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Maintaining Spanish in an English-Speaking World

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MAINTAINING SPANISH IN AN ENGLISH-SPEAKING WORLD

by

Audrey Juhasz

A thesis submitted in partial fulfillment
of the requirements for the degree

of

MASTER OF SCIENCE

in

Family, Consumer, and Human Development

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Logan, Utah

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ABSTRACT

Maintaining Spanish in an English-Speaking World

by

Audrey Juhasz, Master of Science

Utah State University, 2013

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As the Latino portion of the United States population continues to grow each year, more and more children in the United States leave their Spanish-speaking homes and enter English immersion schools. Throughout their lives, these children are likely to shift language preferences from their home language, to the language of the community. However, maintaining development in their first language would be a benefit to them in multiple ways. Identifying factors within bilingual homes that influence English and Spanish language development in preschool-aged children will help researchers and practitioners encourage families to cultivate the optimal learning environment.

This study endeavored to identify some specific social, linguistic, and literacy-related factors within the home that predict Spanish and English language development in 4-year-old children from low-income, predominantly Spanish-speaking families. Extant data from the Bilingual Early Language and Literacy Support Project (BELLS) were analyzed. Data were collected in participants' homes using various measures of the home and family environment.

Results indicated children may begin to repress their first language in order to focus on learning a second language as early as 48 months. Maternal use of unique words, in Spanish, was a strong predictor of children's English expressive vocabulary, indicating that continuing to provide a rich language environment in the home language facilitates English language development. Furthermore, current measures of literacy and learning environments may be missing important behaviors present in Latino families that are distinctly different from behaviors in Caucasian families, thus making such measures inapt to predict language-related outcomes in Latino homes.

(88 pages)

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Audrey Juhasz, Master of Science

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CHAPTER I

INTRODUCTION

According to the 2006 American Community Survey from the United States Census Bureau, approximately 35 million people speak Spanish as their primary home language. It is estimated 25% of entering preschoolers are of Hispanic or Latino descent with 75% speaking Spanish as a primary language (National Task Force on Early Childhood Education for Hispanics, 2007). For these children, how each language develops is a key issue. There are significant repercussions for children who enter English immersion schools without the language necessary to succeed. In addition, children who speak a non-English language may feel pressured to abandon their minority language in spite of numerous advantages of developing full bilingualism.

Gains related to becoming fully bilingual range from practical benefits of knowing two or more languages in an increasingly globalized world, to individualized cognitive benefits such as: positive transfer of first language skills to the development of literacy in English (August & Shanahan, 2006; Genesee, Lindholm-Leary, Saunders, & Christian, 2006), greater cognitive flexibility (Peal & Lambert, 1962), an analysis of and control over language (Bialystok, 1988), increased capacity to memorize information (Bain & Yu, 1980), and a greater understanding of the syntactic, symbolic, and arbitrary features of language (Díaz, 1985; Hakuta, 1987; Ianco-Worrall, 1972).

Unfortunately, a trend observed among many minority-language students is the longer children have lived in the United States the more likely they are to shift their language preference and proficiency from their home language to English (Anderson,

2004; Jia & Aaronson, 2003; Kohnert, 2004; Kohnert & Bates, 2002; Portes & Schaufler, 1994). Shifting language proficiencies rob children of the advantages associated with bilingualism as well as influencing the quality of relations between children and their parents who may not speak the majority language (Portes & Hao, 2002). In view of the documented advantages of encouraging bilingualism and pitfalls of shifting language preferences, it becomes important to better understand what specific factors contribute to first language maintenance. Research has shed some light on the nature and extent of language shift, and loss, in minority dual language learners. There are, however, still many unanswered questions related to preventing language loss in very young children.

In homes with dual language learning children, studies indicate family may be a key source of first language maintenance (Arriagada, 2005; González, Umana-Taylor, & Bamaca, 2006). Social factors, such as family socioeconomic status (Hart & Risley, 1995; Neuman & Cleano, 2001), maternal education (Brooks-Gunn, Han, & Waldfogel, 2002), unique characteristics of Latino families (Hurtado & Gurin, 1987) and acculturation (Stevens & Swicegood, 1987) have all been identified as factors contributing to vocabulary development. Poverty among Latino families has increased in past years (DeNavas-Walt, Proctor, & Smith, 2011). Children in materially disadvantaged circumstances are often, in turn, disadvantaged academically (Bradley & Corwyn, 2002). Additionally, low maternal education is associated with much fewer positive learning habits in the home (Raikes et al., 2006; Rowe, Pan, & Ayoub, 2005; Scarborough & Dobrich, 1994). Gordon's (1964) assimilation model, which indicates that as minority groups acculturate they will eventually learn English and completely lose their native

tongues, further spells doom and gloom for children attempting to maintain their home languages. However, Latino families may be unique from other groups of immigrants in the United States in how they acculturate and their maintenance of their heritage language past the third generation (Brodie, Steffenson, Valdez, Levin, & Suro, 2002; Portes & Schauffler, 1994). Indeed, their views on the importance of the family (Portes & Schauffler, 1994), and the large number of Spanish-speakers in some areas of the United States, facilitate the adoption of a different model of acculturation among Latinos.

Linguistic factors, such as how much children are exposed to each language (De Houwer, 2007; Veltman, 1981), father's unique input (Veltman, 1981), and the presence of siblings (Ortiz, Innocenti, & Roggman, 2004), also significantly influence how children learn two languages. Previously, the 'one-parent-one-language' approach was thought to be sufficient for children to develop their home language. However, current research shows children are much more likely to retain their home language if both parents speak the minority language in the home (Alba, Logan, Lutz, & Stults, 2002; Arriagada, 2005; De Houwer, 2007; King & Fogle, 2006; MacLeod, Fabiano-Smith, Boegner-Pagé, & Fontolliet, 2013). Indeed, much research indicates children's bilingual language development is highly dependent upon how much exposure they receive in each language (Duursma et al., 2007; Place & Hoff, 2011; Thordardottir, 2011). Thus, the contributions of each member of the family may be central to the development of children's home language.

Finally, Latino parents' involvement in and encouragement of literacy-related activities, especially shared bookreading (Wagner, Torgesen, & Rashotte, 1994), is associated with the development of phonological awareness which is a foundational

building block of literacy (Durgunoğlu, Nagy, & Hancin-Bhatt, 1993). However, research shows Latino parents may participate in such activity less frequently than in homes where English is the home language (Raikes et al., 2006; Yarosz & Barnett, 2001).

The purpose of the proposed study is to explore the influence of social, linguistic, and literacy practices on the English and Spanish vocabulary development of preschool English language learners living in low-income households. In order to examine the relation among these variables, extant data from the Bilingual Early Language and Literacy Support Project (BELLS) project will be analyzed.

CHAPTER II

REVIEW OF THE LITERATURE

This chapter will identify the theoretical perspective and related cultural issues that will be used to guide this research and review literature relevant to the proposed research questions. First, the theoretical lens for this study will be presented. Next family social influences factors bilingual language development will be presented. Then, language and literacy influences relating to language development will be discussed. Finally, a summary of key points will be included.

Theoretical Perspective

The imagery of filling up a metaphorical balloon of knowledge in a student's brain can be used to conceptualize common differing theories of bilingual development (Cummins, 1981). In early theories of dual language learning, first and second languages were separate balloons. Only one balloon could be filled at a time through blowing into their respective vents. From this perspective, it would seem most prudent to only spend time blowing into the balloon of most importance. Why waste time blowing up a balloon which seemingly has no use, and subtracts from time that could be devoted to more important concepts? From this perspective, the relative amount of time spent on each task, or language, should be directly correlated to outcomes in each language. Subsequently, parents were encouraged to stop using their home language so as not to detract from English language development or inadvertently confuse children.

In recent years, however, research indicates that concepts learned in one language may be transferrable between languages. For example, Spanish-speaking children with well-developed phonological awareness and literacy skills in Spanish acquire initial literacy skills in English much more quickly than children who have not yet obtained these skills in their home language (Genesee & Geva, 2006; Riches & Genesee, 2006). Cummins' (1981) Common Underlying Proficiency (CUP) model conceptualizes the usefulness of building competency in two languages, as opposed to the traditional "time on task" concept. The CUP model combines the two metaphorical balloons into one large balloon with two outlets, one for each language, to blow into the single chamber of knowledge. This illustrates that any increase in knowledge, whether in a first or second language, adds to the progression of overall competency.

Through this lens, understanding and promoting first language maintenance, without compromising English growth, becomes a matter of vital importance. Indeed, this model stresses the need for positive language promoting practices, in any language, in every environment.

Social Influences

Children's development is shaped by social and cultural factors. Some social factors such as living in poverty or low levels of maternal education create risks for children's early development and later academic success. Cultural factors are often protective, but may also be associated with risk factors. For example, 1 in 3 Latino children lives in poverty, with 1 in 7 Latino children living in extreme poverty (Children's Defense Fund, 2011).

Research suggests Latino families place a strong emphasis on families (Rumbaut, 1997; Suárez-Orozco & Suárez-Orozco, 1995) which can be an important protective factor. Latino families in the United States are diverse and vary in their acceptance and use of mainstream culture and language. These social factors are particularly salient for children's language development as parents transmit their cultural values and teach their children most often through speech. Speech in the home is influenced by maternal education, poverty, and family values. Latino children growing up in bilingual homes may receive mixed messages from the majority culture, often in direct contrast to their family culture. Thus, social factors of poverty, maternal education, family culture, and acculturation all play important roles in young Latino children's early language development.

Poverty

The U.S. Department of Commerce reports that from 2009 to 2010, the poverty rate among Hispanics has increased from 25.3% to 26.6% and the number of Latinos in poverty increased from 12.4 million to 13.2 million (DeNavas-Walt et al., 2011). The effects of poverty and economic disadvantage are profound and far reaching. Research shows a pronounced influence of socioeconomic circumstances (SES - income, education attainment, and social class) across the lifespan and in multiple domains of development including health, cognitive, language, and socioemotional outcomes in children.

Before birth, children in poverty are more likely to experience growth retardation and inadequate neurobehavioral development (DiPietro, Costigan, Hilton, & Pressman, 1999; Kramer, 1987). Children born in poverty are more likely to be born premature, at

low birth weight, or with asphyxia, a birth defect, a disability, fetal alcohol syndrome, or AIDS (Peoples-Sheps et al., 1998; Vrijheid et al., 2000; Wasserman, Shaw, Selvin, Gould, & Syme, 1998). Furthermore, low-SES infants are more likely to suffer injuries and to die than children who are not living in poverty (Overpeck, Brenner, Trumble, Trifiletti, & Berendes, 1998; Scholer, Hickson, & Ray, 1999). They are also much more likely to suffer from health problems such as high blood lead levels (Starfield, 1982), iron deficiency (Starfield, 1989), and growth stunting (Brooks-Gunn & Duncan, 1997; Korenman, Miller, & Sjaastad, 1995) during childhood. These potential risk factors combine to create seemingly insurmountable hurdles for children to overcome as they strive to make developmental gains similar to children in high SES situations. Indeed, we see not only physical impediments for children in poverty, but impacts to cognitive and academic development as well. A meta-analysis found SES accounts for about 5% of variance in academic achievement overall (White, 1982).

Children from impoverished households typically have lower scores of receptive vocabulary, reading ability, and other measures of academic performance when compared to those from upper socioeconomic environments (Bradley & Corwyn, 2002). There is a particularly strong relation between SES and verbal skills even very early in life (Hoff-Ginsberg, 1991; Mercy & Steelman, 1982). Hart and Risley's (1995) seminal work also reported major differences in the language proficiency of children from high-SES homes as compared to those from low-SES homes. On average, children in poverty enter kindergarten with a vocabulary of about 5,000 words whereas children from higher-income families typically enter kindergarten with a vocabulary of around 20,000 words. The authors estimated that in order to remediate language input differences between the

two groups, children living in poverty would require a program supplying 63,000 additional words per week.

Many factors contribute to these dramatic differences. Decreased richness of the language environment (Hart & Risley, 1995; Hoff, 2003), reduced participation in learning activities such as bookreading (Bradley, Corwyn, Burchinal, McAdoo, & Garcia-Coll, 2001; Whitehurst et al., 1994), differences in parents' cognitive stimulation of children (Evans, 2004; Hart & Risley, 1995), and reduced access to learning materials that support cognitive and language development, such as toys and books (Bradley & Corwyn, 2002; Guo & Harris, 2000; Hart & Risley, 1995), may all contribute to these differences. Living in poverty is also often coupled with a decrease of parental responsiveness and an increase of psychological distress, both of which have indirect negative influence on children's language development and later academic competence (Bradley, Corwyn, McAdoo, & Garcia-Coll, 2001; Guo & Harris, 2000).

The chances a Latino child will live in poverty is greater than for Caucasian children. There are many factors driving this trend. Gradín (2012) compared Latino, Black, and Caucasian populations in the United States in an attempt to better understand the unique characteristics of each group that may be driving poverty rates. He reports sociodemographic characteristics of Latinos explained more than half (51.9%) of the overall racial poverty gap. The number of dependent children in Latino families was a major driving force. Indeed, nearly 43% of Latino family members are economically dependent. In comparison, only 25% of Caucasian family members are thus. Additionally, 15.1% of variability was attributed to immigration status of Latinos. Families headed by non-American citizens are 22% more likely to live in poverty

(Gradín, 2012). Latino family heads are also more likely to be younger and less educated than in Caucasian families, contributing to increased poverty levels among Latino families. The influence of poverty on children's developmental outcomes is complex because other social factors related to immigration status, family size, and education contributes to poverty. Thus, it is important to examine the role of these other social factors in addition to poverty to better understand young Latino children's developmental trajectories.

Maternal Education

Level of education is sometimes used as a proxy for SES in new immigrant populations where occupational status may be dramatically different from what it was in participants' countries of origin (see Jia & Aaronson, 2003). Mercy and Steelman (1982) found parental education was the best predictor of intellectual attainment in children. They reported maternal education was a stronger predictor than paternal education, but Scarr and Weinberg (1978) reported both maternal and paternal education to be equally good predictors. The difference in findings may be attributed to the differences in ages of the children participating in each study. Mercy and Steelman's (1982) sample consisted of 6- to 11-year-olds, whereas Scarr and Weinberg (1978) studied 15-year-olds. More recent research has continued to use maternal education as the primary determinant of SES with immigrant families (Cobo-Lewis, Pearson, Eiler, & Umbel, 2002; Golberg, Paradis, & Crago, 2008).

The influence of education on the quantity and quality of verbal interactions between mothers and their children has been well documented (Arriaga, Fenson, Cronan,

& Pethick, 1998; Hart & Risley, 1995; Hoff, 2003). Mothers with fewer years of education typically demonstrate less sophisticated language and literacy skills (Rowe et al., 2005) and read to their children less frequently (Raikes et al., 2006; Scarborough & Dobrich, 1994). Hart and Risley (1995) reported that in addition to hearing dramatically fewer words per hour in low-SES homes, there was also a large discrepancy between the number of prohibitions heard per hour in low-SES homes as compared to high-SES homes. Children in low-SES homes heard an average of 11 prohibitions per hour whereas children in high-SES homes heard only five per hour. The authors hypothesized that the differences in prohibitions may be a mechanism employed by parents to prepare their children for future experiences. Parents from higher SES homes seemed to be preparing their children with skills of abstraction and attention to detail through their speech. Whereas children in low SES circumstances benefit more from speech that encourages obedience, politeness, and conformity which may be key for success in the specific types of employment opportunities that will likely be available to them in coming years. It is worth noting all of the parents in the study displayed love and affection for their children, and were volunteer participants in the study even though they had dramatically different styles of interaction in regards to language use.

The influence of maternal education on bilingual development has been documented throughout the lifespan. Higher maternal education is associated with greater English vocabulary scores in bilingual kindergartners (Bohman, Bedore, Peña, Mendez-Perez, & Gillam, 2010), faster English vocabulary growth in 5- to 7-year-old bilingual children (Golberg et al., 2008), and greater knowledge of English in adolescents from immigrant families than lower maternal education (Portes & Rumbaut, 2001). These

findings can similarly be interpreted in their negative impact on first language maintenance. Studies report parents with more education are less likely to be fluent in a non-English language (Stevens, 1985) and their children rapidly lose their knowledge of their parents' native tongues (Portes & Hao, 1998; Portes & Schauflier, 1994). This may be because parents see English language proficiency as a gateway to success in the United States, and thus discourage the development of a native tongue. Indeed, Bohman et al. (2010) found mothers with more years of education were more likely to be educated in the United States thus with more schooling in English.

Golberg et al. (2008) reported maternal education is more influential for child English proficiency than English language use in the home. In their sample, highly educated mothers tended to speak English less in the home, but their children had higher vocabulary scores and produced a greater variety of words. The authors developed two main hypotheses to explain their findings. First the interaction could be explained through SES differences in higher order and non-language specific verbal interaction factors, such as asking conversation-continuing questions. Alternatively, these children could be demonstrating Cummin's (1981) CUP model that developing a strong base in a first language provides a better starting point for the development of a second language. Regardless of which hypotheses is the best fit, they both suggest that the language input from mothers is key in the language outcomes of children and maternal language choice is related to maternal education. Guo and Harris (2000) found a similar indirect impact of mother education on children's intellectual development through cognitive stimulation.

Latino Families

Research on Latinos families must be cognizant of the great importance this culture typically places on family as a central institution (Rumbaut, 1997; Suarez-Orozco & Suarez-Orozco, 1995). As compared to European American families, Latino families display more familistic behaviors and attitudes (Rogler & Cooney, 1984). For example, they tend to look to family members for support before turning to entities outside of the family system, and they have a tendency to live in extended family units (Keefe, 1984). Their proclivity to maintain their native language for more generations than is typical of immigrants also speaks to their value of family ties (Portes & Schauffler, 1994). Rueschenberg and Buriel (1995) report that even when English has become the family's primary language, these values and practices are still passed on from generation to generation.

Many Latinos have very positive attitudes toward their heritage language and feel its maintenance to be an integral part of culture (Hurtado & Gurin, 1987). For many Latino families "bilingualism leads to economic security in this country and in Mexico, ensures the ability to communicate and interact with a wide range of people, and provides access to knowledge sources both inside and outside of their community" (Pease-Alvarez, Hakuta, & Bayley, 1996, pp. 143-144). In interviews with children and their parents about their language attitudes, Pease-Alvarez et al. (1996) observed mixed feelings from both parents and children. Parents expressed strong feelings about the importance of their children maintaining Spanish language skills in the home. However, when discussing how Spanish should be employed outside of the home, parents' responses varied: most

parents felt grateful for bilingual academic opportunities, but all felt the academic setting should not operate solely in Spanish. Overall, the families tended to lean toward an ideal of additive bilingualism, where first languages are not replaced, but merely added upon. Indeed, half of the parents in the sample viewed their child's maintenance of their heritage culture as an enhancement of the quality of their children's lives in the United States.

Acculturation and Enculturation

Latino parents' preference for their children to maintain Spanish may be reflected in their own generational status and acculturation into the mainstream culture.

“Acculturation emphasizes the immigrant group's adoption of the cultural patterns of the majority or resistance to those patterns and maintenance of values and attitudes from the origin community” (Glick, 2010). Alternatively, enculturation indicates an individual's acquisition of the characteristics and norms of the minority culture they are a part of.

Acculturation and enculturation are both manifest in many ways, and at varying rates in different ethnic populations. Research in health education often uses language preference as an indicator of acculturation (see Bell & Alcalay, 1997; Epstein, Dusenbury, Botvin, & Díaz, 1994). Other studies use the number of generations a family has been in the United States as an indicator for how acculturated the family may be. This research typically draws upon Gordon's (1964) assimilation model where linguistic assimilation of an ethnic group is seen as a necessary step in acculturation and overall assimilation (Stevens & Swicegood, 1987). This model indicates that as minority groups acculturate they will eventually learn English and completely lose their native tongues. In general it is

expected that each successive generation will lose more and more of the family's native language. Research indicates a complete loss of heritage language within a family is typically complete within three generations. Within the first generation, the majority of family members maintain use of the native language, and a few individuals begin to speak English (Veltman, 1988). The second generation typically speaks the native language in varying degrees, but English usage is well established (Hurtado & Vega, 2004; Portes & Hao, 1998; Zentella, 1988). By the third generation, English has become the primary language of the home and the native language is often completely lost (Hurtado & Vega, 2004; Veltman, 1983).

Generational effects are often prevalent, and often a good indicator for acculturation. However, "unlike past immigrant groups, Mexicans and other Latinos have not assimilated into mainstream U.S. culture, forming instead their own political and linguistic enclaves—from Los Angeles to Miami—and rejecting the Anglo-Protestant values that built the American dream" (Huntington, 2004, p. 30). Indeed, second-generation immigrant children from Latin America "display, without exception, a much greater probability of retaining their parental languages" (Portes & Schauffler, 1994, p. 653). The 2002 National Survey of Latinos reports 24% of first generation, 47% of second generation, and 22% of third or later generations of Latinos are bilingual (Brodie et al., 2002). This indicates Gordon's (1964) model may not be appropriate for Latino immigrants.

Immigrant populations for whom Gordon's (1964) model was formed were often from countries great distances from the United States. Latino immigrants are often from countries much closer to the United States making travel affordable and accessible. This

facilitates families' abilities to retain family ties with extended members of the family in the country of origin. Other aspects of the Latino home environment, such as whether or not the children learned Spanish as their first language and their parents' English proficiency, may encourage the use of Spanish and facilitate proficiency in the home language above and beyond generational effects (Arrigada, 2005). In addition, the large number of Spanish-speakers in some areas of the United States may reduce the perceived need to learn English and promote Spanish retention. Arrigada (2005), using a large nationally representative sample, reported that Latino children, in schools where more than 21% of the student population is Latino, are more likely to have high levels of Spanish proficiency. Thus, for some families, acculturation may be more a reflection of changes in a family's or individual's values and attitudes rather than changes in specific behaviors (Glick, 2010).

In short, it is clear that there exists a link between acculturation and language use in the home. However, the relationship is still highly enigmatic. It is thus an important variable to consider to fully understand whether or not children maintain their home language when they enter school.

Linguistic Influences

Children living in homes where the nation's primary language is not their family's primary language are in a unique position of having differing amounts of two languages spoken to them. Many factors influence which language families choose to communicate in. They may strictly speak the home language, or a mixture of two languages, in the home. The varying level of each language influences how children develop each

language respectively. In understanding the varying levels of influences, it is also important to understand how each member of the household may uniquely influence a child's development.

Relative Amount of Exposure

Much current research does not support the 'one-parent-one-language' approach as being sufficient for children to continue to develop in the minority language; children are much more likely to retain their home language if both parents speak the minority language in the home (Alba et al., 2002; Arrigada, 2005; De Houwer, 2007; King & Fogle, 2006; MacLeod et al., 2013). Indeed, Alba et al. (2002) noted "if [a] marriage crosses an ethnic boundary that also is associated with different mother tongues, then the odds that a third-generation child will speak only English are increased by a factor that ranges from 2.6 ($e^{.974}$) to 6.4 ($e^{1.859}$)" (p. 477). They noted this may be true specifically because of the difference in the home between having two Spanish-speaking parents for children to listen to and learn from versus only one.

Research indicates parents' usage of a child's first language in the home supports children's development of that language (De Houwer, 2007; Veltman, 1981). For example, Gutiérrez-Clellen and Kreiter (2003) observed that parents' usage of their native language predicted children's grammatical abilities in that language. The relative amount of exposure children receive in each language is a key factor in dual language vocabulary development (Duursma et al., 2007; Place & Hoff, 2011; Thordardottir, 2011). For example, maternal use of English does not help young Spanish-English dual language learners increase their children's English vocabulary, but it does slow the

children's growth of Spanish vocabulary (Hammer, Davison, Lawrence, & Miccio, 2009). The researchers reasoned children receive sufficient English exposure outside of the home and thus, maternal English does not significantly further influence English language development. In contrast, because the home is often the most verbose source of Spanish input for English language learning children, the reduction in Spanish input from mothers negatively influenced children's Spanish vocabulary growth.

Fathers

It is not uncommon for mothers and fathers to choose to speak different languages with their children. Much of previous research on children's bilingual language development has focused on how maternal input influences development. However, research now indicates the vital role both mothers and fathers play in their children's language development (Girolametto & Tannock, 1994). Studies comparing maternal and paternal verbal input among monolingual children have found many similarities between interaction styles such as adopting a simplified speech register, using a higher pitched voice, and adjusting language output in response to children's language (Fernald et al., 1989; Kavanaugh & Jirkovsky, 1982; McRoberts & Best, 1997). A meta-analysis comparing and contrasting mothers' and fathers' language use with their children found fathers use fewer words, provide less supportive language, are less negative in their language, and tend to be more directive and informing than mothers (Leaper, Anderson, & Sanders, 1998). Surprisingly, there were no differences in how parents used questions or requested information. Rowe, Coker, and Pan (2004) considered a sample of rural, low-income, Caucasian families with 2-year-olds. They reported fathers produced more

wh-questions and requested explicit clarification more often than mothers. Roopnarine, Fouts, Lamb, and Lewis-Elligan (2005) observed a sample of African American families from lower, middle and upper SES backgrounds with 3- to 4-month-old children. They found that across social classes, fathers vocalized more often than mothers and were more affectionate with their infants when proportion of caregiver presence was taken into account.

Beyond differences and similarities in parents' communication styles, fathers' direct influence on children's early cognitive and language development has also been documented. Father's diversity of vocabulary when children were 24 months old during triadic free play correlated positively with children's expressive language skills at 36 months of age in a sample of middle-class Caucasian families (Pancsofar & Vernon-Feagans, 2006). This was true even after controlling for parental level of education, quality of childcare, and maternal vocabulary. Further study using a different, more diverse, sample reported additional support for this finding in addition to evidence that father vocabulary diversity when children are six months old contributes to children's communication skills at 36 months (Pancsofar & Vernon-Feagans, 2010). Fathers' education was also positively correlated with child expressive language. These findings were significant even after controlling for maternal education and language input, ethnicity, birth order, and hours per week in child care. These findings provide evidence for the long lasting influence fathers' language input has upon their children.

How much fathers contribute specifically to children's bilingual language development is not clear. Veltman (1981) presented evidence that children in bilingual families tend to learn the language their mothers speak. However, De Houwer (2007)

using a large representative sample in Belgium, found no differences in children's preference for learning fathers' or mothers' languages. Place and Hoff (2011) corroborated this result using a Spanish-English bilingual sample of toddlers in the United States. There are no other studies that specifically study father's specific and unique contributions to bilingual language development or children's propensity to learn mother's or father's native language. However, as stated previously, children are much more likely to develop a minority language if they have two parents who speak the minority language at home as opposed to only one parent (Alba et al., 2002; Arrigada, 2005; De Houwer, 2007; King & Fogle, 2006; MacLeod et al., 2013). More quality research is needed to better understand the specific role of father's language input in relation to child language preference outcomes in bilingual homes.

Siblings

Dual language learners' development is not only influenced by their interactions with adults, but also by interactions with siblings. Research on the influence of siblings on bilingual language development is also a relatively young area of study and thus has many unanswered questions. However, current research does clearly indicate the important influence older siblings have upon their younger siblings in the home. The confluence model suggests that "children who grow in the presence of fewer siblings and more adults will be advantaged relative to those in the presence of relatively more siblings and fewer adults" (Falbo & Cooper, 1980, p. 299). Birth order has been found to influence children's early vocabulary in monolingual children, with first-born children

demonstrating some advantage over later-born children (Bornstein, Leach, & Haynes, 2004; Hoff-Ginsberg, 1998; Pancsofar & Vernon-Feagans, 2010).

Research of children from low-income Spanish-speaking families sheds some light on how older siblings specifically influence young children's maintenance or loss of home language (Ortiz et al., 2004). Their findings suggest that older school-age siblings negatively influence their younger siblings' Spanish receptive vocabulary while positively influencing English receptive and expressive vocabularies. Wong-Fillmore (1991) also reports that older siblings tend to experience much less language loss than their younger siblings. Nearly half of the parents of a Korean-English-speaking sample reported that their second- and third-born child(ren) began speaking English at an earlier age than first-born children (Ellis, Johnson, & Shin, 2002). A possible reason for this trend may be that as older siblings enter English immersion schools they bring more of the English language home with them (Wong-Fillmore, 1991). On the other hand, the amount of home language siblings speak positively influences children's home language development (Duursma et al., 2007).

De Houwer (2007) reported that children in the same family tended to develop the same language pattern: all the children choose to use only the home language, or only the second language, or a mixture of the two. Only 1 out of 10 children with siblings chose a different language pattern than the other child(ren) in their family. However, data from the October 1999 Current Population Survey indicates that children within the same family vary in their language preferences corresponding to birth order (Stevens & Ishizawa, 2007). It could be that older children are more likely to act as language brokers on behalf of their parents, thus increasing their need to be bilingual. Alternatively,

younger children are more likely to have been born in the United States whereas older children are more likely to have been born in the country of origin, thus increasing the amount of time older siblings have lived in a non-English country. Taken together, however, the two sets of seemingly contradictory findings highlight an important point. If sibling groups tend to speak language in a similar pattern, older children tend to act as language brokers, and younger children tend to learn English faster, the eventual result is for all children to begin speaking English to a greater degree, leaving the maintenance of the home language in question.

Literacy Environment

The association between quality of children's early literacy experiences and their language and cognitive development has been well documented (Payne, Whitehurst, & Angell, 1994; Raikes et al., 2006; Sénéchal & LeFevre, 2001; Tabors, Roach, & Snow, 2001; Tamis-LeMonda, Bornstein, & Baumwell, 2001). However, Spanish-speaking, Latino families typically have fewer children's books in their homes than non-Latino counterparts (Raikes et al., 2006). Only 48% of mothers whose home language was not English read to 3- to 5-year-old children during the preceding week, compared with 84% of mothers whose home language was English (Yarosz & Barnett, 2001). It is unclear why these differences appear, but some hypotheses worth considering include differences in the ways stories are shared in different cultures and contextual influences such as economic stress and poverty. Non-poor parents of infants and toddlers participating in the National Longitudinal Survey of Youth were twice as likely as poor parents to read several times per week (Bradley et al., 2001). Bookreading and literacy-related activities

are important for children in low-income homes because these activities mimic the focused language experiences experienced in more advantaged homes (Snow, Burns, & Griffin, 1998; Whitehurst et al., 1994).

Shared Bookreading

Shared bookreading with young monolingual children has been linked to the development of vocabulary, phonemic skills, print concept knowledge, and positive attitudes toward literacy (DeBaryshe, 1993; Lyytinen, Laakso, & Poikkeus, 1998; Sénéchal, LeFevre, Hudson, & Lawson, 1996; Wagner et al., 1994). A meta-analysis indicated that the time parents spent reading to preschoolers was related to children's language growth, emergent literacy, and reading skills (Bus, van Ijzendoorn, & Pelligrini, 1995). Surprisingly, this relationship does not seem to be dependent upon socioeconomic status. The meta-analysis further estimated that shared bookreading accounts for approximately 8% of the variance in children's language outcomes. However, Scarborough and Dobrich (1994) found SES is still more predictive of literacy development in children than home literacy variables. The authors hypothesized this may indicate there is a mediating factor in the home environment associated with bookreading frequency.

Preschool children may learn vocabulary from shared reading events (Arnold, Lonigan, Whitehurst, & Epstein, 1994; Eller, Pappas, & Brown, 1988; Robbins & Ehri, 1994; Valdez-Menchaca & Whitehurst, 1992). The reason shared bookreading may be so influential is in the very nature of the activity. Mothers tend to use richer and more varied language during shared bookreading than during mealtimes, toy play, or dressing (Hoff-

Ginsberg, 1991). This may be because books often contain more rare and varied vocabulary than typical speech (Hayes & Ahrens, 1988). Thus, reading aloud may present opportunities for parents to introduce more complex speech (Mason & Allen, 1986). During shared bookreading parents act as models of sophisticated language (Debaryshe, 1993), and often teach vocabulary as they emphasize the connection between print and past experience (Shapiro, Anderson, & Anderson, 1997). Indeed, children can understand new vocabulary from even a single exposure to a storybook (Sénéchal & Cornell, 1993). Additionally, children benefit from the focused attention of their parents during shared bookreading experiences (Snow, 1983) as well as the repetition of reading the same book multiple times (Snow & Goldfield, 1983).

The exact interplay between child characteristics, parent practices, vocabulary, and book interest is still a matter of debate and research. Children who display greater interest in books are more likely to be read to by their parents more frequently than other children (Lyytinen et al., 1998; Scarborough & Dobrich, 1994). However, the relationship between the two variables is still unclear. Are children more interested in books because they have more frequent interactions with books, or do children who have interest in books read to more often by their parents? Bus et al. (1995) implied that children's interest in reading is as much a prerequisite as an aftereffect of bookreading. The same is true for the link between children's vocabulary development and book interest. A longitudinal study in Finland, reports that shared bookreading is associated with vocabulary comprehension at 14 months, as well as with vocabulary production, sentence length, and cognitive skills at 24 months (Lyytinen et al., 1998). Conversely, 14-month-olds who attended to books for longer periods of time, and made more requests for

reading, tended to have larger vocabularies than those who had lower interest in books. However whether children were more interested in books because of their larger vocabularies, or if their large vocabularies were a result of their interest in books is not wholly determined.

Phonological Awareness

Differences in phonological processing are believed to be related to the development of beginning reading skills (Ball & Blachman, 1988; Blau et al., 2010; Ellis & Large, 1988; Lundberg, Frost, & Petersen, 1988; Vidyasagar & Pammer, 2010; Wagner, 1988). A meta-analysis reports that phonemic awareness is the strongest correlate of individual differences in word reading ability (Melby-Lervåg, Lyster, & Hulme, 2012). When children begin to learn to read, some knowledge of phonetics should be helpful. This is especially true for alphabetic writing systems, such as that employed by both the English and Spanish languages, because letters tend to roughly correspond to the sounds they make (Wagner et al., 1994).

The sequence of development of phonological awareness in English is generally well understood. First, children become increasingly sensitive to smaller and smaller linguistic units as they grow older (Anthony, Lonigan, Driscoll, Phillips, & Burgess, 2003; Lonigan, Burgess, Anthony, & Barker, 1998; Schatschneider, Francis, Foorman, Fletcher, & Mehta, 1999). Second, children begin to be able to differentiate between similar- and dissimilar-sounding words before they are able to manipulate sounds within words, as well as learning to blend phonological information before learning to segment phonological information (Anthony et al., 2003; Schatschneider et al., 1999; Wagner et

al., 1994). The most demanding cognitive operations seem to be deleting, isolating, and reversing phonological units (Yopp, 1988).

Development of phonological skills in Spanish may follow a similar course as that of monolingual English-speakers (Cisero & Royer, 1995; Denton, Hasbrouck, Weaver, & Riccio, 2000; Goikoetxea, 2005; Gorman & Gillam, 2003; Jiménez González & Haro García, 1995). Rhyme detection precedes initial or final phoneme detection in Spanish-speaking children as it does in English-speaking children (Cisero & Royer, 1995), and Spanish phonological awareness in Spanish-English bilinguals has been found to be a strong predictor of later reading ability (Durgunoğlu et al., 1993). Carlisle, Beeman, Davis, and Spharim (1999) found that for first-, second-, and third-grade Spanish-English bilinguals, phonological awareness contributed to achievement in English reading comprehension above and beyond vocabulary in either language. However, results may or may not apply to low-income bilingual children in English immersion schools. Many studies focus on middle-class bilingual children where typically second languages are viewed as additive and not meant to subtract from the first language. However, one study does show a strong transfer of phonological awareness skills across languages among low-income Spanish-English bilinguals indicating that other findings may be applicable in low-income populations (Dickinson, McCabe, Clark-Chiarelli, & Wolf, 2004). In sum, these findings highlight some of the benefits to bilinguals in facilitating certain types of metalinguistic awareness. This strengthens the need to understand how the literacy environment in the home specifically influences the development of these skills.

Summary

Children's bilingual language development is influenced by several factors in the home. Much research has been done in monolingual homes or in high SES circumstances where children are not at risk of abandoning their first language. Many of the key influences in monolingual homes may be used as starting points for present bilingual research. However, there is still much to learn about how specific social, linguistic, and literacy aspects of the home environment relate to children's maintenance of their first language without compromising emerging English. This study will look at the influence of several aspects of the home environment and how these factors are predictive of children's dual language development in low-income Latino families.

Research Questions

1. What social (family income, maternal education, acculturation), linguistic (language spoken by parents, number of siblings, maternal language proficiency and number of unique words), and literacy environment factors in the home, predict English language development in four-year-old children from low-income, predominantly Spanish-speaking families?

2. What social (family income, maternal education, enculturation), linguistic (language spoken by parents, number of siblings, maternal language proficiency and number of unique words), and literacy environment factors in the home, predict Spanish language development in four-year-old children from low-income, predominantly Spanish-speaking families?

CHAPTER III

METHODS

The purpose of this study was to explore the influence of social, linguistic, and literacy practices in the home on the English and Spanish vocabulary development of preschool English language learners living in low-income households. The present study used extant data from the Bilingual Early Language and Literacy Support Project (BELLS). The study used data collected at time points when participants were 36- to 48-months-old.

Participants

The BELLS project was designed to examine language and emergent literacy outcomes of primarily low-income, Spanish-speaking/bilingual children in the BELLS intervention and in a comparison group. Monthly household income ranged from \$0 to \$3,400 with an average of \$1,118. On average mothers had 8.6 years of education with a standard deviation of 2.6 years. Participants were recruited from a local English immersion preschool, and other children in the same local area who were not enrolled in preschool. The study employed nonprobability sampling techniques and recruited participants through a community neighbor-to-neighbor program, schools, and health clinics.

For the larger BELLS study, children and mothers were assessed at 18, 24, 36, and 48 months of age and the spring before kindergarten entry, or pre-kindergarten. For the purposes of this study, we used the 36 and 48 month assessments to address our

research questions. In addition, we only used comparison group participants to avoid any potential confounding variables associated with the BELLS intervention. The total sample for this study is 77 (40 males) comparison group children and their families with assessment data at both 36 and 48 months. None of the children in the comparison group participated in the intervention. However, several of these children did attend their local Head Start program their pre-kindergarten year. A few children were in family child care homes with other Spanish-speaking families during the study.

The original BELLS study received IRB approval on January 13, 2000 with Mark Innocenti as the Principal Investigator and Lisa Boyce as the co-principal investigator. The protocol number is 52. This original research study is closed.

Instruments

Social Measures

Demographics of the families. The Family Information Survey was developed by the BELLS staff and contained several interview questions focused on gathering information about the socio-cultural context of the family. Questions for all families addressed family income, parental education, family size, family composition, immigrant and generational status, and parental age.

Acculturation/Enculturation. The Bidimensional Acculturation Scale (Marín & Gamba, 1996) attempts to assess both acculturation and enculturation. The assessment is divided into three subscales: language use, linguistic proficiency, and electronic media. Each subscale measures both English and Spanish language-related behaviors using questions such as: “How often do you think in English? How well do you understand

music in English? How often do you watch television programs in Spanish?" Questions are answered on a likert scale ranging from *almost always* to *almost never*. The complete assessment consists of 24 items; six questions in the language use subscale, 12 items in the linguistic proficiency subscale, and six items in the electronic media subscale.

The instrument is available in English and Spanish and is validated for use with both Mexican and Central American populations. Each participant received a score for both acculturation and enculturation based on the mean score for each of the subscales. The developers indicated both scores should be used to determine the cultural adaptation of the individual. Scores above 2.5 on both subscales indicate biculturalism.

The internal consistency reliability for the acculturation scale was .96 and .90 for the enculturation scale (Marín & Gamba, 1996). It is unclear if these alphas were calculated based on the English or Spanish versions of the scale. To assess the validity of the Bidimensional Acculturation Scale, scores from the subscales were correlated with the generational status, age at arrival to the United States, length of residence in the United States, proportion of life in the United States, amount of formal education, self-identification of ethnicity of the participants, and the participants' scores on the Short Acculturation Scale for Hispanic Adults (SASHA). The correlations for the acculturation subscale ranged from $-.72$, with age at arrival to the United States, to $.88$, with the score from the SASHA. The correlations for the enculturation subscale ranged from $-.84$, with the SASHA, to $.68$, with age at arrival. The direction of the correlations was as expected, and it was concluded the measure had good validity (Marín & Gamba, 1996).

Linguistic Measures

Receptive English and Spanish vocabulary. Child English receptive language was measured using the Peabody Picture Vocabulary Test-III (PPVT) which was designed to measure children's receptive vocabulary (Dunn & Dunn, 1997). Participants are shown picture plates with four pictures and asked to point to the picture that best represents a stimulus word presented orally by the examiner. The items are presented in order of increasing difficulty. Testing is discontinued after participants have made eight or more errors in a set of 12 stimulus words. One point is awarded for each correct response, and a sum of the correct responses is used as the index of receptive vocabulary. Scores are converted into standard scores, with a mean of 100 and a standard deviation of 15 (Dunn & Dunn, 1997).

The internal consistency reliability for the PPVT across all age groups ranged from .92 to .98. The test-retest reliability for the PPVT ranged from .91 to .93 across age groups (Dunn & Dunn, 1997). The PPVT has also been found to correlate with established tests of intelligence: the Wechsler Intelligence Scale for Children Verbal IQ (.91 to .92), and the Kaufman Brief Intelligence Test (.80 to .82; Dunn & Dunn, 1997).

The Test de Vocabulario en Imágenes Peabody (TVIP), developed by Dunn, Padilla, Lugo, and Dunn (1986) is the Spanish version of the PPVT. Administration and scoring are the same as the PPVT. The split half reliabilities of the TVIP ranged from .80 to .94 (Dunn et al., 1986). The content validity of the measure with the Kauffman Assessment Battery for Children Spanish ranged from .25 to .56 and concurrent validity was .44 with the Habilidad General Ability Test (Dunn et al., 1986).

Maternal receptive language scores were not used in this study. Only three maternal receptive English and Spanish scores were available. Thus, there was not enough data to justify use. However, maternal expressive language was recorded and used in this study.

Expressive English and Spanish vocabulary. Mother and child expressive vocabulary skills were measured using the Spanish and English versions of the Woodcock-Muñoz Picture-Vocabulary, subtest of the *Woodcock-Muñoz Language Survey* (WMLS), which assesses cognitive abilities, scholastic aptitudes, and achievement (Woodcock & Mather, 1990). These assessments can be used for a wide age range, and have established reliability and validity on a normative sample (Woodcock & Muñoz-Sandoval, 1993). There are 58 items in all. Testing is continued until the participant misses six items in a row. Internal consistency reliability was reported by the authors to be .68 at age 6. Examiners who administer and score the WMLS are required to be highly trained and fluent in the language corresponding to the assessment. For the first few items of this assessment children are asked to point to pictures reflecting their receptive vocabulary knowledge. For the remaining items on the assessment participants are asked to name pictures effectively measuring their expressive vocabulary.

Maternal expressive vocabulary and reading skills were assessed by the WMLS Picture Vocabulary and Letter-Word Identification subtests, in both Spanish and English, at baseline. The Picture Vocabulary subtest predominately assesses expressive language ability at the single word level. The Letter-Word Identification sub-test predominately assesses reading identification skills. The split-half reliabilities for the Picture Vocabulary subtest across age groups ranged from .77 to .96 with a median co-efficient

of .87. The split half reliabilities for the Letter-Word Identification sub-test across age groups ranged from .88 to .98 with a median co-efficient of .93. Information regarding the concurrent validity of the subtests for adults is not reported in the Woodcock-Muñoz manual (Woodcock & Muñoz-Sandoval, 1993).

Mothers' unique words during play. Video recordings of mother-child interactions during play were transcribed by trained bilingual research assistants and analyzed for frequency counts of mother's total number of different words with the Child Language Data Exchange System (MacWhinney, 2000). All transcriptions were verified for accuracy using a consensus approach to reduce measurement error (cf. Shriberg, Kwiatkowski, & Hoffmann, 1984). Furthermore, an estimate of speech acts in Spanish and English were recorded. Overall, the majority (93%) of caregiver language used during play was in Spanish.

In addition, participants were also asked six questions about communication patterns between the target child and other members of the household. These questions, answered by mothers, asked what language the child speaks to their mother and father, and the converse: what language each person speaks to the child. Answers were on a 5-point likert scale ranging from 1 (*only Spanish*) to 5 (*only English*).

Home Literacy Measure

The Home Observation for Measurement of the Environment (HOME) uses an observational unstructured interview approach to assess parent-child interactions and parents' use of a variety of objects and experiences with toddlers that provide opportunities for stimulation and growth (Caldwell & Bradley, 1984). The assessment

includes questions about the amount and types of reading material in the home, learning activities the family participates in outside of the home such as going shopping or to a museum, and how parents interact with their children during the interview. The HOME has been used in many studies with a variety of racial/ethnic groups. The internal consistency of the HOME for 3- to 6-year-old children is reported as a Kuder-Richardson-20 coefficient of .93.

Procedures

Data for participants of the project who completed assessments at 36 and 48 months were analyzed for this study. Study procedures for this project included an in-home direct child assessment, parent interview, and parent assessment. During the initial home visit, consent forms were presented to parents in their preferred language, mothers were assessed, and background, demographic, and contact information were obtained from the family. Mothers were tested during the initial visit only, but demographic information was updated in subsequent assessments. Assessments were scheduled at convenient times for parents. Mothers were present during all assessments and standardized assessment procedures were used. Parents were compensated for their participation with a monetary incentive.

To ensure adequate understanding and uniformity all assessors were bilingual and the interviews and forms were offered in both English and Spanish. All questions and forms were read to parents in their preferred language, with 100% choosing Spanish. Assessors were trained to use standardized assessment procedures by role-playing testing situations, practicing test administrations with pilot children not in the research sample,

and reviewing videotapes of those pilot testing sessions.

Research participants' identifying information was removed and recoded with numbers. Code numbers and identities have been stored separately in locked files.

Identity codes are unassociated with published results.

Analyses

To begin, we examined basic descriptive data (mean, standard deviation, and range) for each variable to determine if the data met the basic assumptions for the proposed analyses and to identify any outliers. Next we looked at correlations to identify which social, linguistic, and literacy factors were statistically significantly related to the outcome variables of child Spanish and English receptive and expressive language scores.

For the first research question, multivariate regression analyses were used to identify which social, linguistic, and literacy factors in the home significantly predict these 4-year-olds' English language scores after controlling for their previous language score at 36 months and maternal acculturation. Only those social, linguistic, and literacy factors found to be correlated with the English language scores were included in the regression model.

For the second research question, multivariate regression analyses were used to identify which social, linguistic, and literacy factors in the home significantly predict 4-year-olds' Spanish language scores after controlling for their previous language score at 36 months and maternal enculturation. Only those social, linguistic, and literacy factors found to be correlated with the Spanish language scores were included in the regression model.

CHAPTER IV

RESULTS

In this chapter, analyses will be reported to address the research questions. For these questions, a p value of .05 was used as a cut-off point to determine statistical significance. All analyses were conducted using SPSS version 21. Questions will be discussed in the order they were listed in Chapter II. Descriptive statistics and intercorrelations among children's language skills in English and Spanish were examined first. Predictor variables intercorrelations were then examined to identify any potential threats to multicollinearity. Next, predictor variables were examined in relation to primary outcome variables of children's English and Spanish vocabulary. Finally, regression models were tested to identify significant predictors of the language outcomes.

Description of Children's Vocabulary

On average, children were more than two and a half standard deviations below the mean in English receptive vocabulary as measured by the PPVT at 36 months, and had not gained much ground by 48 months. The WMLS does not use standard scores. Therefore, age equivalent scores were used for descriptive purposes. In English expressive vocabulary, children were well below the two-year age equivalency at 36 months, but had risen to the two-year one-month level by 48 months. On average, children's Spanish receptive vocabulary was within the average range at 36 months. However, by 48 months the average had dropped one standard deviation below the mean. In Spanish expressive vocabulary, children were, on average, eight months below age

level at 36 months and 16 months below age level at 48 months. Variability in the ages of the children ranged from 33 to 44 months ($M = 37$ months) at the 36 month assessment time point, and 46 to 51 months ($M = 48$ months) at the 48 month assessment time point.

Intercorrelations of children's vocabulary in both languages at all time points are presented in Table 1. English receptive vocabulary at 48 months was significantly positively correlated with English expressive vocabulary, at 36 months, $r(76) = .31, p = .006$, and 48 months, $r(76) = .51, p < .001$. Spanish expressive vocabulary at 36 months was significantly correlated with both Spanish expressive, $r(76) = .40, p < .001$, and receptive, $r(77) = .42, p < .001$, vocabulary at 48 months. Additionally, at 36 months, English and Spanish receptive vocabularies were significantly correlated, $r(75) = .30, p = .008$. The correlation between Spanish receptive vocabulary at 36 months and Spanish expressive vocabulary at 48 months is surprisingly low, $r(74) = .14, p = .244$.

Table 1

Intercorrelation of Children's Vocabulary in Both Languages at All Time Points

Variables	1	2	3	4	5	6	7
36 months							
1. English expressive	–						
2. English receptive	.28*	–					
3. Spanish expressive	.24*	.05	–				
4. Spanish receptive	.09	.30**	.22	–			
48 months							
5. English expressive	.26*	.26*	.07	.10	–		
6. English receptive	.31**	.23	.15	.01	.51**	–	
7. Spanish expressive	-.12	-.13	.40**	.14	.06	-.11	–
8. Spanish receptive	-.06	-.06	.42**	.23*	.17	.25*	.27*

* = $p < .05$, ** = $p < .01$.

Correlations Among Social, Linguistic, and Literacy Environment Factors

Intercorrelations among predictor variables were also examined. As presented in Table 2, mothers' degree of acculturation was significantly positively correlated with the language the mothers spoke to their children, $r(76) = .58, p < .001$, as well as mothers' English vocabulary, $r(76) = .73, p < .001$. Additionally, the language mothers spoke to their children was also highly correlated with mother's English vocabulary, $r(76) = .31, p = .006$. These three variables are highly correlated enough to violate the assumption of non-multicollinearity if included together in a single regression model.

The learning and literacy environment was highly positively correlated with acculturation, $r(76) = .40, p < .001$. Therefore, homes with an enriched learning environment were also homes where the mother was highly acculturated. Additionally, acculturation and enculturation were highly negatively correlated, $r(76) = -.42, p < .001$. The negative correlation between enculturation and acculturation indicates participants who were acculturated were not very enculturated and vice versa.

Household income was highly positively correlated with the learning and literacy environment, $r(76) = .30, p = .008$, indicating that families with high incomes also provided rich learning and literacy environments. Mothers' English vocabulary was correlated with their years of education, $r(77) = .33, p = .004$, implying that mothers with more years of education were more proficient in English. The language mothers and fathers spoke to their children was highly correlated, $r(71) = .36, p = .002$, suggesting mothers and fathers often spoke the same language to their children.

Table 2

Intercorrelation of Predictor Variables

Variables	1	2	3	4	5	6	7	8	9	10
1. Household income										
2. Mothers' years of education	.25*									
3. Degree of acculturation	.26*	.36**								
4. Degree of enculturation	-.15	-.06	-.42**							
5. Language mothers spoke	.03	.24*	.58**	-.16						
6. Language fathers spoke	.02	-.01	.07	-.02	.36**					
7. Number of older siblings	.03	-.29*	-.11	.13	-.03	.08				
8. Mothers' English	.29*	.33**	.73**	-.20	.31**	.08	.00			
9. Mothers' Spanish	.05	.20	.02	.14	-.18	-.10	.12	.24*		
10. Learning and literacy environment	.30**	.23*	.40**	-.13	.21	.09	-.07	.38**	.25*	
11. Mothers' unique words	-.13	.28*	.01	.25	.19	-.03	.02	-.04	.19	-.02

* = $p < .05$, ** = $p < .01$.

Correlations Among Predictor and Outcome Variables

The intercorrelations among predictor variables and children's language outcome variables (see Table 3) showed English expressive vocabulary was positively correlated with both the language and literacy environment, $r(75) = .27, p = .020$, and the unique words the mothers spoke, $r(53) = .31, p = .026$. Thus, children with larger expressive vocabularies were more likely to have richer home language and literacy environments and have mothers who use more unique words than those children with smaller English expressive vocabularies. Only two variables were correlated with English receptive

vocabulary: Language fathers spoke to their children, $r(71) = .27, p = .024$, and number of older siblings, $r(77) = .29, p = .011$. Children with larger English receptive vocabularies were more likely to have fathers who spoke English to them and elder siblings.

Spanish expressive vocabulary was highly negatively correlated with the degree of acculturation, $r(75) = -.24, p = .037$, and mothers' English vocabulary, $r(76) = -.31, p = .007$. Therefore, English-speaking or acculturated mothers have children who do not speak as much Spanish. Children's Spanish receptive vocabulary was significantly negatively correlated with both the mothers' degree of acculturation, $r(76) = -.28, p = .014$, and the language the mothers spoke to their children, $r(76) = -.26, p = .024$. The latter correlation is in the direction expected. The Culture Language Survey scored the question "What language do you speak to "Target Child" in?" on a scale from 1 (*only Spanish*) to 5 (*only English*). Therefore, a lower score, indicating speaking more Spanish than English, on the Culture Language Survey would be negatively correlated with children's higher Spanish vocabulary. Children's Spanish receptive vocabulary was also positively significantly correlated with mothers' degree of enculturation, $r(76) = .29, p = .014$, mothers' Spanish vocabulary, $r(76) = .29, p = .011$, and mothers' unique words during play interactions, $r(54) = .29, p = .036$. Thus, children with greater Spanish receptive vocabularies had mothers who were less acculturated, more enculturated, more likely to speak Spanish to their children, had higher Spanish vocabulary, and used more unique words in their interactions with their children than children with lower Spanish receptive vocabulary. As mentioned previously, 93% of the mothers' language during play interactions was in Spanish indicating mothers' unique words were often in Spanish.

Table 3

Intercorrelation of Predictors and Children's Vocabulary at 48 Months

Predictor variable	English		Spanish	
	Expressive	Receptive	Expressive	Receptive
Household income	.18	.22	-.07	-.11
Mothers' years of education	-.04	-.16	.07	-.13
Degree of acculturation	.12	-.05	-.24*	-.28*
Degree of enculturation	.02	.00	.21	.29*
Language mothers spoke	.15	-.04	-.10	-.26*
Language fathers spoke	.21	.27*	-.17	.02
Number of older siblings	.17	.29*	-.17	-.01
Mothers' English	.17	.14	-.31**	-.19
Mothers' Spanish	.21	.11	-.00	.29*
Learning and literacy environment	.27*	.16	-.14	.04
Mothers' unique words	.31*	-.02	-.01	.29*

* = $p < .05$, ** = $p < .01$.

Regressions

Several regression models were developed to determine which social, linguistic, and literacy factors measured at 36 months best predicted Spanish and English vocabulary at 48 months. The regression models were informed by correlations among predictor variables and language outcomes. The majority of the predictor variables significantly correlated with either English or Spanish language outcomes were included in both the English and Spanish language models for consistency. Thus, the regression models are the same for both expressive and receptive vocabulary and the Spanish model is similar to the English model. As a first step, the corresponding Spanish or English expressive or receptive vocabulary at 36 months was entered as well as the corresponding

mothers' acculturation or enculturation to control for prior vocabulary and degree of acculturation. This was done to examine the unique contributions of the social, linguistic, and literacy environment factors above and beyond previous language and mothers' acculturation.

Research Question One

What social (family income, maternal education, acculturation), linguistic (language spoken by parents, number of siblings, maternal language proficiency and number of unique words), and literacy environment factors in the home, predict English language development in four-year-old children from low-income, predominantly Spanish-speaking families? For the English models, variables were selected primarily upon correlations. The unique words the mothers spoke and the learning and literacy environment were used in both the Spanish and English models. These variables were both highly correlated with English expressive vocabulary. Variables unique to the English models were the language the fathers usually spoke to their children and the number of older siblings. Both of these variables were highly correlated with English receptive vocabulary.

The results of the regression model predicting English expressive vocabulary are shown in Table 4. The regression analysis yielded a non-significant equation $F(6, 40) = 1.83, p = .117$, with the predictor variables accounting for an additional 12% of the variance in English expressive vocabulary above and beyond previous English expressive vocabulary and mothers' acculturation. The effect size for the second step in this analysis ($f^2 = .28$) was found to exceed Cohen's (1988) convention for a medium effect ($f^2 = .25$).

Table 4

Hierarchical Regression Predicting Children's English Expressive Vocabulary at 48 Months

Variable	Children's English expressive vocabulary at 48 months		
	Step 1 <i>B</i>	Step 2	
		<i>B</i>	95% CI
Constant	261.20**	268.33**	[122.02, 414.63]
Previous vocabulary	.39*	.30	[-0.10, 0.69]
Degree of acculturation	-5.18	-6.50	[-15.72, 2.73]
Mothers unique words		1.05*	[0.05, 2.05]
Learning and literacy environment		22.44	[-25.91, 70.78]
Language fathers spoke		2.43	[-3.11, 7.96]
Number of older siblings		.22	[-3.20, 3.65]
R^2	.09	.22	
F	2.28	1.83	
ΔR^2		.12	
ΔF		1.55	

Note. $N = 47$. CI = confidence interval.

* = $p < .05$, ** = $p < .01$.

Previous English expressive vocabulary was a significant predictor of English expressive vocabulary at 48 months on the first step of the model, but not the second. The number of unique words spoken by the mothers during their play interactions with their children was the only significant predictor of 48-month English expressive vocabulary when children's previous English expressive vocabulary, mothers' acculturation, the home language and literacy environment, the language the fathers spoke to their children, and the number of older siblings were all taken into account.

The results of the regression model predicting English receptive vocabulary are shown in Table 5. The regression analysis yielded an equation that approached

Table 5

Hierarchical Regression Predicting Children's English Receptive Vocabulary at 48 Months

Variable	Children's English receptive vocabulary at 48 months		
	Step 1 <i>B</i>	Step 2	
		<i>B</i>	95% CI
Constant	52.23**	39.09*	[6.15, 72.04]
Previous vocabulary	.32*	.31*	[0.02, 0.59]
Degree of acculturation	-7.27*	-6.41	[-14.32, 1.49]
Mothers unique words		-.23	[-1.16, 0.70]
Learning and literacy environment		9.71	[-34.33, 53.76]
Language fathers spoke		3.64	[-1.56, 8.83]
Number of older siblings		2.24	[-0.94, 5.42]
R^2	.15	.23	
F	4.18*	2.14	
ΔR^2		.08	
ΔF		1.10	

Note. $N = 49$. CI = confidence interval.

* = $p < .05$, ** = $p < .01$.

significance, $F(6, 42) = 2.14$, $p = .069$, with the predictor variables accounting for an additional 8% of the variance in English receptive vocabulary above and beyond previous English receptive vocabulary and mothers' acculturation. The effect size for the second step in this analysis ($f^2 = .31$) was found to exceed Cohen's (1988) convention for a medium effect ($f^2 = .25$). Both previous English receptive vocabulary and mothers' acculturation were significant predictors of English receptive vocabulary at 48 months in the first step of the model. Previous English receptive vocabulary continued to be a significant predictor of children's English receptive vocabulary at 48 months when mothers' acculturation, the home language and literacy environment, the language the

fathers chose to spoke to their children, and the number of older siblings were all taken into account.

Research Question Two

What social (family income, maternal education, enculturation), linguistic (language spoken by parents, number of siblings, maternal language proficiency and number of unique words), and literacy environment factors in the home, predict Spanish language development in four-year-old children from low-income, predominantly Spanish-speaking families? For the Spanish models, variables were selected to parallel the English models while being informed by the correlations among predictor and language outcome variables. Once again, models for both Spanish expressive and receptive vocabulary were the same. The number of unique words the mothers spoke during play and the learning and literacy environment, were retained from the English model, even though the learning and literacy environment was not significantly correlated with Spanish vocabulary as this variable is of particular interest to this study. Variables unique to the Spanish regression models were the language mothers usually spoke to their children and mothers' Spanish vocabulary. Both variables were highly correlated with Spanish receptive language and were well supported by the literature as being especially influential for children's Spanish vocabulary development.

The results of the regression model predicting Spanish expressive vocabulary are shown in Table 6. The regression analysis yielded an equation that approached significance, $F(6, 45) = 2.02, p = .083$, with the predictor variables accounting for an additional 4% of the variance in Spanish expressive vocabulary above and beyond

Table 6

Hierarchical Regression Predicting Children's Spanish Expressive Vocabulary at 48 Months

Variable	Children's Spanish expressive vocabulary at 48 months		
	Step 1 <i>B</i>	Step 2	
		<i>B</i>	95% CI
Constant	242.46**	292.24**	[89.00, 495.48]
Previous vocabulary	0.37**	0.40**	[0.10, 0.69]
Degree of enculturation	8.10	8.79	[-4.83, 22.42]
Mothers unique words		-0.30	[-1.28, 0.68]
Learning and literacy environment		-19.59	[-55.62, 16.45]
Language mothers spoke		1.41	[-7.67, 10.50]
Mothers' Spanish		-0.10	[-0.42, 0.23]
<i>R</i> ²	.17	.21	
<i>F</i>	5.08**	2.02	
ΔR^2		.04	
ΔF		0.58	

Note. *N* = 52. CI = confidence interval.

* = $p < .05$, ** = $p < .01$.

previous Spanish expressive vocabulary and mothers' enculturation. The effect size for the second step in this analysis ($f^2 = .27$) was found to slightly exceed Cohen's (1988) convention for a medium effect ($f^2 = .25$). In this model, Spanish expressive vocabulary at 36 months was a significant predictor of Spanish expressive vocabulary at 48 months in both the first and second steps of the model after controlling for mothers' enculturation, the unique words spoken by the mothers, the home learning and language environment, the language mothers spoke to their children, and mothers' Spanish vocabulary.

The results of the regression model predicting Spanish receptive vocabulary are shown in Table 7. The regression analysis yielded a significant equation, $F(6, 46) = 2.52$, $p = .034$, with the predictor variables accounting for an additional 12% of the variance in Spanish receptive vocabulary above and beyond Spanish receptive vocabulary at 36 months and mothers' enculturation. The effect size for the second step in this analysis ($f^2 = .33$) was found to exceed Cohen's (1988) convention for a medium effect ($f^2 = .25$). Mothers' enculturation was a significant predictor of Spanish receptive vocabulary at 48 months in the first step of the model. Additionally, both mothers' enculturation and mothers' Spanish vocabulary approached significance in the second step after controlling

Table 7

Hierarchical Regression Predicting Children's Spanish Receptive Vocabulary at 48 Months

Variable	Children's Spanish receptive vocabulary at 48 months		
	Step 1 <i>B</i>	Step 2	
		<i>B</i>	95% CI
Constant	21.85	-62.94	[-190.38, 64.49]
Previous vocabulary	0.24	0.27	[-0.09, 0.64]
Degree of enculturation	10.87**	7.32	[-1.95, 16.58]
Mothers unique words		0.54	[-0.12, 1.21]
Learning and literacy environment		-1.23	[-26.91, 24.46]
Language mothers spoke		-4.08	[-10.14, 1.99]
Mothers' Spanish		0.19	[-0.05, 0.42]
R^2	.13	.25	
F	3.71*	2.52*	
ΔR^2		.12	
ΔF		1.81	

Note. $N = 53$. CI = confidence interval.

* = $p < .05$, ** = $p < .01$.

for the children's Spanish expressive vocabulary at 36 months, the unique words spoken by the mothers, the home learning and language environment, and the language mothers spoke to their children.

In summary, only the regression model predicting Spanish receptive vocabulary produced a significant F statistic. Two models, Spanish expressive and English receptive vocabulary, approached significance. Only the model for English expressive vocabulary yielded a non-significant F statistic. It is also notable that all four models achieved above medium effect sizes (Cohen, 1988).

CHAPTER V

DISCUSSION

Previous research on bilingual children's language development has focused on children in upper-middle-class environments where first languages are not at risk of being lost. In this study, we explored what home environment characteristics in low-income Latino families influence children's development in both English and Spanish. This study demonstrated that children learning two languages develop in each language in a distinctly different way than monolingual language development. Additionally the tools currently in use to measure the home environment in Latino homes may not be culturally sensitive enough to identify all the possible positive influences. The home environment provided by mothers is predictive of English expressive vocabulary, further encouraging parents to continue speaking their first language in the home. Finally, it is clear that there is still much work to be done to fully understand the mechanisms that predict maintenance and development of Spanish as a first language.

Trends in Bilingual Language Development

Similar to other studies (Miccio, Tabors, Páez, Hammer, & Wagstaff, 2003) young children from Spanish-speaking homes living in the United States in this study varied greatly in their language ability and demonstrated an uneven acquisition of English and Spanish. These children demonstrated significant English vocabulary delays as would be expected, however, their English expressive and receptive vocabulary scores had improved slightly by 48 months. This is still impressive given that language growth

was measured in relevance to age, indicating that as children aged the bar was set ever higher. So, although these children were still below average, moving closer to the norm in 12 months is still worthy of note.

However, Spanish vocabulary displayed some concerning weakening over time which is a trend reflected in other studies (Anderson, 2004; Kohnert, 2004; Wong-Fillmore, 1991). Spanish receptive vocabulary was within the average range at 36 months, but dropped one standard deviation below the mean by 48 months. Similarly children were, on average, 8 months below age level at 36 months in Spanish expressive vocabulary and dropped to 16 months below age level at 48 months.

The modest correlations between 36 and 48 months English vocabulary suggest variability among children's levels of English proficiency at the two time points. In contrast, the correlations among Spanish vocabulary scores suggest children with high expressive Spanish vocabulary scores at 36 months are also likely to have high expressive and receptive Spanish vocabulary scores one year later. This was not true for Spanish receptive vocabulary. It seems the children in this sample may be losing more ground in speaking Spanish than in understanding Spanish. This may be evidence in support of a recently identified trend labeled as the receptive-expressive gap. Recent research by Gibson, Oller, Jarmulowicz, and Ethington (2012) focused on young Spanish-English bilinguals. They report a significantly larger gap between receptive and expressive vocabulary in Spanish than in English. Even when children were divided into groups based upon levels of English exposure, the gap in Spanish persisted. Furthermore, variables predicting both receptive and expressive vocabulary scores failed to predict the receptive-expressive gap. The authors hypothesized that possibly during early stages of

learning a second language children are suppressing or inhibiting their first language, in testing situations, in order to focus on the new language (Gibson et al., 2012). The authors suggested perhaps the results would be different if children were tested in a home environment instead of a school where they may feel pressure to conform to their peer's expectations about language. However, the data gathered for the present study was gathered within the home and the gap persists. Furthermore, research in this area, thus far, has looked at children only within English immersion classrooms where rapid English language acquisition is expected. The present study is unique because it finds evidence of this gap before children are immersed in English indicating that even when a second language is presented in small doses or sporadically, children begin to attend to a second language and mentally suppress their first language early on.

Social, Linguistic, and Literacy Environment Factors

The intercorrelations among the social, linguistic, and literacy characteristics of these families provided interesting contextual information. Not surprisingly, mothers' who were more acculturated had greater English vocabulary, and were more likely to speak English to their children than mothers who were less acculturated. This pattern may be an indication that this sample followed Gordon's (1964) assimilation model, where English language learning is an important step towards acculturation. In addition, mothers who reported greater acculturation also reported higher household income than mothers with less acculturation.

Mothers with greater learning and literacy environments were the mothers who were also more acculturated than those with lesser learning and literacy environments.

This finding is somewhat concerning because it may indicate that the measure of the learning and literacy environment, a subscale from the HOME, may not be particularly well suited for this Latino population. Instead, the HOME may be measuring the extent these families are blending into mainstream culture's ideals about what promotes literacy in the home environment. A factor analysis conducted by Bradley, Mundfrom, Whiteside, Casey, and Barrett (1994) indicated the factor structures of the HOME were not in agreement with the organization of the items into subscales for Hispanics specifically, even though most factors did correspond to current subscales. The authors suggested acculturation may be the reason for the different factor structure for Hispanics than for Black and Caucasian families. Furthermore, Garcia-Coll (1990) has suggested that differences in SES and acculturation may also contribute to dissimilarities between child-rearing practices of Mexican American and White American parents. Mexican American children are socialized to maintain close family ties and become contributing members of the family as opposed to being socialized toward individual achievement (Fillmore, 1988; as cited in Bradley et al., 1994). Mexican American parents' teaching style is also based more on observation than literacy; further indicating these families may be developing useful habits within their homes, although not directly associated with literacy (Fillmore, 1988; as cited in Bradley et al., 1994). Indeed, vital components of Latino homes that foster literacy and language may be present in the families in this sample; however, the measures currently in use may be missing these elements simply because they differ from those typically found in Caucasian households.

Is it interesting to note that mothers' unique Spanish vocabulary was a stronger predictor than our measurement of the home environment or acculturation. This is an

important finding as we attempt to identify what some of the exact mechanisms are in making a real difference in the life-long trajectories of children similar to those in this study. It could possibly be a starting point for the meaningful behaviors to observe in Latino homes.

English

Social, linguistic, and literacy predictors of English vocabulary were examined individually through correlations and as a group in the regression models. As is consistent with current literature, young Latino children with larger English receptive vocabularies were more likely to have older siblings (Ellis et al., 2002; Wong-Fillmore, 1991). Similarly, children with greater English receptive vocabulary had fathers who were more likely to speak English than children with less English receptive vocabulary. This finding is also consistent with literature indicating fathers are less likely than mothers to retain a heritage language, and they are, thus, more likely to become conduits through which English may be brought into the home and passed on to children (Veltman, 1981). It is possible then that fathers are having a similar influence as siblings in young children's English vocabulary development. However, it is important to note, once again, this may or may not be the case because fathers did not actually indicate what language they spoke to their children in, but rather mothers were asked what language they perceived fathers spoke to their children the most. Additionally, all current literature indicates no paternal specific influence on children's propensity to retain a home language. Fathers who speak a second language at home are just as likely to have at least one of their children speak that language as mothers who speak a second language at home (De Houwer, 2007).

Maternal influence on children's vocabulary development is well documented in bilingual and monolingual research (Bohman et al., 2010; Brooks-Gunn et al., 2002; Golberg et al., 2008; Hammer et al., 2009). In the present study, mothers' unique words used during mother-child play interactions significantly predicted children's English expressive vocabulary above and beyond children's previous vocabulary score and mothers' acculturation. This supports previous findings that Spanish language retention promotes English development (August & Shanahan, 2006; Genesee et al., 2006). However, this is one of the first studies showing this influence as early as 48 months with children not attending preschool. Furthermore, mothers' unique words were also significantly positively correlated with English expressive vocabulary. Because the majority of the mothers' words spoken were in Spanish, as 93% of the caregiver language during play interactions were in Spanish, it seems maternal Spanish language development has an impact upon children's English development. As is consistent with Cummin's (1981) CUP model, it appears that as long as mothers are providing input, in either language, there will be a benefit to children's language growth. Children's English language growth is not short-changed when mothers choose to speak using a large Spanish vocabulary. Furthermore, the combination of mother's unique words, the learning and literacy environment, the language spoken by the father, and the number of older siblings accounted for an additional 12% of the variance, above and beyond children's previous English expressive vocabulary and mothers' acculturation accounting for 22% of the total variance.

Children's previous English receptive vocabulary significantly predicted children's English receptive vocabulary at 48 months. Mothers' unique words, the

linguistic and literacy environment, language spoken by the father, and the number of older siblings were not significant predictors above and beyond children's previous vocabulary and mothers' acculturation. However, these variables accounted for an additional 8% of the variance of children's English receptive vocabulary accounting for 23% of the total variance. The predictive power of children's previous language scores indicates the importance of early language development. English acquisition, specifically, is of paramount importance for these children as it has long lasting academic repercussions. This is especially true for bilingual children as they attempt to hit the constantly moving target of age appropriate vocabulary growth in two languages. The ever present achievement gap between children from Spanish-speaking homes and monolingual students is a nationwide concern. The roots of these later educational problems can be traced to the years before children enter school. A nationally representative survey of parents of 3- to 5- year-old children highlights the early origins of the gap between Hispanic and Caucasian, English-speaking children (Zill, Collins, West, & Hausken, 1995). Early experience sets the trajectory for children's development as they age, with a noted disparity between high and low SES homes (Hart & Risley, 1995). Although household income was not included in the regression models due to multicollinearity concerns, it did have pervasive correlations with many other predictor variables.

Both models for English expressive and receptive vocabulary had medium effect sizes. It is not clear why mothers' unique words in Spanish would predict English expressive language, but not receptive language. In any case, the finding that mothers' Spanish unique words significantly predicted children's English expressive vocabulary is

noteworthy and supports the importance of a rich language environment in families' home language for later English vocabulary, an important indicator of early academic success (Carlisle et al., 1999; Dickinson et al., 2004; Durgunoğlu et al., 1993; Raikes et al., 2006).

Spanish

Social, linguistic, and literacy predictors of Spanish vocabulary were examined individually through correlations and as a group in the regression models. It is interesting to note the negative correlation between mothers' degree of acculturation and children's Spanish expressive and receptive vocabulary. Furthermore, mothers' English vocabulary was also even more strongly negatively correlated with children's Spanish expressive vocabulary. This may indicate that as mothers become more proficient in English, and more acculturated into mainstream society, they may stop providing the supports necessary to promote their children's Spanish vocabulary, and thus, negatively influence children's Spanish vocabulary. Studies report parents with more education are less likely to be fluent in a non-English language (Stevens, 1985) and their children rapidly lose their knowledge of their parents' native tongues (Portes & Hao, 1998; Portes & Schauffler, 1994). Mothers in this sample who were more educated were more likely to be acculturated, speak to their children in English, and have more advanced Spanish vocabularies. So although maternal education itself was not highly negatively correlated with children's Spanish vocabulary outcomes, perhaps the corollaries of high maternal education have other more pervasive influences on children's Spanish vocabulary. Furthermore, the negative correlation between mothers' English and children's Spanish

expressive vocabulary may support research indicating maternal use of English does not help young Spanish-English dual language learners increase their children's English vocabulary, but it does slow children's growth of Spanish vocabulary (Hammer et al., 2009).

Spanish receptive and expressive vocabulary models varied in their predictive abilities even though the same social, linguistic, and literacy factors were being used in both models. Children's previous Spanish vocabulary was a strong predictor of children's Spanish expressive vocabulary at 48 months. This model accounted for the smallest amount of additional variance out of all four models. The combination of mother's unique words, the learning and literacy environment, the language spoken by the father, and the number of older siblings accounted for only an additional 4% of the variance above and beyond children's previous Spanish vocabulary and mothers' enculturation. This model still accounted for 21% of the variance and yielded a medium effect size indicating these results may still be meaningful.

The model for Spanish receptive vocabulary yielded the most unique results of the four models tested. This model yielded a significant *F* value and had the largest effect size. Additionally, it was the only model where children's previous language was not significant in either step. The combination of mother's unique words, the learning and literacy environment, the language spoken by the mother, and the mothers' Spanish vocabulary accounted for an additional 12% of the variance above and beyond children's previous Spanish vocabulary and mothers' enculturation, accounting for one-quarter of the variance overall. Even though these models had medium effect sizes, only children's previous Spanish vocabulary was a significant predictor for the whole model and this was

true for only Spanish expressive vocabulary. The remaining social, linguistic, and literacy environment factors were not significant predictors.

This finding has mixed meaning for future research. On the one hand, we would expect the literacy environment and mothers' unique words to be significant predictors of Spanish vocabulary. However, Duursma et al. (2007), in a study of bilingual homes, looking at factors similar to the ones examined here, developed a significant regression model to predict Spanish vocabulary for students which did not include any environmental factors, even though those variables were used in the model for predicting students' English vocabulary. Her model included variables related only to familial language preference. As previously mentioned, our measure of the home environment may be missing important factors in Latino homes, thus until research can uncover a more accurate and meaningful home environment measure, it may continue to be insignificant even though it is a prevailing theme in monolingual language development. The unique words spoken by the mothers may be the more in-depth variable we are looking for to predict Spanish vocabulary in children. In the present study mothers' unique words were significantly correlated with children's Spanish receptive vocabulary. This indicates mothers who used more unique words during play interactions with their children had children who understood more Spanish words than those whose vocabularies were less complex during these interactions. However, as mentioned previously, it was not a significant predictor in this model. Although the link between maternal vocabulary complexity and children's language development is very common in the English language development literature (Hoff, 2003; Pan, Rowe, Singer, & Snow, 2005), it has not been examined closely in research of Spanish-speaking children in the

United States. Further research is needed to truly understand if maternal language complexity is a proficient predictor of Spanish language maintenance for bilingual children in the United States.

The two most surprising non-significant variables in this model were the language spoken by the mother and the mothers' Spanish vocabulary. Contrary to research indicating that parents' usage of a child's first language in the home supports children's development of that language (De Houwer, 2007; Veltman, 1981), our findings did not support that simply reporting the degree of English or Spanish used in the home was especially predictive of children's vocabulary in English or Spanish at 48 months. The literature also clearly indicates maternal Spanish vocabulary should be good predictors of children's Spanish vocabulary (Duursma et al., 2007; Gutiérrez-Clellen & Kreiter, 2003; Place & Hoff, 2011; Thordardottir, 2011). Differences in measures used and sample size may be contributing to why these two factors were not predictive in this model as would have been expected.

In summary, even though several social, linguistic, and literacy environment factors were associated with Spanish and English vocabulary, when entered into models together only mothers unique words for English and children's previous vocabulary scores for Spanish remained significant predictors of expressive language. For receptive vocabulary only children's previous English vocabulary scores were significantly predictive of English receptive vocabulary. However, almost one-quarter of the variance was accounted for in all four models predicting English and Spanish vocabulary with the combinations of social, linguistic, and literacy environment factors included and all four models had medium effect sizes. These findings suggest it may be the combinations of

these family characteristics and not individual variables themselves that are our best predictors for low-income, bilingual children's vocabulary development. Furthermore, mothers' use and complexity of Spanish not only helps these children to maintain their home language, but also helps to promote their English language development. This is an important finding which extends previous work documenting the importance of the home language in promoting English language and literacy practices to a much younger age; even before children begin any form of English immersion preschool or formal schooling.

Limitations

There are several limitations to this study that should be noted and addressed in future research. The sample of comparison group children selected for this study originally was sufficient for the planned analyses. However, some of the specific measures chosen for inclusion were missing cases, which reduced the sample size significantly. In deciding whether to retain these variables at the cost of losing cases we decided that although we may have lost power we retained meaning by choosing a variable, mothers' unique words, that was a more accurate indication of the day-to-day interactions within the home. This choice could have contributed to the lack of significance for the social, linguistic, and literacy environment factors examined. The regression models themselves had medium effect sizes and the betas of many of these variables approached significance. However, only two of the variables reached statistical significance. Replicating this study with a larger sample size may indicate these variables are significant predictors of children's vocabulary as demonstrated in other literature.

Although the vital importance of mothers in young children's lives has been highlighted in this study, it is important not to downplay the potentially powerful influence of other members of the family. Study of paternal influence and the influence of siblings in monolingual children has yielded significant results. In this study we were fortunate to have very rich and descriptive measures of both the unique words the mother spoke, and maternal acculturation. However, the measures of father and siblings' involvement made it difficult to get a clear picture of sibling and father influences. As is common, the data gathered focused primarily upon the mother-child dyad with limited information, from the mothers' perspectives, on other influences. It would have been better if we could have had recorded and coded data for those two groups. However, such an undertaking would probably necessitate a separate study entirely. Indeed, it is difficult to imagine a study where the family as a whole, and in their individual sub-sections, could be studied in a comprehensive and meaningful way without taking an excruciating toll on both researchers and families.

Finally, the measures selected may also have limited our findings. Specifically the measure of the home environment is somewhat lacking in its sensitivity to important positive aspects of the home environment specific to Latino families. A measure more sensitive to Latino families' home environment may take into account more day-to-day verbal teaching practices or through methods of children observing older household members rather than literacy-based activities.

Implications for Practice and Future Directions

An important message to be taken from this research into homes and classrooms is the importance of keeping home languages alive. Even though we were unable to find many significant predictors of Spanish language development, there were many connections between maternal Spanish and children's English. Historically teachers and policymakers have encouraged parents to speak to their children in English only in an effort to boost their children's achievement. Furthermore, the cultural atmosphere in the United States has not always been one to encourage immigrants to retain their first languages. However, this research, along with others, indicates there are many benefits to be reaped when parents speak their home language. Teachers and policymakers armed with this information can encourage parents to continue to speak the language they feel most comfortable communicating in without fear of delaying their children's development as a result.

In light of the importance of mothers' unique vocabulary, it seems it is important to encourage parents to vary their vocabulary and increase the complexity of the words they use. Pre-literate children can only learn the words they hear. Therefore, it is important to introduce them to new words to help build their vocabulary. For bilingual parents, who may speak only their first language at home, their children may only hear words in their first language related to things within the home. Unless parents are thoughtful in their attempts to bring outside vocabulary into the home, children's first language vocabulary may be diminished simply because there are so few new words being spoken around them. This is especially poignant for low-income homes where

there may not be many words being spoken at all (Heath, 1990). It is not necessarily essential for parents to introduce particularly complicated or long words into their daily vocabulary. Rather, it is more important for parents to be thoughtful in the words they choose to speak and engage in activities to bring in diverse words such as storytelling or booksharing.

An important future direction to be gleaned from this study is the importance of developing a culturally sensitive measure of Latino home learning and literacy environments. Although the HOME is an excellent measure, and has been used in many other studies with Latino populations, it seems that it may still be falling short in truly measuring the full extent of the Latino HOME learning and literacy environment. As an example, the HOME specifically asks how many books are within the home for children. However, culturally, Latinos typically do not build in-home libraries as is common in Caucasian cultures. The HOME does not ask many questions about interaction with extended family members, religiosity, or community connectedness, which all may be important learning opportunities for Latino children. In order to identify what may be most meaningful in Latino cultures, researchers should conduct qualitative research focused on identifying what specific types of learning-promoting behaviors are present in Latino homes. Without spending quality time in Latino immigrant homes, it would be difficult to pinpoint which of the many home environment variables may be the most influential. Being able to understand specific behaviors already present in Latino homes would allow researchers and practitioners to build upon these strengths to provide better programs, services, and information for this rapidly growing section of the United States population while still honoring the culture so valuable to Latino families.

In conclusion, this study found variables within the home significantly predict English and Spanish vocabulary development in young, low-income, bilingual children. Mothers' influence was of particular importance, especially their own vocabulary and language development. Further research is needed to better understand both the unique characteristics of Latino homes in the United States and the intricate network of influences acting upon developing bilingual children.

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