Gutiérrez-Clellen (2009) investigated cross-linguistic lexical and grammatical interdependence using multiple measures. Of interest to the current study are their findings on the typical language groups' performance on the grammatical complexity measure (MLUw). Children's mean MLUw in Spanish and English was 5.80 and 6.23, respectively. Marchman & Martínez-Sussmann (2002) conducted a study examining the validity of caregiver/parent report as an estimate of lexical and grammatical ability in bilingual children under the age of three ($N = 24$). They described children's Spanish-English lexical diversity and grammatical complexity (MLUw) based on parent information regarding spontaneous productions of young children ($M = 27.8$). Results indicated that children's mean MLUw in Spanish and English was 1.6 and 1.8 (SDs .45 and .52), respectively.

Summary and Purpose of the Present Investigation

The studies reviewed here include mean length utterance data from monolingual and simultaneous bilingual children. Conversely, developmental data regarding MLUw for older preschool Spanish-English DLLs has not been

addressed extensively. With the exception of the Echeverría study, which was longitudinal, some limitations of studies of bilingual children include that data collection occurred at a single time point and that the participants were highly variable with regard to their language exposure and proficiency.

Spanish-speaking DLLs comprise the largest group served in Head Start programs in the United States. Minimal information exists concerning the ongoing Spanish and early English language acquisition patterns of young dual language learners over the course of their first school experience and first systematic exposure to English. This is surprising given the increasing number of children in this group nationwide. A factor that may hamper attempts to meet the instruction needs of young DLLs is our limited understanding of the second language acquisition process for children who have established a foundation in one language and then begin learning another. In order for schools to positively impact the overall performance of these children, it is necessary to expand our understanding of linguistic development of this group so that we may identify needs unique to these children as early as their first school experience.

With all children, identification of education needs is often based on assessment measures. Many of the standardized measures commonly used in research have limitations in that they may not be sensitive to DLLs and, therefore, may yield inaccurate results. The examination of language acquisition in DLLs may be more efficiently conducted using unbiased measures that minimize underestimation of skills and capture their uniqueness. Standardized measures provide a finite glimpse of children's specific skills; however, they do not provide

information regarding dual language learning children's patterns of language development over time.

One possibility for gaining a fuller understanding of the language acquisition process in young DLLs is to supplement standardized scores with more detailed measures such as those obtained through language sampling. The reliability and diagnostic value of language sampling as a means of describing children's lexical diversity and grammatical complexity with English-speaking children has been well established for some time (Darley & Moll, 1960; Klee, 1992; Loban, 1963). More recently, language sample analysis has been used to examine language development in non-English speaking children (Gutiérrez-Clellen et al., 2000; Muñoz et al., 2003). Although studies vary with regard to elicitation procedures and analyses, there is a general consensus that language sampling is a valid procedure through which to estimate a child's linguistic ability and that measures obtained from language samples are useful for measuring linguistic development in Spanish-speaking DLLs (Gutiérrez-Clellen, 2002; Gutiérrez-Clellen et al., 2000; Bedore et al., 2010).

The present study was undertaken in response to the need for developmental data on young Spanish-English DLLs and to better our understanding of the language developmental patterns of children in this group. Specifically, the primary goal of this investigation was to examine Spanish and English lexical and grammatical development of three-year-old children in Head Start during their first school experience and initial systematic exposure to English. The focus of the study was motivated by the following main research

question: What are the bilingual language acquisition patterns of three-year-old Spanish-English DLLs over the course of their first school year?

Method

Sample

Eight Spanish-speaking children, with typical language development, who were acquiring English as a second language were included in the study. The children were recruited on a volunteer basis from a local school district that is also a Head Start grantee in the Southwestern United States and serves over 400 children in 21 classrooms at 13 different sites. The Head Start program had two classrooms of exclusively three-year-old children. Therefore, all participating children were drawn from these classrooms given that the focus of the study was language acquisition in three-year-old dual language learners. The number of child participants from each classroom was 5 and 3, and their ages ranged from 3;7 to 3;10 ($M = 3;8$, $SD = 1.30$) at the time of recruitment. Of the participating children, seven were female and one was male. All children were of Mexican descent and of low socioeconomic status (SES) as determined by their eligibility status to attend a Head Start preschool program. All eight children participated for the duration of the study.

Participating children met the following inclusion criteria as they (a) were enrolled in a Head Start class that exclusively enrolled three-year-olds, (b) were dominant Spanish-speakers with Spanish as the primary language spoken in their homes, (c) were attending school for the first time, i.e., they had never attended any formal classroom-based programs outside their homes, (d) were not observed

or reported to possess productive English skills upon entry to school, and (e) were not receiving special education services. Parental reports and a review of school records determined conformance with the inclusion criteria.

Parents (7 mothers, 1 father) of participating children completed a questionnaire regarding general demographic information and home language use. Per report, all mother-child communication occurred in Spanish exclusively and father-child communication occurred in Spanish (88%) or Spanish/English (12%). Five children watched both Spanish and English television programs, two watched English programs only, and one child watched only programs in Spanish. Half of the children (50%) listened to both English and Spanish music/radio programs with the remaining half divided between exclusive Spanish (38%) or English (12%) music/radio programs. Fifty percent of the parents indicated that their children preferred listening to stories in Spanish, and the other fifty percent reported both English and Spanish as the preferred language(s) for stories. None of the children reportedly had an exclusive preference for stories in English. Five mothers had less than an 8th grade education, one had a high school diploma, one had a Bachelor's degree, and one elected not to respond.

Teachers, Paraprofessionals, and Classroom Language Environment

Classroom teachers ($n = 2$) and paraprofessionals ($n = 3$) in participating classrooms consented to participate in the study. All teaching staff were female (100%) and ranged in age: 18-25 ($n = 1$), 26-35 ($n = 2$), 36-45 ($n = 1$), and 56-65 ($n = 1$). Of the five staff participants, two were Caucasian (40%), two were of African American descent (40%), and one was Multiracial (20)%. Two staff self-

identified as being Hispanic (40%). They reported a wide range of years of experience (2 to 29) teaching preschool (M years = 12.9). In compliance with Head Start home language philosophy, primary language support was provided in both classrooms in the form of bilingual teams, with the lead teachers speaking English and the paraprofessional(s) speaking English and Spanish fluently. Per classroom staff and program administrator report, children were exposed to both English and Spanish on a daily basis within the classroom setting.

Procedures

Data collection procedures occurred at four time points (Times 1-4). Standardized measures were administered upon school entry in August (Time 1) and at the end of the school year in May (Time 4). In addition to standardized measures, language samples were elicited via a story retell task at four time points (Times 1-4) over the course of the school year, approximately two months apart. Trained research assistants administered all measures to the children individually within the children's classrooms. This complied with district Head Start guidelines stipulating that children could not be removed from their classrooms by persons not employed by the Head Start program. Children had the option to discontinue testing at any time, however, were encouraged to continue if attention and time allowed. Testing was conducted in one language per day to minimize cross-linguistic contamination. That is, on a given day, testing sessions occurred in either Spanish or English. Depending on the child's attention and cooperation level, testing sessions generally lasted from 30 to 45 minutes.

Standardized Language Measures

To measure Spanish and English comprehensive language ability in terms of content and form, children were assessed using the Clinical Evaluation of Language Fundamentals Preschool – 2 Spanish (CELF Preschool-2 Spanish; Wiig, Secord, & Semel, 2009) and the parallel English measure (CELF Preschool-2; Wiig, Secord, & Semel, 2005). The parallel standardized measures require verbal responses to picture stimuli, and items are ordered by difficulty according to research with monolingual Spanish or English children and bilingual Spanish-English children. The subtests administered included Basic Concepts (*Conceptos básicos*), Word Structure (*estructura de palabras*), Recalling Sentences (*recordando oraciones*), Concepts and Following Directions (*conceptos y siguiendo direcciones*), Expressive Vocabulary (*vocabulario expresivo*), Sentence Structure (*estructura de oraciones*), and Word Classes (*clases de palabras*). Both measures are standardized and have undergone extensive field testing to establish evidence of reliability and content and construct validity (Wiig et al., 2005; Wiig et al., 2009) for monolingual (CELF-P2) and bilingual (CELF-P2 Spanish) children. Standard ($M = 100$, $SD = 15$) and scaled scores ($M = 10$, $SD = 3$) appraised children's receptive and expressive language abilities with respect to structure and content. The decision to use parallel standardized measures was based on this study's intent to document the children's language abilities in both Spanish and English. The CELF Preschool-2 manual indicates that the Cronbach's coefficient alphas for the subtest scores for the standardization sample (ages 3;0-4-11) range from .72-.96, indicating good internal consistency. The test-

retest reliability correlations corrected for the variability of the standardization group (ages 3;0-4;11), range from .77-.92 for the subtests and .89-.96 for the composite scores. The Spanish CELF Preschool-2 Cronbach's coefficient alphas for the subtest scores for the standardization sample (ages 3;0-4-11) range from .74-.96, indicating good internal consistency. The test-retest stability coefficients of the standardization sample (ages 3;0-4;11), range from .71-.92 for the subtests and .87-.97 for the composite scores.

Children were tested in a quiet area within the preschool classroom setting. The first author administered all Spanish measures, and trained research assistants administered the English measures. Administration of the standardized measures occurred for the purpose of assessing children's skills in each language upon school entry, prior to daily exposure to English in the classroom setting. Subsequent administration of these measures at Time 4 occurred for the purpose of examining language skills after a year of school.

Analyses included measures of children's receptive and expressive language in addition to measures of language structure and language content (lexical and grammatical development) in each of their languages. Receptive Language, Expressive Language, Language Structure, and Language Content Indices (RLI, ELI, LSI, and LCI, respectively) were used as general measures of children's language ability. Subtests deriving RLI, ELI, LSI, and LCI included Basic Concepts, Sentence Structure, and Concepts and Following Directions for RLI; Word Structure, Recalling Sentences, and Expressive Vocabulary for ELI; Expressive Vocabulary, Concepts and Following Directions, and Basic Concepts

for LSI; and Sentence Structure, Word Structure, and Recalling Sentences for LCI.

Language Sampling Procedures

A story retell task, a language sampling procedure widely used with bilingual children (Castilla et al., 2009; Gutiérrez-Clellen & Kreiter, 2003; Paradis, 2005; Restrepo & Silverman, 2001) was used to elicit language samples. Four wordless picture books by Mercer Mayer were used as the stimuli for the task. A different book was used at each time point with the exception of Time 4, at which time children completed a second task (test-retest). In addition to a novel book (4a), the Time 1 book (4b) was presented again to elicit language using a familiar story used to inform test-retest comparisons. All children were presented with the same book(s) at each time point. The books were *Frog, Where Are You?* (Mayer, 1969), *One Frog Too Many* (Mayer & Mayer, 1975), *Frog on His Own* (Mayer, 1973), and *Frog Goes to Dinner* (Mayer, 1974). Stories were comparable in complexity. Spanish story retell sessions occurred first, followed by English retell sessions, which occurred within the same week. The mean recording times for the retells elicited in the Spanish sessions at Times 1-4 (a and b) across children were, 4:21, 4:13, 4:45 4:16, and 3:31 minutes and seconds, respectively. The mean recording times for the retells elicited in the English sessions at Times 1-4 (a and b) across children were, 3:00, 3:36, 4:29 5:43, and 4:87 respectively. Overall, the mean recording times for Spanish and English retell sessions were 4:05 and 4:19, respectively.

Elicitation. Language samples were elicited in Spanish and then English on different days by examiners proficient in the target languages using a recommended elicitation protocol (Miller & Iglesias, 2010). Examiners were instructed to provide directions, tell the story following a script, be engaged, and prompt the child as needed using acceptable verbal/nonverbal prompts. After using the provided script to tell the story, the examiner handed the book to the child and instructed him/her to retell the story in the target language prompted by “Now you tell me the story/Tell me what happened in the story” or “*Dime tú el cuento/Dime tú lo que paso en el cuento.*” The microphone and video camera were turned on and children’s retells were recorded. To ensure consistent use of acceptable prompts, examiners referenced a list of verbal and nonverbal target language prompts to be used as needed throughout the retell (e.g., Tell me more/What else? or *Dime más/Que más?* and smiles/head nods of affirmation). Language samples were audio/video recorded using an external wireless Bluetooth monaural non-directional microphone, transmitter (Model ECM HW1T) that was attached to the child’s collar or shirt neck and a Sony SR-85 camcorder with attached receiver (Model ECM HW1R) standing on a tripod (approximately 3-4 feet from the child) facing the child.

Transcription and analyses. A trained bilingual research assistant with advanced coursework in the field of speech and hearing science orthographically transcribed audio/video files (and the first author, a certified bilingual speech language pathologist and trained researcher, then checked them) containing the story retells ($N = 80$) in their entirety. Transcription was completed following a

multiple step process. Initially, a basic transcript was created in a word document format (.docx), followed by conversion to a text file (.txt). The text files were modified to include Pye Analysis of Language (PAL; Pye, 1987) conventions and then modified again to include all standard Spanish conventions for the Systematic Analysis of Language Transcripts Bilingual SE Version (SALT; Miller & Iglesias, 2010). In order to account for the pro-drop nature of the Spanish language, child utterances were divided into modified communication units (C-units). Whereas C-units are traditionally defined as independent clauses and their modifiers (Loban, 1976), for the current analyses a modified C-unit containing more than one verb was segmented, and utterances lacking a subject were coded as fragments (Miller & Iglesias, 2010). By segmenting child utterances into modified communication units, comparisons with samples from the SALT bilingual story retell databases could be conducted. Final transcripts were analyzed to obtain measures of lexical and grammatical development in each language. The multi-step transcription process was necessary in order to analyze the language samples using two language analysis programs that recognize slightly different coding conventions. The average number of child utterances at Times 1-4b ranged from 24.0 to 35.2 in the Spanish ($M = 30.0$, $SD = 4.6$) and from 14.0 to 35.2 in the English ($M = 25.0$, $SD = 8.9$) sessions.

Language sample analysis of the elicited story retells concerned children's lexical and grammatical development in each of their languages. Analyses were conducted using PAL to obtain word indices and frequency with which each word occurred. Specifically, four measures of children's lexical productivity were

obtained, including number of verb types (NVT), number of new verb types (NNVT), total number of verbs (TNV), and new words (NW) by time. SALT was used to obtain standard language measures of lexical and grammatical development including number of different words (NDW), total number words (TNW), type token ratio (TTR), and mean length of utterance in words (MLU_w). NDW, TNW, TTR, and MLU_w are widely used to assess lexical productivity (Miller et al., 2006; Muñoz et al., 2003; Patterson, 2000), and grammatical complexity (Aguado Alonzo, 1989; Bedore et al., 2010; Gutiérrez-Clellen et al., 2000; Linares & Sanders, 1977) in Spanish-speaking children.

Teacher Language Use

Teaching staff observations were conducted to determine the proportion of teachers' and paraprofessionals' Spanish and/or English language use across the school day as well as by context (meal times, large group, small group, and center times). Video recordings were selected as opposed to live observations (by an actual observer) as they would be less intrusive and could capture the teaching staff's language use with minimal interruption to the classroom. Observations were conducted bi-weekly (8 times over the course of the school year for the 2.5 hour duration of the school day with the exception of outdoor time) totaling 20 hours per teacher/paraprofessional dyad per classroom. Teachers and paraprofessionals were interviewed to obtain information regarding class schedules so that video recording did not conflict with outside or special class activities (e.g. library time).

To measure the teaching staff's language use in the classroom, teaching staff video/audio recordings (488 minutes total) were coded using a researcher-developed coding system, a time interval system divided into one-minute units (120 consecutive minutes were coded on eight days over the course of the year). For each minute interval, teachers' and paraprofessionals' child-directed speech (CDS) was coded for the language used (Spanish [S], English [E] or mixed [M]) by specific contexts/activities (e.g. meal time, group time etc.). CDS was identified by teaching staff's (a) use of a child's name (b) speaking or looking directly toward child, or (c) commenting on a child's actions or observed behaviors. Language use was considered mixed if a teacher or paraprofessional used English *and* Spanish at the word or phrase level within an interval, such as “*go lava las manos*” or “*come your lunch rapido.*”

Reliability

Transcription. Reliability estimates for transcription were based on a comparison of the transcripts of two independent transcribers. A predetermined transcript was used as a reference point to establish the total number of words, and only the child utterances were coded. If the child's production was unintelligible or there was no defined adult target (not a true word) or was a filled pause word (ah, uh, um) or yes word (ok, uhm, mmm, mhm), it was not included in the total number of words. Two estimates of reliability, percent agreement and intraclass correlation coefficient (ICC), were computed to determine level of agreement among transcribers. Word-by-word comparisons were conducted on 16 (20%) randomly selected transcripts (two per child, 20%, one in each English and

Spanish session). Agreements were calculated as total number of words minus discrepancies/total number of words. Overall percent agreement was 95.42%, indicating excellent agreement between transcribers. The ICC was .98, also indicating a high level of consistency between transcribers.

Classroom language use. Coding reliability for classroom video observations of the teaching staff's language was assessed for eight (25%) randomly selected video observations. Videos were double-coded (two observers coded language use simultaneously) and an intercoder reliability analysis using the Kappa statistic was performed to determine consistency among raters. Kappa values are on a -1 to 1 scale, with 1 being perfect agreement and 0 being what would be expected by chance. Negative Kappa values indicate agreement less than chance (Cohen, 1960). The intercoder reliability for the raters was Kappa = 0.95 ($p < .000$). A Kappa value of .95 is interpreted as an almost perfect level of agreement (Landis & Koch, 1977).

Results

A series of analyses were conducted to describe children's lexical and grammatical development over time. First, measures of central tendency, variance, and range for composite scores (Indices) and subtest scaled scores on the standardized parallel *CELF-P2* measures and eight measures of lexical (NVT, NNVT, TNV, NW, NDW, TNW and TTR) and grammatical (MLUw) development at each time point (Times-1, 2, 3, 4a and 4b) are presented. Time 1 corresponded to the beginning of the school year (August) and Time 4 to the end of the year (May). In addition to individual raw scores and/or absolute

frequencies, the groups' means are reported. Second, means of measures at Times 1-4a, and Times 1 and 4b were compared using repeated measures paired samples *t*-tests.

In the following sections, child pseudonyms in the form of first names (e.g., Emilia, Marina) will be used to refer to individual children so as not to compromise their identities. Spanish then English data from Times 1-4a are described in each section first followed by Spanish and English data from Time 4b.

Teacher Language Use

To measure teachers' and paraprofessionals' language use across the school day as well as by context (meal times, large group, small group, and free-choice times) bi-weekly classroom observations were conducted over the school year. Observations revealed that teacher language use was predominantly English (71%) or mixed (29%). Teachers did not use Spanish exclusively at any time on the days observed. Paraprofessionals were observed to use English (27%), Spanish (9%), and mixed language (61%) during the day. In general, children were exposed to disproportionate amounts of English and Spanish, exclusively. Teachers' and paraprofessionals' language use by context is shown in Table 2.

Standardized Tests

To examine children's Spanish and English language skills at the beginning and at the end of the preschool year, a descriptive analysis was conducted on composite scores on parallel (Spanish and English) measures of receptive language, expressive language, language content, and language

structure, and subtest scaled scores that were used to derive each composite score. In general, children's Spanish language composite and subtest scaled scores, ranging from 80 to 120 and 6 to 16, respectively, were within the average range at Time 1 and Time 4. English language composite and subtest scaled scores, ranging from 50 to 65.3 and 1 to 3, respectively, were below the average range at both Time points. The means, standard deviations and min/max range for composite scores are displayed by time and language in Table 3 and for subtest scaled scores in Table 4.

Differences in performance on repeated measures were also explored. Paired samples *t*-tests were conducted to evaluate whether significant language development occurred from Time 1 to Time 4 in Spanish and English per composite score (RLI, ELI, LCI, LSI) means. No statistically significant differences were observed in children's mean performance on composite indices for Spanish. With regard to children's English receptive language skills, results indicated that children's mean receptive ability in English in May ($M = 65.25$, $SD = .00$), was significantly greater than their mean receptive ability in August ($M = 50.00$, $SD = 9.04$), $t(7) = -4.77$, $p = .002$). Statistically significant differences were also observed in children's English language content and structure scores. Children's mean structure and content composite scores in May ($M_s = 58.6$ and 61.4 , and $SD_s = 0.0$ and 0.0) were significantly greater than their mean scores in August ($M_s = 53.0$ and 50.0 , $SD_s = 10.0$ and 6.6), $ts(7) = -2.40$ and -3.22 , $ps = .001$), respectively. No statistically significant difference was found in children's English ELI scores from Time 1 to Time 4.

Paired samples *t*-tests conducted with subtest scaled scores revealed no statistically significant difference in children's mean performance on Spanish measures between Time 1 and Time 4. With regard to children's performance on English measures, results indicated that children's mean sentence structure and basic concepts scores in May ($M_s = 3.8$ and 4.3 , $SD_s = 1.4$ and 1.5) were significantly greater than their mean sentence structure and basic concepts scores in August ($M_s = 1.0$ and 1.0 , $SD_s = 0.0$ and 0.0), $t_s(7) = -5.06$ and -5.25 , $p_s = .001$), respectively.

Language Sampling

Language of elicitation. Given that the children in the sample were early in their second language acquisition process, the majority of retells occurred in Spanish despite elicitation in English (English sessions). Children's English productions were minimal and generally limited to an occasional code-switched word, with the exception of two children (Emilia and Marina) that attempted to retell stories using English at Time 4 (to be described).

Paired samples *t*-tests were conducted to evaluate differences in performance as a function of language of elicitation (Spanish, English) at each time point. No statistically significant differences were found. Therefore, unless otherwise noted, data from the two elicitation sessions were collapsed at each time point and analyzed by time. The average number of child utterances analyzed across times 1-4b was 55.93 ($SD = 12.9$).

Lexical development. An examination of the composition of children's vocabulary over time (Times 1-4a) revealed changes in children's Spanish verb

use. Individual as well as group means for Spanish verb measures are shown in Table 5, with the exception of children's new verbs at Time 1 that could not be determined as this was the initial data collection time point. Paired samples *t*-tests were conducted to determine statistically significant differences between children's NVT, NNVT (Times 2-4a), and TNV scores across time. While no statistically significant differences were found for children's mean NVT, results indicated statistically significant differences across time for children's mean NNVT and TNV. Children's mean NNVT at Time 2 ($M = 13.6, SD = 4.1$) was significantly higher than their mean NNVT at Time 4a ($M = 9.5, SD = 3.3$), $t(7) = 3.12, p < .05$). With regard to the total number of verbs children used across time, statistically significant differences in the groups' mean TNV scores were found from Time 1-2, Time 2-3, Time 3-4 and Time 1-4a ($M_s = 21.5, 34.3, 47.1$ and $56.6, SD_s = 9.0, 7.8, 10.2$ and 9.2), $ts(7) = -10.44, -8.99, -8.26$ and $-16.73, ps < .001$), respectively. With regard to children's English verb acquisition from Time 1-4a, NVT ranged from 0-1, 0-1, 0-1, and 0-2. Children's NNVT and TNV ranged from 0-1, 0-2, 0-1, and 0-2. There were no significant differences between the groups' mean scores across time.

As a general indication of children's word knowledge and use, scores on Spanish lexical complexity measures were computed and are shown in Table 6. The number of new Spanish words acquired by each child over the school year was highly variable and is also shown in Table 6 with the exception of new words at Time 1 that could not be determined as this was the initial data collection time point. The mean number of new Spanish words at Times 2 through Time 4a

decreased from 47.8 at Time 2 to 38.6 at Time 4a. In general, with regard to new words, descriptive summaries indicate that there was no consistent pattern of increase across time. The number of different words produced by children at any time ranged from 34 to 118. Children's cumulative total number of Spanish words used across samples ranged from 767 to 2123. Across children, type-token ratios at Times 1-4a ranged from .20 to .37, .21 to .36, .18 to .33 and .17 to .37, respectively. No statistically significant differences were observed in children's mean NW, NDW, TNW or TTR across time. Pearson product-moment correlation coefficients were computed to assess the relationship between children's total number of words and type-token ratio at each time point. Consistent with previous studies, there was a strong negative correlation between the two variables at Times 1, 3 and 4, ($r_s(6) = -.836, -.961$ and $-.744, p_s = .010, .000,$ and $.034,$ respectively), indicating that as children's total number of words increased, their type-token ratios decreased.

Descriptive summaries of children's lexical development in English (NW, NDW, TNW and TTR) are shown in Table 7. Children's cumulative number of new English words across time ranged from 2 to 35. The most notable increase in mean number of new English words occurred from Time 3 to Time 4, corresponding with the end of the school year. The number of different words used at each Time point was highly variable and ranged from 15 to 48. Children's total number of English words acquired across Times 1-4a ranged from 4 to 55. Children's TTR was generally very high (.5 - 1.0), indicating limited English

lexical diversity. No statistically significant differences were observed in children's mean NW, NDW, TNW or TTR.

Children's performance on the test-retest task (Times 1 and 4b) was analyzed to compare Spanish and English lexical development in the context of a familiar story. Spanish and English raw scores, means, and standard deviations at Time 4b are reported in Table 8. NNVT means comparison was not conducted as Time 1 was the initial collection time point. Paired samples *t*-tests were conducted to determine whether group NVT and TNV Spanish mean scores at Time 4b were significantly different from mean scores at Time 1. No statistically significant difference was observed with regard to children's NVT. However, children's mean TNV at Time 4b ($M = 37.9, SD = 3.8$) was significantly greater than their mean at Time 1 ($M = 21.5, SDs = 3.7$); $t(7) = -3.82, p < .01$). No statistically significant differences were observed in children's mean NDW, TNW, or TTR. With regard to children's English scores, no statistically significant differences were observed when comparing their mean performance at Time 1 to their mean performance at Time 4b.

Grammatical development. Children's grammatical development over time was determined by examining MLUw, a measure of grammatical complexity. Raw data by child and time are presented in Table 9. Overall, Spanish MLUw for individual children increased slightly from Time 1 to Time 4a but was highly variable within and between children. Group means increased from Time 2 to 3, and 3 to 4 ($Ms = 5.67, 5.26, 6.11$ and $6.23, SDs = 1.1, 0.9, 1.4$ and 1.2). A paired samples *t*-test was conducted to determine a difference between children's

averaged (semester) MLUw at Times 1 and 2, and Times 3 and 4 and no statistically significant difference was found.

Results from the test-retest (Times 1 and 4b) task analysis of grammatical development in the context of a familiar story revealed no statistically significant difference between children's mean Spanish MLUw at Time 1 ($M = 5.67$, $SD = 1.1$) compared with their mean performance at Time 4b ($M = 5.64$, $SD = 0.9$). Similarly, children's mean English MLUw at Time 1 ($M = 1.0$, $SD = 0.0$) was not statistically significant from their mean MLUw at Time 4b ($M = 1.0$, $SD = 0.0$).

With the exception of two girls, the children in this sample did not combine words in English at any measurement point over the course of the school year; therefore, children had a MLUw of 1.0 across all time points. Emilia used English during both of her story retells (a and b) at Time 4, and Marina used English to retell the familiar book at Time 4b. Results from Emilia and Marina are reported separately as their early English production patterns were unique and warrant detail.

Emilia used a variety of both content and function words. Of the 41 English words she used at Time 4a and b, there were 20 nouns (49%), 6 verbs (15%), 1 adjective (2%), 3 adverbs (7%), 4 pronouns (10%), 3 prepositions (7%), 1 article (2%), 1 conjunction (2%), and 2 interjections (5%). A qualitative sentence analysis of Emilia's English samples at Time 4 (a and b) revealed her initial approach to forming multiword utterances. Emilia's MLUw and mean length utterance in morphemes (MLU) of 6.67, based on 62 multiword utterances, suggested an advanced stage relative to Roger Brown's stages (Brown, 1973).

Sentences containing verbs (~30%) were relatively grammatical in that (a) they contained subjects; (b) noun phrases (NP) were well formed, containing either nouns with articles or pronouns and compounds e.g., 'boy and the tree'; and (c) prepositional phrases (PP) included prepositions 'on', 'in,' or 'up' + NP e.g., 'the trip'. At the same time, there was evidence that her grammar was not as advanced as her MLUw and MLU might suggest. Specifically, she had six verbs (be, can, get, push, go, and stop), but she predominantly used go and stop; she did not use any auxiliaries, and her nominal sentences (~70%) showed a limited range of constructions, predominantly consisting of NP + V, NP + V + PP. In fact, several of her utterances were compound noun phrases, e.g., 'boy and dog and boy' (50%). Most importantly, they were formulaic in that they contained limited original content. Specifically, Emilia took her basic sentence structure and slightly alternated the words used for the subjects NPs and verb complements.

Marina's early productive English was similar to Emilia's in terms of MLUw and MLU but more advanced in that she used a wider variety of constructions. Marina also used a variety of both content and function words. Of the 48 English words she used at Time 4b, there were 17 nouns (35%), 8 verbs (17%), 3 adjectives (6%), 8 adverbs (17%), 3 pronouns (6%), 6 prepositions (13%), 1 article (2%), 1 conjunction (2%), and 1 interjection (2%). Like Emilia, Marina's MLUw (5.87) and MLU (6.00), based on 35 utterances, suggested advanced grammar (Brown, 1973). Her sentences containing verbs were grammatical as they (a) contained subjects; (b) included well-formed noun phrases (NP), containing either nouns with articles e.g., 'the frog', or pronouns e.g.

'he,' and compound e.g., 'and the boy and the dog'; and (c) incorporated prepositional phrases (PP) included prepositions 'into,' 'like,' 'for,' 'in,' 'of,' or 'up' + NP e.g., 'and the frog'. Further analyses of Marina's language sample also revealed less advanced grammar than her MLUw and MLU suggest. With regard to verb use, Marina's utterances contained the verbs 'go,' 'have,' 'know,' 'running,' 'said,' and 'see' and the auxiliary 'is.' Her sentences varied in terms of constructions, predominantly consisting of NP + verb phrase (VP) e.g., 'the boy is down,' NP + VP + PP e.g., 'I have a doggy little like a baby,' and compound noun phrases e.g., 'and the bees and the doggy' (15%). In general, Marina's approach to multiword utterances was less formulaic than Emilia's in that she combined her words to form unique utterances, produced fewer compound noun phrases, and used more advanced constructions.

Discussion

The purpose of this study was to examine ongoing Spanish and early English development of three-year-old dual language learners as they received initial systematic English instruction upon enrollment in a Head Start preschool program. Much of what we know about bilingual language acquisition has been informed by diary studies of individual children (Amastae, 1982; Leopold, 1939-1949; Quay, 1995). To our knowledge, this study is among the first to use language samples across time to describe language development in a group of three-year-old DLLs. The present investigation included standard measures of lexical productivity and grammatical complexity derived from language samples,

supplemented by standardized tests. We believe this method resulted in a comprehensive description of children's development in each of their languages.

Children's Language Development in Spanish

Results indicate that the children in this sample demonstrated age appropriate Spanish skills at the beginning and end of the school year per the CELF-P2 Spanish. These results are in contrast to studies with four-year-old preschoolers that report below average language as measured by receptive and/or expressive vocabulary tests (Fernández, Pearson, Umbel, Oller, and Molinet-Molina, 1992; Uchikoshi, 2006). The standardized measure used in the present study did not assess receptive vocabulary in isolation; rather it provided a comprehensive evaluation of children's Spanish language abilities. Although receptive vocabulary measures provide information about a single aspect of a child's language, comprehensive measures such as the CELF-P2 Spanish contextualize receptive vocabulary within a broader language context. This perspective includes receptive and expressive language and language content and form, and as such is likely responsible for the differences observed in the present study when compared with previous research.

Growth in Spanish over the school year was not apparent in the standardized measure; however, this is not surprising given that the CELF-P2 is designed to identify children with disorders, not detect changes over time in the language of typical children. Although growth was not apparent on the standardized measure, analysis of language samples suggested development per increases in the children's verb use (total number of verbs). Consistent with

studies in the linguistic literature that regard verbs as a building block of grammar, developmental studies of children's typical and atypical verb acquisition (Bloom, 1991; Ingram et al., 2003; Ingram et al., 2008; Sanz-Torrent et al., 2008; Silva-Corvalán & Montanari, 2008) have shown that an increase in children's use of verbs is a marker of grammatical development. Ingram et al., (2003) examined early verb acquisition in children with language delay (age range 3;8 to 4;8) and found that development was marked by changes in children's use of verbal syntactic types, verb types, and verb forms. Despite their delay, children followed similar patterns of verb acquisition from the use of sentences without verbal syntactic types to productions containing a variety of verb forms. Results of the current study are comparable to those of Ingram et al. (2003) in terms of developmental stages of verb acquisition. Children's total number of new verb types increased across time suggesting active verb development. Although verb forms were not of interest here, a post hoc examination of the verb data indicated that all children were producing multiple verb forms for each verb type at the end of the school year.

To date there is limited information available for three-year-old DLLs; however, there is data for bilingual two-year-olds and four-year-old DLLs. Therefore, results were compared to studies of Spanish-English DLLs that used similar measures to describe children's Spanish language development. The average number of different words used by children in our sample at Time 4 ($M = 80.8$, $SD = 21.9$) was consistent with parent report of NDW that Marchman et al. (2004) noted in a study of younger children (age range 17 to 30 months). Our

results are also comparable to those of Fiestas and Peña (2004), who measured average Spanish NDW in older children (age 4;0-6;11). The mean number of different words produced by the children in the Fiestas and Peña sample was 168.08 ($SD = 81.55$). The age difference between children in the two samples could explain the difference in mean scores.

In terms of MLUw, statistically significant change was not observed in the groups' mean. However, examination of individual children's semester averages was suggestive of an increase of MLUw in all children but one. For young children, an increase in MLUw generally occurs as a function of newly acquired grammatical words (e.g., articles, pronouns), thereby resulting in sentences of greater length. The use of MLUw as a measure of grammatical complexity has been regarded as unbiased and informative when used with Spanish-speaking children (Gutiérrez-Clellen et al., 2000). Our findings with regard to Spanish MLUw of the three-year-old children ($M = 6.2$, $SD = 1.1$) are comparable to Marchman et al. (2004) who also measured MLUw ($M = 2.6$, $SD = 1.4$) in their large sample of younger children ($N = 113$). When compared with previous studies of similar age monolingual Spanish-speakers (Echeverría, 1979), performance of children in the current study suggests slightly advanced grammatical complexity as measured by MLUw.

Children's Language Development in English

All children demonstrated significant increases in their standard scores on the CELF-P2 receptive language, language content, and language structure indices from August to May. In particular, children demonstrated more developed

sentence structure knowledge and basic concept skills in May than they had in August, per subtest scaled scores. While our standardized measure did not detect increases in expressive language, measures derived from children's language samples suggested an increase in expressive language for some children.

Consistent with previous studies of early second language and bilingual language acquisition, our findings suggest that children were acquiring English following similar stages as monolingual children learning English (i.e., single words emerge first followed by word combinations) although the rate was highly variable across children (Amastae, 1982). Despite English elicitation attempts, most children produced Spanish retells at each time point, with the exception of Emilia and Marina, who produced English retells at Time 4. However, all children were observed to be building their English vocabulary as evidenced by the insertion of new lexical items into Spanish utterances. This behavior, sometimes referred to as language mixing (Lindholm & Padilla, 1977), has been documented in Spanish-English bilingual children. We observed incremental changes in NDW and TNW suggestive of increasing lexical productivity. In general, children's single words consisted of content and function words, yet words were predominantly nouns. This finding is also consistent with studies of early bilingual language development (Caselli et al., 1995). We did not see changes in children's scores on verb measures. However, this is not surprising given that the majority of children in this sample did not produce verbs.

Overall, children's MLUw did not increase from August to May. Given that children were early in their English language acquisition process and had a

limited lexicon, it is not surprising that most children did not combine words. The performance of Emilia and Marina was remarkable as they combined familiar words into multiword utterances at Time 4. Despite limited original content, the girls nonetheless formed productive utterances. Whereas Emilia took her basic sentence structure and varied the words she used, Marina combined her words to form unique utterances, placing her at a slightly more advanced stage of development relative to Emilia. Thus, both girls appeared to be further in their development of English relative to their same-age peers in a similar language learning environment. These findings consistently highlight the variability among three-year-old DLLs with regard to second language acquisition. Further, our findings are consistent with several studies whose results have indicated that receptive language gains precede expressive language gains in most, but not all, instances (Caselli et al., 1994).

Teacher Language Use in the Classroom

Language learning environments for DLLs in Head Start should provide systematic exposure to English while supporting the home language.

Paraprofessionals in this study used a limited amount of Spanish throughout the day (9%) but used a substantial number of mixed utterances (61%). This is worth mentioning as these proportions suggest a limited number of Spanish relative to English linguistic models provided to children in the classroom. It was not the intent of this study to inform the language of instruction literature; however, it is also worth noting that children in this study were exposed to a significant amount of English (71% by teachers and 27% by paraprofessionals) while at school yet

produced a rather limited amount of English after a year of instruction. Observations and parent report indicated that children's estimated daily exposure to English met or exceeded the minimum amount of daily exposure to a language (20%) to observe productive spontaneous language (Pearson, Fernández, Ledeweg & Oller, 1997). In their study of two-year-old children, Pearson et al. (1997) found a positive relationship between the amount of time spent with speakers of a language and the number of words produced by children in that language. These findings are noteworthy and highlight potential education implications as studies have shown that children entering Kindergarten with high levels of English proficiency outperform their less proficient peers on language and literacy measures. Results further indicated that of the Spanish used by paraprofessionals, most occurred during small group activities such as painting or puzzles (29%) and greeting/breakfast time (12%). Both of these contexts were social in nature, and limited explicit academic or language/literacy instruction occurred on the days observed.

Limitations and Directions for Future Research

This study is among the first to make available a description of a group of young DLLs' early English language development while simultaneously documenting changes in their primary language across time. As with all studies, there are limitations. First, it would have been desirable to have had a larger sample of children for more generalizability of results and easier detection of group patterns and/or trends. Second, the language learning environments of the two classrooms in this study were similar. In order to relate child language

outcomes to the language learning environment, future research should address this question in a wider variety of classrooms. Finally, there were limitations in our selection of standard language measures and our method of eliciting language samples. The use of type-token ratio as a measure of lexical diversity has been supported by some researchers and argued by others to be insensitive to developmental change. Additionally, in several studies TTR has not correlated with age. In our study, children's high TTRs indicated limited lexical diversity. This information was of restricted value in isolation as similar conclusions could have been drawn from our other measures of productivity. Further, it is possible that measures such as the number of new verb types may have been constrained somewhat by the frog stories used to elicit language samples, as specific verbs were used when telling the story to the children.

Thus far, research with dual language learners is informed by studies of children who are heterogeneous with regard to language experiences and exposure. In this study, our small group of DLLs demonstrated some degree of homogeneity in that exposure to English outside of school was generally minimal per parent report. These children were predominantly exposed to English upon school entry and had no observed productive English initially. This characteristic of the sample allowed for an examination of early English development as it occurred over the course of the first school year and first systematic exposure. Despite similar experiences and exposure to Spanish and English, children's performance was highly variable. This research expands upon previous studies and contributes to the knowledge base by providing comprehensive data from

three-year-old DLLs, a group not extensively studied. Far more research is needed to gain an understanding about language acquisition of young dual language learning children as their presence in preschool programs is certain.

References

- Aguado Alonso, G. (1989). TSA: El desarrollo de la morfosyntaxis en el niño [The development of syntax in children]. Madrid, Spain: *Ciencias de la educación preescolar y especial*.
- Amastae, J. (1982). Aspects of bilingual acquisition of English and Spanish. *Journal of the Linguistic Association of the Southwest*, 5(1-2), 5-19.
- August, D., Carlo, M., Dressler, C., & Snow, C. E. (2005). The critical role of vocabulary development for English language learners. *Learning Disabilities Research and Practice*, 20(1), 50-57.
- August, D., & Shanahan, T. (2006). Developing literacy in second-language learners: Report of the National Literacy Panel on Language-Minority Children and Youth. Mahwah, NJ: Earlbaum.
- Barnett, W. S., Yarosz, D. J., Thomas, J., Jung, K., & Blanco, D. (2007). Two-way and monolingual English immersion in preschool education: An experimental comparison. *Early Childhood Research Quarterly*, 22(3), 277-293. doi:10.1016/j.ecresq.2007.03.003
- Bedore, L. M. & Leonard, L. B. (2001). Grammatical morphology deficits in Spanish-speaking children with specific language impairment. *Journal of Speech, Language, and Hearing Research*, 44, 905-924. doi: 10.1044/1092-4388(2001/072)
- Bedore, L.M., Peña, E. D., Gillam, R. B., & Ho, T. H. (2010). Language sample measures and language ability in Spanish-English bilingual kindergarteners. *Journal of Communication Disorders*, 43, 498-510. doi: 10.1016/j.jcomdis.2010.05.002
- Bialystok, E. (2001). *Bilingualism in development: Language, literacy and cognition*. Cambridge: Cambridge University Press.
- Bloom, L. (1991). *Language Development from Two to Three*. Cambridge: Cambridge University Press.
- Brown, R. (1973). *A first language: The early stages*. Cambridge, MA: Harvard University Press.
- Butler, Y., & Hakuta, K. (2006). Bilingualism and second language acquisition. In T. K. Bhatia & W. C. Ritchie (Eds.), *The handbook of bilingualism* (pp. 114-144). Malden, MA: Blackwell Publishing Ltd.

- Caselli, M. C., Bates, E., Casadio, P., Fenson, J., Fenson, L., Sanderl, L. & Weir, J. (1995). A cross-linguistic study of early development. *Cognitive Development, 10*, 159-199.
- Castilla, A. P., Restrepo, M. A., & Perez-Leroux, A. (2009). Individual differences and language interdependence: a study of sequential bilingual development in Spanish-English preschool children. *International Journal of Bilingual Education and Bilingualism, 12*(5), 565-580. doi:10.1080/13670050802357795
- Cohen, J. (1960). A coefficient of agreement for nominal scales. *Educational and Psychological Measurement, 20*, 37-46. doi:10.1177/001316446002000104
- Collins, R., & Ribeiro, R. (2004). Toward an early care and education agenda for Hispanic children. *Early Child Research & Practice, 6*(2). Retrieved from <http://ecrp.uiuc.edu.ezproxy1.lib.asu.edu/V6n2/collins.html>
- Conboy, B. T., & Thal, D. J. (2006). Ties between lexicon and grammar: Cross sectional and longitudinal studies of bilingual toddlers. *Child Development, 77*(3), 712-735. doi:10.1111/j.1467-8624.2006.00899.x
- Darley, F. L. & Moll, K. L. (1960). Reliability of language measures and size of sample. *Journal of Speech and Hearing Research, 3*(2), 166-173.
- De Houwer, A. (1995). Bilingual Language Acquisition. In P. Fletcher & B. MacWhinney (Eds.), *Handbook of child language*, (pp. 219-250). Cambridge, MA: Blackwell.
- Dickinson, D. K., McCabe, A., Clark-Chiarelli, N., & Wolf, A. (2004). Cross-language transfer of phonological awareness in low-income Spanish and English bilingual preschool children. *Applied Linguistics, 25*, 323-347. doi: 10.1017.S0142716404001158
- Echeverría, M. S. (1979). Longitud del enunciado infantil: Factores ambientales e individuales [Children's mean length of utterance: Environmental and individual factors]. In Estudios Generales I. *Actas del 5o Seminario de Investigación y Enseñanza de la Lingüística y Universidad Técnica del Estado* (pp. 56-68). Santiago, Chile.
- Edmonson, B. (2005). Immigration is a powerful force for change: How fast does it affect Head Start? Retrieved from, http://www.headstartinfor.org/Englsih_lang_learners_tkit/Immigration/regions_toc.htm

- Farver, J. M., Xu, Y., Eppe, S., & Lonigan, C. J. (2006). Home environments and young Latino children's school readiness. *Early Childhood Research Quarterly, 21*(2), 196-212. doi:10.1016/j.ecresq.2006.04.008
- Fernández, M. C., Pearson, B. Z., Umbel, V. M., Oller, D. K., & Molinet-Molina, M. (1992). Bilingual receptive vocabulary in Hispanic preschool children. *Hispanic Journal of the Behavioral Sciences, 14*, 268-246.
- Fiestas, C. E. & Peña, E. D. (2004). Narrative discourse in bilingual children: Language and task effects. *Language, Speech and Hearing in Schools, 35*(2), 155-168. doi:10.1044/0161-1461(2004/016)
- Fry, R. & Gonzales, F. (2008). One-in-five and growing fast: A profile of Hispanic public school students. Washington, DC: Pew Hispanic Center.
- Genesee, F., Paradis, J., & Crago, M. B. (2004). Dual language development and disorders: A handbook on bilingualism and second language learning. Baltimore, MD: Brookes Publishing Company.
- Gutiérrez-Clellen, V. F. (2002). Narratives in two languages: Assessing performance of bilingual children. *Linguistics and Education, 13*(2), 175-197. doi:10.1016/S0898-5898(01)00061-4
- Gutiérrez-Clellen, V. F., & Kreiter, J. (2003). Understanding child bilingual acquisition using parent and teacher reports. *Applied Psycholinguistics, 24*, 267-288. doi:10.1017.S0142716703000158
- Gutiérrez-Clellen, V. F., Restrepo, M. A., Bedore, L., Peña E., & Anderson, R. (2000). Language sample analysis in Spanish-speaking children: Methodological considerations. *Language, Speech and Hearing Services in Schools, 31*, 88-98.
- Hammer, C. S., Davison, M. D., Lawrence, F. R. & Miccio, A. W. (2009). The effect of maternal language on bilingual children's vocabulary and emergent literacy development during Head Start and Kindergarten. *Scientific Studies of Reading, 13*(2), 99-121. doi: 10.1080/10888430902769541
- Hammer, C. S., Lawrence, F. R., & Miccio, A. D. (2008). Exposure to English before and after entry to Head Start: Bilingual children's receptive language growth in Spanish and English. *International Journal of Bilingual Education and Bilingualism, 11*(1), 30-56. doi:10.2167/beb376.0
- Ingram, D., Kayser, H. & Durfee, D. (2003), Verb acquisition in Spanish children with language delay. *Journal of multilingual communication disorders 1*(2), 115-123. doi: 10.1080/1476967031000090953

- Ingram, D., Welti, A., & Priem, C. (2008). The early stages of verb acquisition in Spanish, German & English. In N. Gagarina & I. Guzman (Eds.), *The Acquisition of Verbs and their grammar: The Effect of Particular Languages* (pp. 151-171). Netherlands: Springer.
- Klee, T. (1992). Developmental and diagnostic characteristics of quantitative measures of children's language production. *Topics in Language Disorders, 12*(2), 28-41. Retrieved from <http://ovidsp.tx.ovid.com>
- Kohnert, K. (2004). Processing skills in early sequential bilinguals. In B. A. Goldstein (Ed.), *Bilingual language development and disorders in Spanish-English speakers* (pp. 53-76). Baltimore, MD: Brookes Publishing.
- Landis, J. R., & Koch, G. G. (1977). The measurement of observer agreement for categorical data. *Biometrics, 33*(1), 159-174. doi:10.2307/2529310
- Leopold, W. (1939-1949). *Speech Development of a Bilingual Child*. Evanston, IL: Northwestern University Press, 4 Volumes.
- Linares, M. & Sanders, L. (1977). Evaluation of syntax in three-year-old Spanish-speaking Puerto Rican children. *Journal of Speech and Hearing Research, 20*, 350-357.
- Lindholm, K. J. & Padilla, A. M. (1977). Language mixing in bilingual children. *Journal of Child Language, 5*, 327-335.
- Loban, W. (1963). The language of elementary school children. Research Report #1. National Council of Teachers of English.
- Loban, W. (1976). *Language development: Kindergarten through grade twelve*. Urbana, IL: National Council of Teachers of English.
- Marchman, V. A., & Martínez-Sussmann, C. (2002). Concurrent validity of caregiver/parent report measures of language for children who are learning both English and Spanish. *Journal of Speech, Language and Hearing Research, 45*, 983-997. doi:10.1044/1092-4388(2002/080)
- Marchman, V. A. Martínez-Sussmann, C. & Dale, P. S. (2004). The language-specific nature of grammatical development evidence from bilingual language learners. *Developmental Science, 7*(2), 212-224.
- Mayer, M. (1969). *Frog, where are you?* New York, NY: Dial Books.
- Mayer, M. (1973). *Frog on his own*. New York, NY: Dial Books.
- Mayer, M. (1974). *Frog goes to dinner*. New York, NY: Dial Books.

- Mayer, M. & Mayer, M. (1975). *One frog too many*. New York, NY: Dial Books.
- Miller, J., Heilmann, J., Nockerts, A., Iglesias, A., Fabiano, L., & Francis, D. J. (2006). Oral language and reading in bilingual children. *Learning Disabilities Research and Practice, 21*, 30-43.
- Miller, J. & Iglesias, A. (2010). Systematic Analysis of Language Transcripts (SALT), Bilingual SE Version 2010 [Computer Software], SALT Software, LLC.
- Muñoz, M. L., Gillam, R. B., Peña, E. D., & Gulley-Faehnle, A. (2003). Measures of language development in fictional narratives of Latino children. *Language, Speech and Hearing Services in Schools, 34*, 332-342. doi: 10.1044/0161-1461(2003/027)
- National Center of Education Statistics. (2004). English language learner students in the U.S. public schools: 1994 and 2000 (NCES 2004-035). Washington, DC: U.S. Department of Education.
- National Center for Education Statistics (2006). The condition of education. Washington, DC: U.S. Department of education.
- National Center of Education Statistics, (2009). The condition of education. Washington, DC: U.S. Government Printing Office.
- Páez, M. M., Tabors, P. O., & López, L.M. (2007). Dual language and literacy development of Spanish-speaking preschool children. *Journal of Applied Developmental Psychology, 28*, 85-102.
- Paradis, J. (2005). Grammatical morphology in children learning English as a second language: Implications of similarities with specific language impairment. *Language, Speech and Hearing Services in Schools, 36*, 172-187. doi:10.1044/0161-1461(2005/019)
- Patterson, J. L. (1998). Expressive vocabulary development and word combinations of Spanish-English bilingual toddlers. *American Journal of Speech-Language Pathology, 7*, 46-56.
- Patterson, J. L. (2000). Observed and reported expressive vocabulary and word combinations in bilingual toddlers. *Journal of Speech, Language and Hearing Research, 43*, 121-128.
- Patterson, J. L., & Pearson, B. Z. (2004). Bilingual lexical development. In B. A. Goldstein (Ed.), *Bilingual language development and disorders in Spanish-English speakers* (pp. 77-104). Baltimore, MD: Brookes Publishing Company.

- Pearson, B. Z., & Fernández, S. C. (1994). Patterns of interaction in the lexical growth of bilingual infants and toddlers. *Language Learning*, 44(4), 617-653. doi:10.1111/j.1467-1770.1994.tb00633.x
- Pearson, B. Z., Fernández, S., Ledeweg, V., & Oller, D. K. (1997). The relation of input factors to lexical learning by bilingual infants. *Applied Psycholinguistics*, 18, 41-58. Retrieved from <http://journals.cambridge.org>
- Pearson, B. Z., Fernández, S., & Oller, D. K. (1993). Lexical development in bilingual infants and toddlers: *Comparison to monolingual norms*. *Language and Learning*, 43(1), 93-120. doi:10.1111/j.1467-1770.1993.tb00174.x
- Proctor, C. P., Carlo, M. S., August, D., & Snow, C. (2006). The intriguing role of Spanish language vocabulary knowledge in predicting English reading. *Journal of Educational Psychology*, 98(1), 159-169. doi: 10.1037/0022-0663.98.1.159
- Pye, C. (1987). PAL: The Pye analysis of Language Version 2.0.
- Quay, S. (1995). The bilingual lexicon: Implications for studies of language choice. *Journal of Child Language*, 22, 369-387.
- Rearson, S. F. & Galindo, C. (2006). Patterns of Hispanic students' math and English literacy test scores in the elementary grades: A report to the National Task Force on Early Childhood Education for Hispanics.
- Raver, C. C., & Knitzer, J. (2002). Ready to enter: What research tells policy makers about strategies to promote social and emotional school readiness among three- and four- year olds. Washington, DC: National Center for Children in Poverty.
- Restrepo, A., & Silverman, S. W., (2001). Validity of the Preschool Language Scale-3 for use with bilingual children. *American Journal of Speech-Language Pathology*, 10, 382-393. doi:10.1044/1058-1058-0360(2001/032)
- Restrepo, M. A., Castilla, A. P., Schwanenflugel, P. J., Neuharth-Pritchett, S., Hamilton, C. E., & Arboleda, A. (2010). Effects of a supplemental Spanish oral language program on sentences length complexity and grammaticality in Spanish-speaking children attending English-only preschools. *Language, Speech and Hearing Services in Schools*, 41, 3-13.
- Rodríguez, J. L., Díaz, R. M., Duran, D., & Espinosa, L. (1995). The impact of bilingual preschool education on the language development of Spanish-speaking children. *Early Childhood Research Quarterly*, 10(4), 475-490. doi:10.1016/0885-2006(95)90017-9

- Rolstad, K., Mahoney, K., & Glass, G. V. (2005). Weighing the evidence: A meta-analysis of bilingual education in Arizona. *Bilingual Research Journal*, 29(1), 43-67.
- Sanz-Torrent, M., Serrat, E., Andreau, L. & Serra, M. (2008). Verb morphology in Catalan and Spanish in children with Specific language impairment: A developmental study. *Clinical Linguistics and Phonetics*, 22(6), 459-474. doi: 10.1080/02699200801892959
- Silva-Corvalán, C. & Montanari, S. (2008). The acquisition of ser, estar (and be) by a Spanish-English bilingual child: The early stages. *Bilingualism: Language and Cognition*, 11(3), 341-360. doi:10.1017/S136672890800357X
- Simon-Cereijido, G. & Gutiérrez-Clellen, V. F. (2009). A cross-linguistic and bilingual evaluation of the interdependence between lexical and grammatical domains. *Applied Linguistics*, 30, 315-337. doi: 10.1017/S142716409090134
- Suárez-Orozco, M., & Páez, M. (2002). *Latinos: Remaking America*. Berkeley, CA: University of California Press.
- Tabors, P. O., & Snow, C. E. (2001). Young bilingual children and early literacy development. In S. Neuman, & Dickinson (Eds.), *Handbook of early literacy research* (pp. 159-179).
- Uccelli, P., & Páez, M.M. (2007). Narrative and vocabulary development of bilingual children from kindergarten to first grade: Developmental changes and associations among English and Spanish skills. *Language, Speech and Hearing Services in Schools*, 38, 225-236.
- Uchikoshi, Y. (2006). English vocabulary development in bilingual kindergarteners: What are the best predictors? *Bilingualism: Language and Cognition*, 9(1), 33-49. doi: 10.1017/S1366728905002361
- Wiig, E. H., Secord, W. A., & Semel, E. (2005). *Clinical Evaluation of Language Fundamentals Preschool- 2*. San Antonio, TX: Pearson.
- Wiig, E. H., Secord, W. A., & Semel, E. (2009). *Clinical Evaluation of Language Fundamentals Preschool- 2 Spanish*. San Antonio, TX: Pearson.
- Winsler, A., Díaz, R. M., Espinosa, L., & Rodríguez, J. L. (1999). When learning a second language does not mean losing the first: Bilingual language development in low-income, Spanish-speaking children attending bilingual preschool. In A. Editor & B. Editor (Eds.), *Child Development*, 70(2), 349-362. doi:10.1111/1467-8624.t01-1-00026

Table 2

Proportion of Spanish, English and Mixed Language Used by Teachers and Paraprofessional by Context

Context	<i>n</i>	Language		
		English	Spanish	mixed
Teachers (<i>N</i> = 2)				
Greeting/Breakfast	216	73.0	0.0	27.0
Whole Group	144	63.0	0.01	36.0
Small Group	48	92.0	0.0	8.0
Centers	353	73.0	0.0	27.0
Lunch	107	.67	0.0	33.0
Paraprofessionals (<i>N</i> = 3)				
Greeting/Breakfast	189	29.0	12.0	59.0
Whole Group	128	37.0	5.0	59.0
Small Group	35	2.0	29.0	69.0
Centers	318	22.0	6.0	72.0
Lunch	134	21.0	7.0	72.0

Note. *n* = number of observations (1-minute intervals).

Table 3

Means, Standard Deviations and Min-Max by Language and Time for Clinical Evaluation of Language Fundamentals Preschool – 2 Composite Scores

Measure	Time 1		Time 4	
	<i>M (SD)</i>	<i>Min-Max</i>	<i>M (SD)</i>	<i>Min-Max</i>
Spanish				
Receptive Language	108.5 (9.9)	95-119	103.9 (6.2)	92-113
Expressive Language	101.9 (9.6)	80-109	99.5 (7.1)	89-109
Language Content	105.8 (9.5)	92-120	100.1 (5.9)	93-109
Language Structure	103.6 (10.9)	80-114	102.9 (8.6)	85-112
English				
Receptive Language	50.0 (0.0)	50-50	65.3 (9.0)*	55-85
Expressive Language	53.0 (0.0)	53-53	53.8 (5.6)	48-63
Language Content	50.0 (0.0)	50-50	61.4 (9.9)*	50-83
Language Structure	53.0 (0.0)	53-53	58.6 (6.6)*	50-69

* Paired samples *t* test $p < .01$.

Table 4

Means, Standard Deviations and Min-Max by Language and Time for Clinical Evaluation of Language Fundamentals Preschool – 2 Subtest Scaled Scores

Subtests	Time 1		Time 4	
	<i>M (SD)</i>	<i>Min-Max</i>	<i>M (SD)</i>	<i>Min-Max</i>
Spanish				
Sentence Structure	11.25 (2.3)	7-14	11.9 (2.3)	8-14
Basic Concepts	11.9 (2.0)	10-16	10.4 (1.5)	9-13
Word Structure	10.1 (1.9)	6-12	9.4 (2.0)	7-13
Expressive Vocabulary	10.4 (2.4)	6-13	10.3 (2.3)	6-13
Recalling Sentences	10.8 (2.2)	7-13	10.6 (2.3)	7-15
Concepts & Directions	---	---	---	---
English				
Sentence Structure	1.0 (0.0)	1-1	3.8 (1.4)*	2-6
Basic Concepts	1.0 (0.0)	1-1	4.3 (1.8)*	2-8
Word Structure	1.0 (0.0)	1-1	1.4 (0.7)	1-3
Expressive Vocabulary	1.0 (0.0)	1-1	1.8 (1.0)	1-3
Recalling Sentences	4.0 (0.0)	4-4	3.6 (1.8)	2-7
Concepts & Directions	3.0 (0.0)	3-3	4.4 (2.7)	1-10

Note: Concepts & Directions subtest not administered in Spanish at Time 1 due to age of children.

* Paired samples *t* test *ps* < .01.

Table 5

Absolute Frequencies for Spanish Verb Measures Collapsed Across Elicitation Sessions by Child and Time

Child	NVT				NNVT				TNV ^b			
	T ₁	T ₂	T ₃	T ₄	T ₁	T ₂	T ₃	T ₄	T ₁	T ₂	T ₃	T ₄
Ale	31	25	32	33	--	13	10	12	31	44	54	66
Carina	11 ^a	21	15	22	--	14	6	11	11 ^a	25	31	42
Diego	15	21	25	23	--	13	12	10	15	28	40	50
Emilia	31	17	32	20 ^a	--	10	18	6 ^a	31	41	59	65
Helena	10	22	29	21	--	19	16	9	10	29	45	54
Juliana	25	34	25	40	--	19	12	15	19	31	46	61
Marina	24	16	21	19	--	7	10	8	24	31	41	49
Alexa	31	29	36	23	--	14	16	5	31	45	61	66
<i>M</i>	22.3	23.1	26.9	25.1	--	13.6	12.5	9.5	21.5	34.3	47.1	56.6
<i>SD</i>	9.0	6.0	6.8	7.4	--	4.1	4.0	3.3	9.0	7.8	10.2	9.2

Note: Unless otherwise noted, values reflect data collapsed across Spanish and English elicitation sessions Times 1-4a.

Children's new verbs at Time 1 could not be determined as this was the initial data collection time point. NVT =

number of verb types (infinitive); NNVT = number of new verb types (infinitive) produced at each time point; TNV = total number of verbs. T₁ = Time 1; T₂ = Time 2; T₃ = Time 3; T₄ = Time 4.

^a Value derived from Spanish elicitation session data.

^b Values are cumulative.

Table 6

Spanish New Words and Lexical Complexity Scores Collapsed Across Spanish and English Elicitation Sessions by Child and Time

Child	NW				NDW				TNW				TTR			
	T ₂	T ₃	T ₄	T ₁	T ₂	T ₃	T ₄	T ₁	T ₂	T ₃	T ₄	T ₁	T ₂	T ₃	T ₄	
Ale	48	49	43	118	95	107	102	582	446	609	486	20	21	.18	.21	
Carina	44	26	52	34 ^a	64	54	85	92 ^a	226	180	261	.37 ^a	.28	.30	.33	
Diego	35	36	28	48	46	56	64	159	193	174	241	.30	.24	.32	.27	
Emilia	36	52	40	99	89	101	73 ^a	419	249	348	195 ^a	.24	.36	.29	.37 ^a	
Helena	45	59	36	43	56	92	64	151	272	510	378	.28	.21	.18	.17	
Juliana	84	43	60	74	107	105	117	245	415	494	407	.30	.26	.21	.29	
Marina	31	25	31	62	52	58	57	251	220	175	172	.25	.24	.33	.33	
Alexa	59	66	38	98	94	110	79	324	386	400	337	.30	.24	.24	.23	
<i>M</i>	47.8	44.5	38.6	72.0	75.4	85.4	80.1	277.9	300.9	361.3	309.6	.28	.26	.26	.28	
<i>SD</i>	17.1	14.9	11.3	30.4	23.4	24.9	20.6	160.9	99.0	171.3	110.3	.05	.05	.06	.07	

Note: Unless otherwise noted, values reflect data collapsed across Spanish and English elicitation sessions at Times 1-4a. Children's Spanish new words at Time 1 could not be determined as this was the initial data collection time point. NW = number of new words produced at each time point that were not produced at earlier time points; NDW = number of different words; TNW = cumulative total number of words; TTR = type token ratio. T₁ = Time 1; T₂ = Time 2; T₃ = Time 3; T₄ = Time 4.

^a Value derived from Spanish elicitation session data.

Table 7

English New Words and Lexical Complexity Scores Collapsed Across Spanish and English Elicitation Sessions

Child	NW				NDW				TNW				TTR			
	T ₁	T ₂	T ₃	T ₄	T ₁	T ₂	T ₃	T ₄	T ₁	T ₂	T ₃	T ₄	T ₁	T ₂	T ₃	T ₄
Ale	2	1	3	9	2	1	3	8	2	1	5	12	1	1	.60	.67
Carina	0	0	0	4	0	0	0	4	0	0	0	4	0	0	0	1
Diego	6	0	0	3	6	0	0	3	6	0	0	3	1	0	0	1
Emilia	3	18	2	17	3	18	6	27	3	19	6	27	1	.95	1	1
Helena	0	0	4	0	0	0	3	0	0	0	4	0	0	0	.75	0
Juliana	0	0	1	2	0	0	1	2	0	0	1	2	0	0	1	1
Marina	1	0	1	0	1	0	1	1	1	0	2	1	1	0	.50	1
Alexa	4	0	1	2	3	0	4	3	4	0	4	3	.75	0	1	1
<i>M</i>	2.0	2.4	1.5	4.6	1.9	2.4	2.2	6.0	2.0	2.5	2.8	6.5	.59	.24	.60	.83
<i>SD</i>	2.2	6.3	1.4	5.8	2.1	6.3	2.1	8.8	2.2	6.6	2.3	9.1	.49	.45	.41	.36

Note: Unless otherwise noted, values reflect data collapsed across Spanish and English elicitation sessions Times 1-4a. NW = number of new words produced at each time point that were not produced at earlier time points; NDW = number of different words; TNW = total number of words; TTR = type token ratio. T₁ = Time 1; T₂ = Time 2; T₃ = Time 3; T₄ = Time 4.

^a Due to children's limited English production, NDW based on 50 utterances could not be computed. Therefore, English NDW should be interpreted with caution.

Table 8

Lexical Scores for Retest Task at Time 4b Collapsed Across Elicitation Sessions by Child and Language

Child	Spanish (English)									
	NVT	NNVT	TNV	NW	NDW	TNW	TTR			
Ale	16 (0)	28 (0)	44 (0)	43 (9)	105 (9) ^b	446 (10)	.24 (.90)			
Carina	19 (0)	13 (0)	32 (0)	67 (3)	68 (3) ^b	305 (3)	.20 (1)			
Diego	17 (0)	9 (0)	26 (0)	30 (3)	51 (3) ^b	162 (3)	.31 (1)			
Emilia ^a	24 (5)	16 (5)	40 (5)	62 (24)	89 (22) ^b	232 (25)	.38 (.88)			
Helena	24 (0)	12 (0)	36 (0)	27 (0)	72 (0) ^b	378 (0)	.19 (0)			
Juliana	32 (0)	27 (0)	59 (0)	38 (2)	107 (2) ^b	439 (2)	.24 (1)			
Marina ^a	17 (8)	9 (8)	26 (9)	19 (47)	52 (42) ^b	163 (47)	.32 (.89)			
Alexa	23 (3)	17 (3)	40 (3)	18 (6)	82 (7) ^b	399 (7)	.21 (1)			
<i>M</i>	21.5 (2.0)	16.4 (2.0)	37.9 (2.1)	38.0 (11.8)	80.8 (11.0)	354.8 (12.1)	.26 (.83)			
<i>SD</i>	5.4 (3.0)	7.4 (3.1)	10.8 (3.4)	18.5 (16.1)	21.9 (14.3)	107.3 (16.2)	.07 (.34)			

Note. Children's Spanish new verbs and new words at Time 1 could not be determined as this was the initial data collection time point. NNVT are relative to NVT at Time 1. NVT = number of verb types (infinitive); NNVT = number of new verb types (infinitive) produced at each time point; TNV = total number of verbs; NW = number of new words produced at each Time 4b that were not produced at earlier time points; NDW = number of different words; TNW = total number of words; TTR = type token ratio.

^a Child produced an English sample therefore data was not collapsed across elicitation sessions and is reported separately for language by elicitation session.

^b Due to children's limited English production, NDW based on 50 utterances could not be computed. Therefore, English NDW values should be interpreted with caution as they are based on fewer than the recommended 50 utterances.

Table 9

Spanish Mean Length Utterance in Words (Semester Average in Parentheses) by Time

Child	MLU _w					
	T ₁		T ₂	T ₃		T ₄
Ale	5.54	(6.20)	6.86	7.91	(7.81)	7.71
Carina	5.11	(4.77)	4.43	4.86	(5.39)	5.93
Diego	3.97	(4.09)	4.20	3.87	(4.17)	4.46
Emilia	6.45	(6.19)	5.93	7.57	(7.54)	7.50
Helena	6.29	(5.98)	5.67	6.80	(6.22)	5.64
Juliana	7.66	(6.60)	5.53	6.42	(5.96)	5.50
Marina	5.12	(4.95)	4.78	6.48	(6.98)	7.48
Alexa	5.23	(4.94)	4.65	4.94	(5.28)	5.62
<i>M</i>	5.7	(5.5)	5.2	6.1	(6.2)	6.2
<i>SD</i>	1.1	(0.9)	0.9	1.4	(1.2)	1.1

Note. Unless otherwise noted, values reflect data collapsed across Spanish and English elicitation sessions Times 1-4a. MLU_w = mean length utterance in words. T₁ = Time 1; T₂ = Time 2; T₃ = Time 3; T₄ = Time 4.