

**EXPLORING THE UNDERLYING FACTOR STRUCTURE OF THE HOME  
LITERACY ENVIRONMENT (HLE) IN A SPANISH TRANSLATION OF THE  
FAMILIA INVENTORY**

A Dissertation

by

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## **ABSTRACT**

Differences in children's skills at the beginning of formal schooling have been reported, with Hispanic children, often performing below their Caucasian counterparts. The home literacy environment (HLE) has been reported to be the cause of the early differences, but the paucity of Spanish language instruments aimed at studying the HLE of Hispanic families has affected research in this important area. One available instrument is the Spanish version of the Familia Inventory, designed to assess family interactions related to literacy. Research has shown that the Spanish inventory is not equivalent to the original English version possibly due to an erroneous translation. The purpose of this study is to complete a psychometric examination of a re-translated Spanish language version of the Familia Inventory with a low-socioeconomic Spanish-speaking Hispanic sample using confirmatory (CFA) and exploratory factor analysis (EFA). The inventory was administered to 132 parents of preschoolers.

Results from CFA models revealed that the 10 a-priori subscales suggested by the developer of the inventory and a four-factor model suggested by a researcher did not yield adequate model fit with this sample. Follow-up analyses of individual subscales yielded poor fit for the majority of the subscales. Exploratory factor analysis using the original 57 items of the inventory suggested a five-factor model accounting for 43.3% of the variance. It is suggested that the inventory needs to be theoretically re-conceptualized.

## **DEDICATION**

To my parents, Jose and Alicia Adame. To you, I dedicate this degree. You will always be my inspiration for all that I do. The sacrifices you have made for our family have not gone unnoticed. Your hard work and dedication to our family has served as my motivation to learn and succeed. I can only hope to make you as proud as you have made me.

To my sister, Maria Adame Wright. Sis, you have been such an influential person in my life. As a young girl I watched you work hard to succeed academically and professionally in your life. Through these experiences and through sister to sister advice and life lessons you have instilled important values in me that I now carry into adulthood. I do not believe I would be where I am today if it was not for your support. I am proud to call you my sister.

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# CHAPTER I

## INTRODUCTION

### **Importance of the Home Literacy Environment (HLE)**

It is well documented that adults and the home literacy environments (HLE) they create provide a primary context for children's early language, literacy, and reading development (Johnson, Martin, Brooks-Gunn, & Petrill, 2008). Unfortunately, many children experience far less exposure to supportive home language and literacy environments thus enter school unprepared to benefit from instruction (West, Denton, & Germino-Hausken, 2000). Scholars have struggled with trying to understand and measure the precise early childhood environmental language and literacy antecedents of early disparities with varying levels of success. One important source of variation in children's early experiences with language and literacy is the HLE.

The importance of the HLE rests on the assumption that children growing up in supportive HLEs are better equipped to benefit from school because of repeated exposure to varied and rich literacy and language experiences (van Steensel, 2006). Homes with supportive HLEs are often characterized by interactive adult-child shared reading, elaborated parent-child talk, facilitative and responsive parental teaching of literacy skills, ample number of books in the home, and adult valuing of literacy behaviors (Burgess, Hecht, & Lonigan, 2002; Farver, Xu, Eppe, & Lonigan, 2006; Leseman & de Jong, 1998). Research on diverse families has, however, shown that children in these families often lack sufficient exposure to and experiences with literacy



activities, interactions, and resources at home negatively affecting their early language and literacy development and presaging future achievement disparities (Payne, Whitehurst, & Angell, 1994). Reese and Gallimore (2000) state that while low-income families and ethnic minority families do offer their children enriching opportunities, the quality and context (e.g., home) in which they occur is not well understood.

**Early Disparities in Language and Literacy Begin at Home.** The importance of studying the HLE rests on seminal works by Hart and Risley (1995) showing that by the age of three children from professional, middle/lower class, and welfare families demonstrate large gaps in their amount of home literacy related talk and vocabulary knowledge. Further, children's vocabulary levels very closely paralleled their parents' vocabulary in terms of size and the types of words spoken, indicating a strong parent component in children's vocabulary attainment. Particularly astonishing was the finding that children from welfare families had smaller vocabularies than children from both middle/lower class and professional families with differences reaching 30 million words over the first four years of a child's life. Follow-up studies by Hart and Risley found that by age nine the same children's reading skills were remarkably linked to vocabulary size measured at age three, an indicator of the remarkable persistence of early home environmental effects on children's language development (Hart & Risley, 1995). It is not surprising that Hart and Risley (2003) describe the early years in a child's life as "a time when they are especially malleable and uniquely dependent on the family for virtually all their experience" (p. 9).

Evidence also suggests that early gaps associated with literacy poor environments persist. As early as kindergarten, West, Denton, and Reaney (2000) found that the achievement gap was present in measures of letter recognition, beginning sounds, ending sounds, sight words, and words in contexts, all components of reading readiness, with Hispanic children consistently scoring below their Caucasian peers. Additionally, the researchers considered family risk factors like low maternal education, non-English primary language, single-parent household, and receipt of government assistance like food stamps. According to the authors, children with more risk factors fared worse in reading at the beginning and end of kindergarten than children with less risk factors. Hispanic families in particular present with multiple risk factors, with the most prominent likely being English language learner status. As the two previous studies demonstrate, in order to understand why early deficits exist, the HLE has become a context to explore to seek answers, especially for populations that are considered to be at-risk.

**Hispanic Families and the HLE.** Despite the importance of measuring and studying the HLE; little is known about the HLE of Hispanic families, a population estimated to make up a significant percentage of the population in the near future. It is now evident that Hispanic children are the largest racial/ethnic group, the youngest, and the fastest-growing in the United States (Garcia & Jensen, 2009). According to the U.S. Census Bureau, persons of Hispanic origin represent 16% of the United States population with an expected projection to reach 30% by the year 2050. Not only should Hispanic children be a research priority but also the Spanish-speaking homes and family

environments they reside in (Garcia & Jensen, 2009). With increasing numbers of Hispanic students the existing achievement gap is not likely to fade, for this reason, Garcia and Jensen (2009) argue that “young Hispanic (or Latina/o) children (ages 3 to 8) should be of particular interest to policymakers, practitioners, and researchers in education” (p. 1).

Research validates the urgent need to conduct studies with primarily Spanish-speaking children and their HLEs, as these children are considered at elevated risk for poor literacy outcomes (Hammer, Miccio, & Wagstaff, 2003). Studies have shown that Hispanic children read less at home, have fewer chances to read with their parents, and have poor school achievement (Grossman & Shigaki, 2010; Valdez-Menchaca & Whitehurst, 1992). To examine these issues a body of research has emerged in the area of home-school discontinuities (Reese & Gallimore, 2000).

Discontinuities can exist between expectations of the school and expectations of the home. Parents of Hispanic children may not hold the same views on important topics like child development, attainment of early literacy skills, and reading development (Reese & Gallimore, 2000). For this reason investigating the HLEs of Spanish-speaking Hispanic families is critical. Nevertheless, despite the sizable body of work documenting the importance of children’s early experiences with literacy for later cognitive development, little research has focused on the early home environments of Spanish-speaking Hispanic children and their families (Mistry, Biesanz, Chien, Howes, & Benner, 2008; Perry, Kay, & Brown, 2008), possibly due to a lack of convergence on what constitutes the HLE or the paucity of Spanish translated measures of the HLE.

**Measuring the Home Literacy Environment (HLE).** Research documents that the HLE is multidimensional. The HLE's multidimensionality (Burgess et al., 2002) has encouraged researchers to explore the relationship between HLE dimensions and important child language and literacy outcomes as a way of understanding how the HLE mediates outcomes. More specifically, a myriad of HLE dimensions have been theorized and include adult reading behaviors, parent-child shared reading, parental teaching, number of books in the home, among others. These dimensions are often found to be associated with child outcomes like children's oral language (Burgess et al., 2002; Hart et al., 2009), receptive vocabulary (Farver et al., 2006; Roberts, Jurgens, & Burchinal, 2005), and letter knowledge (Stephenson, Parrila, Georgiou, & Kirby, 2008).

Although studies linking HLE dimensions with child outcomes shed important light on early influences on child language and literacy development, they have primarily been conducted with Caucasian families, a threat to the external validity of the HLE construct for diverse populations. It is not unreasonable to assume that Caucasian conceptualizations of the HLE construct are routinely applied to examine, explain, and understand the HLE of Hispanic families without considering the possibility that American values, beliefs, and practices relative to the HLE may not apply to Hispanic home literacy practices. This is further confounded when researchers do not disaggregate results by ethnicity and instead report results from a "general" low-income sample despite being composed of numerous minorities including Hispanic families.

**Home Literacy Environment (HLE) Measures.** Measuring the HLE of diverse and socioeconomically different families has become a source of much debate in the

literature. To begin with, measures created to assess the HLE can typically be narrowed to a few published measures. Nevertheless, the available measures are primarily available in English and rarely in Spanish, which creates a problem for researchers interested in exploring the HLE of Spanish-speaking Hispanic families. Available measures such as the Home Observation for Measurement of the Environment (HOME) and the Child/Home Environmental Language and Literacy Observation (CHELLO) are not available in Spanish and are either too demanding in terms of time and resources or focus on children's literacy experiences in child care settings (i.e., not the home). Further, the reliance on a non-culturally sensitive conceptualization of the HLE may result in a failure to accurately capture the HLEs of Hispanic families.

One notable exception is the Familia Inventory (Taylor, 1996). The Familia Inventory (Taylor, 1996) is described as a measure of family interactions around literacy and is available in English and Spanish, but lacks psychometric data with Hispanic samples. The only way to fully understand the HLE of Hispanic families is to conduct research with this population with measures that can be supported empirically for their use across populations. Assuming that HLE dimensions derived from one ethnic group (e.g., Caucasian) will be relevant for another ethnic group (e.g., Hispanic) without empirical research (Ngorosho, 2010) is not tenable and likely poses a serious threat to test development standards, as reported in the *Standards for Educational and Psychological Testing* (APA, 1999). Only through psychometrically sound HLE measures can researchers focus on exploring what is happening in the homes of young Hispanic children.

## **Statement of the Problem/Rationale**

Despite the documented importance of the HLE in a child's early life and the increasing achievement gap between Hispanic children and their Caucasian peers, little research has focused on understanding the HLE of diverse children, especially Hispanic children and their families. The relevance of the HLE rests on the assumption that the HLE is generally the first literacy environment experienced by children. Compounding the lack of research on diverse children is the relative absence of Spanish language instruments to measure the HLE. Most of the few available measures of the HLE are in English, effectively creating a barrier for scholars interested in conceptualizing the HLE of Spanish-speaking households. One notable exception is the Spanish version of the Familia Inventory (Taylor, 1996). Despite its promise, the Spanish version of the Familia Inventory (Taylor, 1996) has not been fully psychometrically examined for its stated purposes and has been previously been found to be a poor translation of the English version of the inventory (Gonzalez et al, 2011).

A better understanding of the Hispanic HLE can have significant implications for professionals working with Hispanic preschoolers. Garcia and Jensen (2009) state that "a systematic understanding of educational practices in the home can lead to improved fit between home and school practices, which can animate meaningful parental participation and increase student learning" (p. 15). Not only will research with Hispanic families lead to a better understanding of the HLE, but can improve partnerships between home and school that can have a lasting effect on children's future school achievement.

## **Purpose of Study**

The purpose of the study was to explore the underlying factor structure of a re-translated Spanish-language version of the Familia Inventory (Taylor, 1996) using factor analysis data analytic strategies. This study was specifically conducted to address the documented paucity of knowledge concerning the home literacy environment (HLE) of Spanish-speaking Hispanic families. The study examined the structural validity of the measure to determine if the underlying structure reflected the developer's hypothesized, yet untested, a-priori 10-factor structure with a demographically unique sample, namely, Spanish-speaking Hispanic families. If the model failed to fit the data well, a four-factor model found in Gonzalez et al.'s (2011) exploratory factor analyses of the English version of the Familia Inventory (Taylor, 1996) was tested. If the Gonzalez et al. (2011) model was not supported, exploratory factor analyses were conducted to search for alternative models that fit the data well. Finally, if appropriate, revisions to the original questionnaire were suggested. The study contributed uniquely to the literature on the HLE by clarifying the psychometric properties of a popular instrument of the HLE routinely used with Hispanic families, yet not investigated for this purpose. In addition, this study added to the literature on the HLE of Spanish-speaking Hispanic families by identifying appropriate dimensions to be used when conceptualizing the Hispanic HLE.

## **Research Questions**

- 1) Can the a-priori 10-factor model proposed by the developer of the Familia Inventory (Taylor, 1996) be validated with a Spanish-speaking sample of Hispanic families using the re-translated Spanish version of the inventory?

- a) Hypothesis: Based on previous research (e.g., Gonzalez et al., 2011) it is anticipated that the a-priori 10-factor model will not be supported with the Spanish re-translation of the Familia Inventory (Taylor, 1996).
- 2) Does the Familia Inventory (Taylor, 1996) four-factor model found by Gonzalez et al. (2011) using the English version replicate using the re-translated Spanish version of the Familia Inventory (Taylor, 1996) with a Spanish-speaking Hispanic sample?
  - a) Hypothesis: It is anticipated that the four-factor model found in the English version in Gonzalez et al. (2011) will not be replicated. The English version assumes a non-Hispanic cultural view suggesting a different factor structure for a Spanish re-translation completed by Hispanic parents.
- 3) Do dimensions derived from exploratory factor analysis best describe the home literacy environment of Spanish-speaking Hispanic families?

### **Study Definitions**

*Hispanic*: According to the U.S. Census Bureau persons of Hispanic origin, include persons from Mexico, Puerto Rico, Cuba, Central or South America, or “some other Hispanic origin”. For the purposes of this study “Hispanic” will be used to describe such families.

*Home literacy environment (HLE)*: The HLE can be defined as “the variety of resources and opportunities provided to children as well as by the parental skills, abilities, dispositions, and resources that determine the provision of these opportunities for children” (Burgess et al., 2002, p. 413).



*Early literacy skills:* The National Early Literacy Skills Panel identified the following early literacy skills: (1) alphabet knowledge, (2) phonological awareness, (3) rapid automatic naming of letters or digits, (4) rapid automatic naming of objects or colors, (5) writing or writing name, (6) phonological memory, (7) print concepts, (8) print knowledge, (9) reading readiness, (10) oral language, and (11) visual processing.

## **CHAPTER II**

### **LITERATURE REVIEW**

Reading acquisition is a process that begins very early in a child's life especially in the preschool years (Scarborough & Dobrich, 1994). Researchers generally agree that pre-literacy skills primarily develop through interactions with adults who model language and literacy in ways that are consistent with cultural expectations (Wasik, Bond, & Hindman, 2006). Unfortunately, many children, especially those who grow up in economically disadvantaged homes, have limited access and exposure to rich language and literacy opportunities and thereby enter school unprepared to benefit from instruction (West et al., 2000). Early difficulties in language and literacy are remarkably stable and indicative of downstream widening achievement gaps (Scarborough & Dobrich, 1994). Researches have grappled with trying to understand the preschool antecedents of language and literacy difficulties with varying explanations for the early deficits. Some have argued that there exists a mismatch between home environment opportunities and expectations from school with regard to language development (Perry, et al., 2008). In fact, when teachers are questioned about the origins of children's difficulties in the classroom it is not uncommon for them to point to the home literacy environment (HLE) for answers (Burgess et al., 2002).

The research is clear, adults and the home literacy environments (HLE) they create are the primary context for children's early language, literacy, and reading readiness (Johnson, et al., 2008). Although the body of work on children's home

literacy environments is expanding there is little consensus on a universal definition of the HLE, the dimensions theorized to underlie the HLE, and the overall generalizability of definitions across diverse populations, a threat to the external validity of this construct. For example, most of the current studies of the HLE focus on the lives of middle-class Caucasian families and their young children. Questions remain; however, on the degree to which these studies and their findings generalize to under studied populations such as the very poor and ethnically or culturally diverse groups. In the end, this calls into question the validity of conceptualizations of the HLE, especially in poorly understood HLEs of ethnic minorities such as Hispanics (van Steensel, 2006). In this literature review, the HLE, the HLE of minority children with a focus on Hispanic families, the relation between the HLE and child outcomes, and problems with existing conceptualizations of the HLE and HLE measures are reviewed.

### **Defining the Home Literacy Environment (HLE)**

The HLE can be defined as “the variety of resources and opportunities provided to children as well as by the parental skills, abilities, dispositions, and resources that determine the provision of these opportunities for children” (Burgess et al., 2002, p. 413). Hart et al. (2009) referred to the HLE as an “indirect learning environment,” where children are exposed to and participate in literacy activities in the home without explicit or direct instruction (p. 911). The HLE is highly dependent on the parent being the child’s first teacher and offering their child literacy and language opportunities in the home. The importance of the HLE rests on the assumption that children with rich HLEs are better prepared to benefit from schooling through better access and exposure to early

literacy and language compared to children with less enriched HLEs (van Steensel, 2006).

The HLE is considered to be multifaceted or multidimensional (Burgess et al., 2002). In addition, researchers have supported the use of elaborate conceptualizations of the HLE, as they “will be better able to predict variability in literacy outcomes” (van Steensel, 2006, p. 368). Limited conceptualizations of the HLE have been found to focus on only one dimension of the HLE; specifically parent-child shared reading (Bus, van IJzendoorn, & Pellegrini, 1995). Defining the HLE has; however, proven to be somewhat elusive for researchers as they try to understand the various dimensions of the HLE and how these dimensions relate to important language and literacy outcomes. To address the lack of consensus on defining the HLE, several researchers have developed and tested models of the HLE to help fully define the construct.

Burgess and colleagues (Burgess et al., 2002) for example tested six conceptualizations of the HLE with a primarily Caucasian sample, emphasizing the various dimensions that can be applied when studying the HLE. The conceptualizations included: (a) limiting environment (i.e., parent resources determine literacy opportunities provided to children); (b) literacy interface (i.e., parent exposes the child to literacy activities); (c) passive HLE (i.e., parents act as a model by engaging in literacy themselves); (d) active HLE (i.e., parent and child engage in literacy activities); (e) shared reading (i.e., parent and child engage in shared reading); and (f) overall HLE (i.e., included all conceptualizations). The authors found a statistically significant relationship between the HLE conceptualizations that emphasized “active elements” or

child participation in literacy-related activities and the outcomes tested (e.g., oral language, phonological sensitivity, word decoding), concluding that language and literacy skills of young children could be improved by giving special attention to the active components of the HLE. Their finding underscored the importance of defining discrete dimensions of the HLE in understanding child language and literacy outcomes.

### **Conceptualizing the Home Literacy Environment (HLE)**

Researchers studying Caucasian samples have applied the HLE's multidimensional nature to their studies, for example, in the study by Hart et al. (2009), the HLE was conceptualized as including adult and child reading behaviors in the home, which were assessed via a parental survey. Similarly, van Steensel (2006) assessed the HLE of Dutch families through a questionnaire comprised of two parts: questions about the frequency of individual literacy activities of family members and questions about the frequency of joint literacy activities involving the child. In their studies, other researchers have also attempted to understand the HLE's influence on child outcomes while defining the various dimensions of the HLE. Hood, Conlon, and Andrews (2008) conceptualized the HLE by assessing parent's knowledge of book titles (e.g., title recognition test) and inquiring about the frequency of literacy related activities (e.g., reading to the child, parental teaching, library visits, engagement in non-literacy activities), the number of books in the home, and child interest, which made up the Home Literacy Environment Questionnaire. Through statistical analysis two factors were produced from the items, Parental Teaching and Parental Reading.

Similarly, Phillips and Lonigan (2009) defined and assessed the HLE through a survey probing about the frequency of reading to the child, parental teaching and library visits, the number of books in the home, child interests, and television watching habits. Using a British sample, Melhuish et al. (2008) measured the HLE by interviewing the parent about the frequency of activities related to learning in the home (e.g., reading to the child, visiting the library, parental teaching of letters and numbers, painting and drawing, engagement in songs, poems, rhymes). To measure the HLE of a Canadian sample, Stephenson et al. (2008) inquired about the frequency of parental teaching activities, reading to the child, and the number of children and adult books in the home. In summary, across the various studies attempting to identify the dimensions underlying the HLE construct, the following dimensions were represented in two or more studies: (a) frequency of adult reading behaviors, (b) frequency of adult-child shared reading, (c) the number of books in the home, (d) parental teaching of literacy related skills, and (e) child interest.

Despite their usefulness in defining the underlying dimensions of the HLE construct, most of the previous studies have been conducted with Caucasian families and their young children. While useful from a heuristic perspective, applying a Caucasian perspective to groups not represented in the research may misguide understanding the HLE of ethnically or culturally different families. Therefore, our current understanding of the HLE construct may not appropriately apply to or accurately represent (through assessment) the HLE in culturally diverse families. The use of measures not validated across ethnically and culturally diverse populations not only is ethically questionable,

but may lead to erroneous conclusions about their home literacy environments and likely the values and beliefs of populations different from the populations used to develop the instruments. Advancing our knowledge of the home literacy construct can only proceed through further exploration of ethnically and culturally diverse families.

### **The Home Literacy Environment (HLE) of Minority Children**

As noted earlier, most recent research on the HLE has applied American/Caucasian conceptualizations to populations that were not represented in the identification of the theoretical dimensions that allegedly underlie the HLE construct. In short, our understanding of the HLE construct was derived from knowledge on the HLE of Caucasian middle-class families (Hammer et al., 2003). As such, little is known about the HLE of minority families and their children, most notably Hispanic children. The urgency in understanding the HLE of Hispanic families is underscored by the phenomenal growth in the Hispanic population, predicted to double by the year 2050. This is remarkable considering that in 2009 Hispanic children made up 26% of the population under the age of five and 22% of the population under the age of eighteen, making it clear that the Hispanic children and youth population in schools is growing. Despite the growth in the Hispanic population, the Nations Report Card ([www.nationsreportcard.gov](http://www.nationsreportcard.gov)) reports that among 4<sup>th</sup> graders in 2011, 51% of Hispanic students were at or above the basic achievement level in reading compared to 78% of Caucasian students.

An example of inappropriate and erroneous grouping of ethnic/culturally different families into broad and general populations for a study can be found in

Hammer, Farkas, and Maczuga (2010). Hammer and colleagues measured the HLE of low-income children made up of several ethnicities (e.g., White, Black, Hispanic, Other ethnicity) by parent report of the frequency of parent-child activities, such as reading to the child, telling the child a story from a book or magazine, teaching letters, and singing songs. While informative; the authors did not disaggregate data by ethnicity and instead grouped the participants by their economic background making them a homogeneous group of low income families. When differences in socioeconomic status and culture are not considered, it is likely that groups such as Hispanics will continue to remain misunderstood.

Similar to the studies conducted with Caucasian samples, Gonzalez and Uhing (2008) utilized five subscales (e.g., extended family, family work and play, library use, parental modeling, and practical reading) from a home literacy environment measure to study the HLE of Hispanic families. Using the same HLE measure, Gonzalez, Rivera, Davis, and Taylor (2010) measured the HLE by inquiring about shared reading, parental modeling, practical reading, and shared writing about mostly Hispanic and African-American families. Farver et al. (2006) assessed the Hispanic HLE by exploring family demographic factors, parent involvement in literacy related activities, and parenting stress and Hammer et al. (2003) studied the HLE of Puerto Rican children by administering a questionnaire to parents about the frequency of children's literacy activities, parent-child literacy activities, and mother's literacy activities. The importance of the HLE is undoubtedly clear across cultures, but whether the HLE is



being measured with applicable dimensions still remains to be answered (Bradley, Mundfrom, Whiteside, Casey, & Barrett, 1994).

### **Discontinuities between Home and School**

Discontinuities between home and school may further exacerbate the limited understanding of the Hispanic HLE. Hispanic parents may hold views of early literacy that differ from the mainstream view that learning begins early in a child's life. These differences can be reflected in the experiences that Hispanic families provide to their children relating to the HLE and by extension parent delivered child language and literacy experiences. In support of this view, in their case study on immigrant Latino parents, Reese and Gallimore (2000) found that reading was viewed as a formal process that began at the age of five and was taught through repetition, a stark contrast to the prevailing mainstream view that early literacy occurs naturally as children explore their surroundings. Parents in this study molded their assumptions about literacy and learning when they received guidance from teachers, indicating that once children enter school, teachers become a source of information for parents, providing support and guidance in literacy related activities, but only when teachers make an effort to understand the knowledge gaps that exist between schools and families (Reese & Gallimore, 2000).

The urgency in understanding the HLE is underscored by universal presumptions teachers and researchers often make about the role of the home environment in development of children's language, literacy, and other behaviors; typically the assumptions are from a non-culturally sensitive perspective. Taking an American (e.g., independence) assumption often limits full recognition of the unique strengths of

culturally different family literacy practices, practices that can be called upon to assist culturally or ethnically diverse children experience early success in their schooling. Teachers and other school personnel would benefit from understanding the literacy practices Hispanic families value and endorse to evaluate how literacy practices in the home translate to or support (or in some cases, hinder) classroom literacy pedagogical instructional practices. Specifically, school personnel may not fully recognize the impact of failing to recognize a mismatch between classroom language and literacy expectations and home language and literacy expectations of culturally diverse children (Perry et al., 2008).

Given the growing population estimates, in tandem with the documented early achievement gaps between Hispanic children and their non-Hispanic Caucasian peers, studies focusing on the home language and literacy practices of Hispanic families may provide important insights to researchers interested in studying the moderating role the HLE plays in preparing Hispanic children for the demands of schooling. While researchers have begun to explore the HLE of Hispanic families, questions remain about the cultural appropriateness of the measures used.

### **The Role of the Home Literacy Environment (HLE) on Early Literacy Skills**

Most research on the HLE has focused on identifying HLE dimensions that relate most to the development of children's early literacy and language skills and later successful reading skills. Research shows that multiple aspects of the HLE may interact with various early literacy skills regardless of whether they tap educational or developmental milestones (Burgess et al., 2002). It is well documented that a number of

language and literacy skills are developed early in a child's life, especially during the years prior to school entry, as they lay the foundation for success in later reading.

National reports such as that of the National Early Literacy Panel (NELP, 2008) identified alphabet knowledge, phonological awareness, rapid automatic naming of letters or digits, rapid automatic naming of objects or colors, writing or writing name, and phonological memory as essential early literacy skills. Alphabet knowledge refers to a child's knowledge of print letter names and sounds. Research shows that children who acquire early skill in alphabet knowledge are later able to apply that knowledge to decode unfamiliar words (Coyne & Harn, 2006; Torgesen, 2002). Phonological awareness focuses on the child's ability to distinguish and manipulate spoken language (e.g., segmenting words or syllables). Research shows that skills in manipulating the sounds of spoken language is robustly related to decoding skills (Lonigan, Burgess, & Anthony, 2000) and later reading skills (Anthony & Francis, 2005; Hogan, Catts, & Little, 2005). Rapid automatic naming of letters or digits involves the child being able to quickly name letters and digits shown randomly. Likewise, rapid automatic naming of objects or colors involves quick naming of random pictures of objects or colors. Studies show that rapid automatic naming is predictive of word reading (Wagner et al., 1997). Writing or writing name includes the ability of the child to write letters or their name when asked. Studies show that a relationship exists between preschoolers' writing skills and knowledge of alphabet letter names (Diamond, Gerde, & Powell, 2008; Riley, 1995; Weinberger, 1996). Phonological memory requires the child be able to recall spoken

information after a few minutes. Studies show that skill in phonological memory is predictive of later reading skills (Stone & Brady, 1995).

Taken together, these skills underlie later fluency in reading and have their origins long before children enter formal schooling, origins in the HLE. Thus studying the HLE, especially of ethnically or culturally diverse populations most at risk of early reading failure would seem important.

### **Relationships between HLE Dimensions and Child Outcomes**

Hart et al. (2009) found that at each year of analysis, the HLE accounted for 6% to 10% of the total variance in oral language development (i.e., especially expressive vocabulary). Although mostly limited to mono-English speaking populations, and almost unilaterally targeting oral language, some studies have begun showing promise in identifying those elements of the HLE most closely related to child performance in important language and literacy skills discussed previously. For example, in a study by Burgess et al. (2002) an HLE that consisted of “active elements” including parent-child engagement in literacy activities, led to growth in oral language, letter knowledge, phonological sensitivity, and word decoding. A study by Roberts et al. (2005) found that the HLE dimensions of maternal sensitivity and book-reading strategies related to children’s receptive vocabulary and the total score on an HLE measure predicted receptive vocabulary and language, expressive language, and early literacy skills. Britto and Brooks-Gunn (2001) found that the language and verbal interactions dimension of the HLE explained nearly 56% of the variance in children’s expressive language, but not receptive language. Gonzalez and Uhing (2008) found that the HLE dimension of

library use accounted for the greatest amount of unique variance in English oral language proficiency, while extended family accounted for the greatest amount of unique variance in Spanish oral language proficiency.

Other studies also underscore the important role the HLE plays in early development of language and literacy skills. In the study by Britto and Brooks-Gunn (2001), the HLE dimensions of home learning climate and social and emotional climate, explained 42% and 35% of the variance in children's school readiness skills that included knowledge of colors, shapes, and general information. Farver et al. (2006) found that parent's literacy involvement and parent's report of child literacy interest were positively associated with children's receptive vocabulary. In Foster, Lambert, Abbott-Shim, McCarthy, & Franze (2005), home learning (e.g., caregivers' reading to the child, promoting enrichment experiences, providing learning activities, providing books and reading materials) served as a mediator between family socioeconomic status and children's emergent literacy (e.g., receptive vocabulary, phonemic awareness, parent report of child literacy and language development). Finally, in their Canadian study, Stephenson et al. (2008) found that direct teaching correlated with all of the child outcomes (e.g., phonological sensitivity, letter knowledge, kindergarten word reading, first grade word reading) and the frequency of storybook reading correlated with letter knowledge and kindergarten word reading, but the number of books in the home was not correlated with any of the child outcomes.

## **Studying the HLE of Ethnically and Culturally Diverse Families**

While studies clearly show the benefits of an enriched HLE on child language and literacy outcomes, conceptualizing precisely what the HLE consists of and for who it is representative is still in question. For example, are current measures of the HLE culturally sensitive or do they represent culturally diverse views of the HLE? Thus, a need exists for researchers to “clearly specify and provide rationale for the manner in which they conceptualize and assess the HLE” (Burgess et al., 2002, p. 422). This rationale is of importance for those studying the HLE of culturally diverse groups such as Hispanic families. Research should aim to understand how families, including culturally or ethnically diverse families, structure the HLE for their children (Burgess et al., 2002), including how the HLE is initiated and sustained (Gonzalez et al., 2011) through the child’s first years of life. When this is understood, reliable and valid measures can be created based on the dimensions of the HLE that are established empirically, especially for culturally diverse families (Gonzalez et al., 2011).

As evidence in support of more closely examining the HLE through a culturally sensitive lens, critics of the NELP’s (2008) report highlight that the panels’ over reliance of “dominant-culture yardsticks” (Orellana & D’warte, 2010, p. 297 ) to measure the HLE left out important minority culture HLE strengths available to those studying home supports for literacy development. It is altogether possible that culturally non-dominant groups engage in beneficial HLE practices not recognized by reports such as that by the NELP. For example, among Hispanic migrant families, storytelling may be a common practice in the home (Boyce, Innocenti, Roggman, Norman, & Ortiz, 2010), whereas the

dominant culture may value the practice of shared-book reading. The process of acquiring language and literacy becomes even more complex when the language and literacy used in the HLE differs from the language and literacy encountered in schools (Hammer et al., 2003). Much is to be learned from the homes of different cultures that could potentially benefit culturally different children in the context of culturally appropriate ways of providing language and literacy enrichment in the home. It is clear that early literacy skills do not develop in isolation, they begin in important contexts, especially the home; therefore it is important to examine, more fully, measures of the HLE.

### **Home Literacy Environment (HLE) Measures**

The universe of measures created to study and assess the HLE can usually be narrowed down to a few published measures. The available measures are primarily available in English and rarely in Spanish, which creates a problem for researchers interested in exploring the HLE of Hispanic families whose only language may be Spanish. Among one of the most rigorously studied measures is the Home Observation for Measurement of the Environment (HOME). The HOME developed by Caldwell and Bradley (1984) is a widely used interview and observation inventory aimed at understanding the availability of cognitive stimulation and emotional support in the home of infant-toddlers, preschool, and school-age children.

The Early Childhood HOME Inventory is of particular interest due to its focus on preschool aged children. According to Bradley et al. (1994) the HOME has been used to assess families' HLEs in Europe, North America, and South America. Due to its

widespread use among researchers, the authors were interested in exploring whether the inventory items represented the same constructs across different ethnic groups, namely European Americans, African Americans, and Hispanic Americans. Factor analyses results for the Early Childhood HOME Inventory revealed that the fit was poorer for Hispanic Americans than the other ethnic groups, leading the researchers to think that Hispanic Americans may have different views than the dominant American culture about early literacy.

Sugland et al. (1995) conducted a study to explore the internal consistency and patterns of prediction of the Early Childhood HOME Inventory full form and short form for European American, African American, and Hispanic American groups. The results shared will focus on the study conducted with the full version of the HOME Inventory. Results demonstrated that although few differences were noted between ethnic groups, most of the subscales included in the HOME Inventory had lower internal consistencies for Hispanic Americans. These results indicate that the HOME Inventory is better able to capture the HLE of European Americans, followed by African Americans, and lastly Hispanic Americans. A valid question considers whether the HOME Inventory is able to capture the important features of the HLE that impact ethnically diverse preschoolers' development. For example, the HOME Inventory may not capture the influences of other family members, families' ethnic identity, non-material resources in the home, or language differences (Sugland et al., 1995), which may be important to consider when studying Hispanic families. Despite its inconsistent performance with Hispanic American groups, broader use of the HOME Inventory is also limited by the excessive



demands in terms of time and resources (e.g., in-vivo observations) along with its unavailability in Spanish. These demands and the lack of availability in Spanish limit broader use of the instrument, especially with growing populations such as Hispanics.

With the understanding that reliable, valid, and easy to use measures of the HLE are scarce, Neuman, Koh, and Dwyer (2008) developed the Child/Home Environmental Language and Literacy Observation, or CHELLO. The CHELLO was developed to assess language and literacy experiences of children birth to five years of age who attend family or group child care settings. The CHELLO involves both a checklist to determine the quality of the resources available and an observation and interview to assess aspects related to literacy (e.g., instructional supports, affective environment). Although potentially useful, the CHELLO is in need of additional research and like the HOME Inventory, it is not available in Spanish.

**The Familia Inventory.** Among the only measures of the HLE that are also available in Spanish is the Familia Inventory developed by Taylor (1996). The Familia Inventory assesses shared family literacy activities through a 57-item questionnaire. The specific intended use of the Familia Inventory is “to assess the levels and regularity of literacy-related activities in 10 areas of family interaction” (Taylor, 1996, p. 3). The Familia Inventory was initially constructed from quantitative and naturalistic data gathered from 55 Icelandic families and consisted of 30 items (Taylor, 1995). According to the author, due to the “promising results” of the pilot study he was prompted to standardize the measure with an American sample consisting of (a) a suburban population consisting of first and fourth graders from six elementary schools in

the Shawnee Mission Kansas School District, (b) an inner city population consisting of first and fourth graders from six elementary schools in the Kansas City, Kansas School District, (c) a mixed social economic population consisting of primarily single parents enrolled in re-entry classes at a community college in Lee's Summit, Missouri, and (d) a rural population consisting of first and fourth graders at Odessa, Missouri School District (Taylor, 1996, p. 4). According to the developer, a representative sample of 1500 families using the 1990 Census was used to create standardized norms. Additionally, users can choose to use optional norms based on ethnicity (e.g., Euro American, African American, Hispanic American) or age (e.g., children aged 0-5, 6-9, or 10-12). The user's manual does not specify whether the optional norms are independent samples or are included in the total sample.

The Familia Inventory (Taylor, 1996) consists of 10 subscales theorized to be related to important child language and literacy outcomes: (a) Family Work and Play, measures the interactions centered around shared labor and recreational activities; (b) Use of Television, assesses the frequency and level of television viewing by the family; (c) Verbal Interactions in Home, measures the level of communication between the family and the child; (d) Parental Modeling of Reading, assesses parents literacy habits that serve as models and shape the reading behavior of children; (e) Practical Reading in the Home, measures the family use of reading for applied purposes; (f) Shared Reading by the Family, assesses the frequency of shared reading; (g) Shared Writing by the Family, measures the use of writing activities in the home; (h) Support by Extended Family, assesses interactions with family members and relatives; (i) Library Use by

Family, assesses how often family members use the library as a resource; and (j) Parental Support of School, assesses parent involvement in homework and school activities (Taylor, 1996). The subscales are rated on a Likert scale ranging from 0 (never), 1 (less than once a month), 2 (once a month), 3 (twice a month), 4 (once or twice a week), and 5 (daily).

In 2003, Prime Time, a program that was developed to foster a lifelong love and enjoyment of reading for economically disadvantaged families by encouraging their attendance at discussions about children's books in public libraries, began using the Familia Inventory (Taylor, 1996) as an instrument to measure changes in participants' literacy-related behaviors. Although specific information about the study relating to the Familia Inventory was not provided, it was described in the results section that the Familia Inventory dimension of "library use" increased over the 6 week program, a finding that confirmed the program's goal (Reta & Brady, 2007). In another study using the Familia Inventory (Taylor, 1996), Gonzalez and Uhing (2008) explored the role of the HLE on Hispanic children's English and Spanish oral language outcomes. Using commonality analysis, the HLE domain of "library use" was found to be most predictive of English oral language while the "extended family" factor was most predictive of Spanish oral language. Despite its potential use by researchers interested in understanding the HLE of Hispanic families, little is still known about the structural validity of the Familia Inventory (Taylor, 1996). The question, are the alleged constructs empirically supported? "has not been empirically evaluated to determine

whether the items assigned to the various subscales are unique measures of those subscales” (Gonzalez et al., 2011, p. 477).

To address this question, Gonzalez et al. (2011) explored the factor structure of the Familia Inventory (Taylor, 1996) using a Hispanic sample to determine whether the items and subscales from the measure were supported by the sample and to determine whether the measure was invariant across English and Spanish language versions. After conducting confirmatory factor analysis using the 10 subscales, poor fit within and between the subscales was evident. The 10 subscales of the measure did not emerge as would be expected if the items pertaining to each subscale represented that subscale. Despite the poor fit for the entire measure, some scales did fit well for the English language version (i.e., library use, support for school, verbal interaction) and the Spanish language version (i.e., practical reading, shared reading, support for school). Findings from invariance testing across the English and Spanish language versions of the measure determined that the two versions performed differently, which serves as evidence of poor structural validity of the measure, due to either a poor translation of the instrument into Spanish or altogether different latent constructs unmeasured or poorly measured in the Hispanic sample. In fact, exploratory factor analysis following the confirmatory analyses revealed that a four-factor model (i.e., family shared reading activities, library use, television use, interactions with extended family) accounting for 53% of the variance best represented the English data and a two-factor model (i.e., family shared reading and related activities, library use) accounting for 43% of the variance best represented the Spanish data, evidence of either a poor translation into Spanish or poor

ecological validity (i.e., relevance) of the HLE constructs for Hispanic populations as identified by the developer of the Familia Inventory (Taylor, 1996).

### **Problems with Existing HLE Measures**

One universal problem underlying conceptual and theoretical understandings of the HLE is that developed measures are almost universally created from an “etic” perspective or outside looking in. Developers of these measures almost unilaterally apply American dominant cultural lenses to viewing and making sense of the HLE practices of culturally diverse groups. In the process, these HLE measures likely omit valuable HLE information useful in understanding language and literacy practices of minority groups. What is needed are measures developed from an “inside out” or “emic” perspective taking into account practices as viewed by the studied group. Other problems plague measures intended to assess the HLE across multiple ethnic groups. For example, Gonzalez et al. (2011) found that language invariant factor structures of the English and Spanish versions of the Familia Inventory (Taylor, 1996) likely resulted from an “arm chair” translation of the items from English to Spanish. In a number of instances the questions changed completely in the translation thus eliciting a totally different response in Spanish, a problem for factor invariance analyses.

To date, most researchers interested in the HLE have used surveys or questionnaires to gather information about the frequency in which parents and their children engage in literacy related activities. Despite their popularity, few studies have investigated the internal structure of these measures for relevance across studied groups. Further, even fewer studies demonstrate the use of observation or interview techniques,

which would provide richer information about the experiences of children in their HLE (van Steensel, 2006). If studying the HLE is of interest, it is possible that the dimensions used to conceptualize the HLE may not be applicable to the families being studied (Sugland et al., 1995) and could result in missed information due to irrelevant questions being asked. The current research indicates that more empirical studies are needed in this important area.

## CHAPTER III

### METHOD

For purposes of this study, the underlying factorial structure of a re-translated Spanish-language version of the Familia Inventory (Taylor, 1996) was explored using factor analysis. In the following section, participants, measure, data collection procedures, and data analysis strategies are addressed.

#### **Study Participants**

Families participating in this study primarily resided in a rural area of central Texas. Spanish-speaking Hispanic parents and/or adult guardians with children enrolled in the Brazos Valley Community Action Agency (BVCAA) Head Start program were invited to participate in the study. To be eligible for Head Start, all participating families must meet federal and local economic disadvantage criteria. There were no restrictions for participation specifically as related to families with diverse Head Start children such as children with prior Head Start attendance or children with mental health, educational, or physical disabilities. Based on 2011-2012 actual estimates, it was anticipated that a sample of approximately  $n = 210$  families would meet eligibility for the present study (i.e., Hispanic, Spanish-speaking). Participants were considered for the study if they met the following criteria: (1) identify as Hispanic, (2) speak Spanish in the home, and (3) have a child aged 3, 4, or 5 enrolled in the Head Start program during the 2012-2013 academic year in either center base or home base programs.

Power analysis was conducted to determine the appropriate sample size for conducting both confirmatory and subsequent exploratory factor analyses. Statistical research in the fields of education and behavior science is characterized by divergent opinions on the issue of establishing a minimum desirable level of sample size (MacCallum, Widaman, Zhang, & Hong, 1999). For purposes of this study, the rule of three subjects-to-variables ratio was applied (Cattell, 1978; Everitt, 1975, in Arrindell & van der Ende, 1985; Gorsuch, 1983, in MacCallum, Widaman, Zhang & Hong, 1999); however the final sample was determined in consultation with the statistical committee member. Using the rule of three (Cattell, 1978) it is, however, the aim to select a sample of approximately  $n = 171$  ( $57 \text{ items} \times 3 = 171$ ) for the study.

For the present study, a sample of  $n = 198$  met eligibility criteria for the study. The final sample used for analysis included  $n = 132$  or 67% of families that met eligibility criteria. The 66 families that met study criteria did not return the study packets, which included a consent form and the study questionnaire. Refer to Table 1 for descriptive statistics. As part of study criteria, all participating families identified as Hispanic. Approximately 18% of families reported being born in the United States, with the remaining reporting being born in another country. Of the 81.8% of families who were born in other countries, 74.2% were from Mexico, 3% were from El Salvador, 2.3% were from Guatemala, 1.5% were from Honduras, and .8% were from Cuba. Among families, 78% were of two-parent households, 21.2% were mother-only households, and .8% father-only households. The average household monthly income among families was \$1340 or approximately \$16,000 annually. Among mothers, 41.7%



had less than a high school education, 43.9% held a high school diploma or equivalent, 11.4% completed some college, and 3% held a vocational degree. For fathers, only 90.8% of the families reported their educational status, specifically mother-only households tended to not include paternal education. Among fathers, 48.5% had less than a high school education, 29.5% held a high school diploma or equivalent, 9.8% completed some college, and 3% held a vocational degree.

**Table 1** Descriptive Statistics for Participants (n = 132)

Demographic Information	Frequency	%
Nationality		
Born in the US	24	18.2
Not Born in the US	108	81.8
Country of Origin		
Mexico	98	74.2
El Salvador	4	3
Guatemala	3	2.3
Honduras	2	1.5
Cuba	1	.8
Type of Household		
Two-parent Household	103	78
Mother-only Household	28	21.2
Father-only Household	1	.8
Mother's Education		
Less than a High School Diploma	55	41.7
High School Diploma or Equivalent	58	43.9
Completed Some College	15	11.4
Held Vocational Degree	4	3
Father's Education		
Less than a High School Diploma	64	48.5
High School Diploma or Equivalent	39	29.5
Completed Some College	13	9.8
Held Vocational Degree	4	3

### **Measure: The Familia Inventory**

The Familia Inventory (Taylor, 1996) is a 57-item self-report rating scale that is theorized to assess multiple components of the home literacy environment. Items are rated on a Likert scale that includes 0 (never), 1 (less than once a month), 2 (once a month), 3 (twice a month), 4 (once or twice a week), and 5 (daily). The instrument is typically filled out by parents or adult caretakers of toddlers or preschool children. According to the author of the Familia Inventory (Taylor, 1996), it is reported to assess the following constructs of the HLE: (a) Family Work and Play (items measure the interactions centered around shared labor and recreational activities); (b) Use of Television, (items measure the frequency and level of television viewing by the family); (c) Verbal Interactions in Home, (items measure the level of communication between the family and the child); (d) Parental Modeling of Reading, (items measure parents literacy habits that serve as models and shape the reading behavior of children); (e) Practical Reading in the Home, (items measure the family use of reading for applied purposes); (f) Shared Reading by the Family, (items measure the frequency of shared reading); (g) Shared Writing by the Family, (items measure the use of writing activities in the home); (h) Support by Extended Family, (items measure interactions with family members and relatives); (i) Library Use by the Family, (items measure how often family members use the library as a resource); and (j) Parental Support of School, (items measure parent involvement in homework and school activities) (Taylor, 1996).

The Familia Inventory (Taylor, 1996) comes in two versions, an infant-toddler version and a preschool version. The internal consistency coefficient, Cronbach's alpha,

for the preschool version (used in this study) of the Familia Inventory subscales was reported to range from 0.78 to 0.93, demonstrating adequate internal consistency reliability (Gonzalez et al., 2011).

**Spanish Re-Translation of the Familia Inventory.** The Familia Inventory (Taylor, 1996) is available in English and Spanish, but due to the improper and oftentimes erroneous translation of items in the original Spanish translation of the Familia Inventory (Taylor, 1996) and the questionable factor structure of the Spanish version of the inventory (see Gonzalez et al., 2011), on May 16, 2012 the English version of the Familia Inventory (Form A) was re-translated into Spanish. From among those eligible to translate an instrument into Spanish, a fully bilingual (i.e., Spanish and English) person was identified and selected who had previous experience translating instruments. Once translated into Spanish, on June 1, 2012 a different experienced fully bilingual (i.e., Spanish and English) person back-translated the re-translated Spanish language version of the Familia Inventory (Taylor, 1996) into English. Any inconsistencies between the original English version, the re-translated Spanish version, and back-translated English version were addressed through consensus. In the present study, the factorial structure of the re-translated Spanish version was psychometrically tested.

The decision to re-translate the Familia Inventory (Taylor, 1996) into Spanish was prompted by the very poor translation of the original English version of the instrument into a Spanish language version (see the appendix for examples of the poorly translated items from Gonzalez et al.'s (2011) study). After finding that the English and

Spanish translated versions of the Familia Inventory (Taylor, 1996) yielded dissimilar factor structures and underlying item loadings, Gonzalez et al. (2011) suggested the likely possibility that the English version of the Familia Inventory and the purported equivalent Spanish version of the inventory were two different instruments, due to the erroneous translation of items underlying the Spanish version. As Tuleja, Beamer, Shum, and Chan (2011) suggest, a problem with translations is that bias can be introduced into the translation when the items of the source language (e.g., English) change in their meaning when translated to the target language (e.g., Spanish). Although the change may be slight, it can arguably create bias in individual items and/or constructs. Not only is the wording of items crucial, but semantics, grammar, and syntax could affect the linguistic equivalence of items, thus misrepresenting or not measuring the intended construct (e.g., HLE) of interest.

### **Recruitment Procedures**

Before recruiting participating families, it is a policy of Head Start that approval from the Head Start director and the BVCAA governing body known as the Policy Council is obtained. After approval from the Head Start director was obtained, the governing Policy Council formed by parents and community members to approve decisions impacting the program were informed of the proposed study. Once approval was granted from the Policy Council, recruitment of families for this study commenced. Approval for the study was obtained during the July 2012 Policy Council meeting.

At the beginning of the 2012-2013 Head Start academic year a roster of families who were enrolled was obtained from the Head Start web-based case management

system called PROMIS. The roster included information about the primary language, secondary language, and English ability of the child. From this roster, those families meeting study eligibility criteria (outlined above) were identified and subsequently a sample was identified. All eligible families were provided with a Spanish language flyer describing the study, participation requirements, consent procedures, and risks associated with the study. To ensure appropriate readability the Flesch Reading Ease readability statistics of Microsoft Word (Flesch, 1951) was used. The score of 34 considers the document to be a difficult reading, but parents were able to have the information read to them. In order to promote participation in the study, a meeting was scheduled at the Head Start centers where the study investigator was available to explain the consent procedures, answer any questions about the study, and assist in filling out the questionnaire. Eligible families were given a flyer in Spanish with the date and time of the meeting. Meetings were scheduled either during drop-off or pick-up times. For eligible families that did not attend the meeting, a packet with the consent form for participation and the re-translated Familia Inventory (Taylor, 1996) was handed out by classroom teachers during drop-off and pick-up times. Participants that completed and returned the questionnaire were entered into a drawing for an opportunity to win one of 10 gift certificates for \$10.00 at a local supermarket. The gift cards were distributed from February to May 2013.

### **Data Collection Procedures**

After Texas A&M University Internal Review Board approval was obtained on 10-8-2012, Head Start families meeting eligibility criteria were informed of the

opportunity to participate in the study through a Spanish flyer containing information about the study. Approximately one week later a flyer inviting the eligible family to their Head Start center to receive assistance in filling out the questionnaire was delivered to the families. Families that did not attend the meeting, were provided with the study packet when they dropped-off or picked-up their child at the Head Start center or when they had their weekly home visit (if part of the home base program). All materials were given to parents by their child's teacher. The study packet contained: (a) a Spanish language consent form and (b) the Spanish re-translated Familia Inventory (Taylor, 1996). Parents were instructed to read and sign the consent form, complete the enclosed Familia Inventory (Taylor, 1996), and return the study packet to their child's Head Start teacher. Approximately after four weeks, parents who had not returned the study packet were given an additional study packet that instructed them to return the consent form and questionnaire within a week. At times, teachers asked for additional study packets due to the families misplacing them. The packets were picked up by the study investigator. Data collection procedures were conducted from October 2012 (IRB Approval) to May 2013.

### **Data Analysis Procedures**

Cronbach's alpha was calculated for each subscale of the 10-factor and four-factor structure using SPSS 21.0 (SPSS Inc, 2012) to examine internal consistency. To explore the structural validity of the Spanish language version of the Familia Inventory (Taylor, 1996) a three-stage approach was used. In stage one, since the Spanish re-translated version of the Familia Inventory (Taylor, 1996) has not been empirically

evaluated in terms of whether the items truly represent the various subscales and are indeed unique measures of those subscales a confirmatory factor analysis (CFA) was conducted. A test of the 10-factor model implied by the 10 subscales represented in the instrument and theorized by the developer of the Familia Inventory (Taylor, 1996) was conducted first. The question of fit was asked both at the level of the entire scale and at the level of the subscales as it is possible for the entire scale to fit poorly even if subscales fit well (Gonzalez et al., 2011). If the 10-factor model failed to fit the data well, in the second stage, a four-factor model found in Gonzalez et al.'s (2011) exploratory factor analysis of the English version of the Familia Inventory (Taylor, 1996) was to be tested. In Gonzalez et al. (2011) it was found that the a-priori theorized 10-factor model was not supported in a confirmatory factor analysis. Subsequently, the authors conducted an exploratory factory analysis that produced a four-factor model; hence, stage two tested the four-factor model found in Gonzalez et al. (2011) using the Spanish re-translated version of the Familia Inventory (Taylor, 1996). In the event of poor fit of the four-factor Gonzalez et al. (2011) structure, stage three involved conducting an exploratory factor analysis (EFA) to search for alternative models that fit the data well.

Fit for all models tested was assessed using the comparative fit index (CFI: Bentler, 1990) and the standardized root mean square residual (SRMR: Hu & Bentler, 1995). The chi-square test of model fit was also reported, but due to the statistic being susceptible to small sample sizes (Reise, Widaman, & Pugh, 1993; Yuan & Bentler, 2004), the CFI and SRMR fit indices were used for interpreting model fit. Models were

considered to fit well if the CFI  $\geq$  .95 and SRMR  $\leq$  .08 (Hu & Bentler, 1999). All CFA models were estimated using Mplus 7.0 (Muthen & Muthen, 2010). The EFA model was estimated using SPSS 21.0 (SPSS Inc, 2012). For each analysis, full information maximum likelihood (i.e., FIML) was used so that cases with missing values could be included. FIML estimation has been found to be superior when compared to other missing data methods (Enders & Bandalos, 2001). Fifteen percent of the 132 cases were missing at least one response, but overall less than 1% of the data were missing. Finally, due to item non-normality (e.g., skewedness), the Yuan-Bentler correction for non-normality (Yuan and Bentler, 2000) was applied using the Mplus MLR estimator.



## CHAPTER IV

### RESULTS

This chapter includes interpretation of the findings from data analysis and their relation to the research questions and hypotheses.

#### **Stage One: 10-Factor Model**

The first research question asked whether the a-priori 10-factor model proposed by the developer of the Familia Inventory (Taylor, 1996) could be validated with a Spanish-speaking sample of Hispanic families using the re-translated Spanish version of the inventory. The hypothesis, which was based on previous research (e.g., Gonzalez et al., 2011), anticipated that the a-priori 10-factor model would not be supported with the Spanish re-translation of the Familia Inventory (Taylor, 1996).

**Internal Consistency Reliability Estimates.** The internal consistency reliability of the 10-factor model subscales was assessed using Cronbach's alpha. An alpha value of .70 or above is generally considered the minimal acceptable standard (Kline, 2005). Cronbach's alpha reliabilities for the present data were compared to those obtained by the developer of the Familia Inventory (Taylor, 1996) using English and Spanish data combined and the values reported by Gonzalez et al. (2011) for his 129 completed Spanish cases in Table 2. Values reported by Taylor (2007) range from .78 to .93, indicating adequate internal consistency reliability. Values reported by Gonzalez et al. using his Spanish data indicate values below those reported by the developer of the Familia Inventory (Taylor, 1996). Specifically, only three subscales, Parental Modeling

of Reading, Practical Reading in the Home, and Library Use by the Family, were reported to exceed .70 to be considered adequate. Using data from the current study, three subscales were found to have alpha values that exceeded .70, Parental Modeling of Reading, Shared Reading by the Family, and Library Use by the Family. Refer to Table 2 for all values.

Cronbach’s alpha, a coefficient of internal consistency, provides information about intercorrelations among items. Inspection of inter-item correlations revealed that subscales did not have items with high intercorrelations and some pairs of items even correlated negatively with each other. This was the case for the Support by Extended Family, Parental Support of School, and Use of Television subscales. Gonzalez et al. (2011) also reported low item intercorrelations and subscales with items that correlated negatively with each other. The low item intercorrelations and hence the subscale alpha values below the minimum acceptable standard are concerning.

**Table 2** Cronbach’s Alpha for the Familia Inventory Subscales

Subscale	Taylor (2007)	Gonzalez et al. (2011)	Present Study
Family Work and Play	.89	.50	.62
Use of Television	.86	.57	.49
Verbal Interactions in Home	.90	.56	.67
Parental Modeling of Reading	.88	.75	.81
Practical Reading in the Home	.89	.71	.62
Shared Reading by the Family	.91	.69	.79
Shared Writing by the Family	.89	.45	.57
Support by Extended Family	.78	.50	.53
Library Use by the Family	.89	.91	.83
Parental Support of School	.93	.53	.58

**Confirmatory Factor Analysis.** All confirmatory factor analyses were conducted with the total sample, which included 132 cases. The 10-factor model implied by the 10 subscales represented in the instrument and theorized by the developer of the Familia Inventory (Taylor, 1996) was tested via confirmatory factor analysis. In the Familia Inventory (Taylor, 1996) each subscale is made up of six items, three of which are represented in at least two theorized subscales. In the model, the items were assigned to the corresponding subscale. In the 10-factor model the 10 factors could not be completely distinguished due to pairs of factors having a correlation greater than one, also known as a Heywood case (Geiser, 2013). Correlations exceeded one for Family Work and Play with Use of Television, Parental Modeling of Reading with Practical Reading in the Home, Practical Reading in the Home with Use of Television and Verbal Interactions in Home, and Use of Television with Verbal Interactions in Home and Shared Writing by the Family. Modifying the 10-factor model by dropping one subscale at a time did not produce factor correlations below one. As was hypothesized, the a-priori 10-factor model was not supported by the data, indicated by the poor fit evident by the fit indices. In these cases, Geiser (2013) does not recommend cosmetic statistical actions, but instead promotes that the data be examined closely. Fit information for the 10-factor model and the modified models is presented in Table 3.

**Table 3** Fit of the 10-Factor Model and Modified Models

Model	$\chi^2$	df	P	CFI	SRMR
10-Factor Model	2696.7	1491	<.001	.582	.089
Modified Models					
Without Family Work and Play	2171.3	1236	<.001	.621	.089
Without Use of Television	2220.1	1236	<.001	.606	.089
Without Verbal Interactions in Home	2322.5	1288	<.001	.599	.101
Without Parental Modeling of Reading	2086.2	1185	<.001	.599	.089
Without Practical Reading in the Home	2127.4	1185	<.001	.606	.089
Without Shared Reading by the Family	2239.8	1236	<.001	.578	.090
Without Shared Writing by the Family	2139.6	1185	<.001	.612	.088
Without Support by Extended Family	2229.0	1236	<.001	.616	.088
Without Library Use by the Family	2196.3	1185	<.001	.575	.091
Without Parental Support of School	2026.7	1185	<.001	.644	.087

*Note.* The models presented include at least one pair of factors with a correlation greater than one.

Since the 10-factor model was found to have poor fit, the question of fit was asked at the level of the individual subscales to attempt to explain the origins of misfit. Model misfit can be identified within subscales or between subscales. Misfit within subscales is evident when some subscale items are more related to each other than other items and misfit between subscales occurs when a subscale contains items measuring multiple subscales (Gonzalez et al., 2011). Of the 10 subscales, the four that fit well were Verbal Interactions in Home, Practical Reading in the Home, Shared Reading by the Family, and Library Use by the Family. Taking in to account that the 10-factor model did not fit well and that the majority of the individual subscales did not fit well, it is likely that misfit has origins within the subscales (e.g., subscales that have items that are highly correlated and others that are not), calling for a reexamination of the Familia

Inventory (Taylor, 1996) subscales. Fit information for the Familia Inventory (Taylor, 1996) subscales is presented in Table 4.

**Table 4** Fit of the Familia Inventory Subscales

Model	$\chi^2$	df	P	CFI	SRMR
Family Work and Play	22.8	9	.007	.821	.072
Use of Television	13.8	9	.129	.825	.063
Verbal Interactions in Home	10.6	9	.307	.977	.048
Parental Modeling of Reading	18.1	9	.034	.942	.047
Practical Reading in the Home	11.9	9	.220	.951	.049
Shared Reading by the Family	9.0	9	.439	1.000	.034
Shared Writing by the Family	17.5	9	.042	.837	.062
Support by Extended Family	35.4	9	<.001	.651	.091
Library Use by the Family	9.6	9	.386	.997	.033
Parental Support of School	53.3	9	<.001	.602	.102

### Stage Two: Four-Factor Model

The second research question asked whether the four-factor model found by Gonzalez et al.'s (2011) exploratory factor analysis using the English version of the Familia Inventory could be replicated using the re-translated Spanish version of the Familia Inventory (Taylor, 1996) with a Spanish-speaking Hispanic sample. It was hypothesized that the four-factor model would not be replicated due to the English version assuming a non-Hispanic Caucasian view.

**Internal Consistency Reliability Estimates.** The internal consistency reliability of the four-factor model subscales was assessed using Cronbach's alpha. Using data from the current study, two subscales were found to have alpha values that exceeded .70, Family Shared Reading Activities and Library Use. Unlike the Familia Inventory

(Taylor, 1996) subscales, the subscales from the four-factor model did not have pairs of items that correlated negatively with each other. Cronbach's alpha for the four-factor model subscales can be found in Table 5.

**Table 5** Cronbach's Alpha for the Four-Factor Model Subscales

Subscale	Present Study
Family Shared Reading Activities	.87
Library Use	.83
Television Use	.61
Interactions with Extended Family	.61

**Confirmatory Factor Analysis.** The four-factor model derived from the exploratory factor analysis conducted by Gonzalez et al. (2011) was tested using confirmatory factor analysis. After excluding items that had little variability and low loadings, 27 English items were used to conduct the exploratory factor analysis in the Gonzalez et al. (2011) study. The first factor, Family Shared Reading Activities, includes thirteen items, the second factor, Library Use, includes six items, the third factor, Television Use, includes 5 items, and the fourth factor, Interactions with Extended Family, includes 3 items. In the model, the items were assigned to the corresponding subscale. According to the fit indices, the four-factor model met criteria for the SRMR, but not for the CFI, indicating poor model fit. As was hypothesized, the four-factor model could not be replicated using the re-translated Spanish version of the Familia Inventory (Taylor, 1996) with a Spanish-speaking Hispanic sample. Fit information for the four-factor model is presented in Table 6.

**Table 6** Fit of the Four-Factor Model

Model	$\chi^2$	df	P	CFI	SRMR
Four-Factor Model	474.8	318	<.001	.841	.077

### **Stage Three: EFA**

The third research question was dependent on whether poor model fit was found at stage one and stage two of data analysis. Since that was the case in the present study, the final question asked whether factors derived from exploratory factor analysis best describe the home literacy environment of Spanish-speaking Hispanic families. The poor model fit found at stage two when completing a confirmatory factor analysis with the English four-factor structure found by Gonzalez et al. (2011) suggests a different factor structure for the Spanish re-translation of the Familia Inventory (Taylor, 1996) completed by Spanish-speaking Hispanic parents.

**Exploratory Factor Analysis.** In the event of a poor fit of both the 10- and four-factor models of the Familia Inventory (Taylor, 1996), an exploratory factor analysis was planned within the present study to determine what factors might underlie the 57 items of the inventory. Due to the non-normality of the data, principal axis factoring was used as the extraction method (Fabrigar, Wegener, McCallum, & Strahan, 1999). An oblique rotation method was chosen, specifically direct oblimin, to allow the factors to correlate. In SPSS the pattern matrix contains the factor and item loading information (Costello & Osborne, 2005). To determine the number of factors to retain parallel analysis (Horn, 1965) was used using the procedures outlined by O'Connor (2000).

Parallel analysis involves comparing eigenvalues derived from the sample data to those derived from random data. The eigenvalues obtained from the sample data that are greater than one when compared to the random data are retained because they most likely represent factors in the population and not sampling error. For the present data, 1000 samples were simulated with the same sample size and number of items. The obtained eigenvalues using the sample data were compared to the 95<sup>th</sup> percentile of the eigenvalues derived from the random data to determine the number of factors to retain (Hayton, Allen, & Scarpello, 2004). Parallel analysis indicated that that five factors be retained when comparing the eigenvalues of the sample data and random data. The first 10 eigenvalues for each set of data is presented in Table 7.

**Table 7** Eigenvalues

Eigenvalues for random data at 95 <sup>th</sup> percentile	Eigenvalues from sample data from present study	Decision to retain factor
2.946	13.268	Yes
2.696	3.368	Yes
2.538	2.914	Yes
2.410	2.739	Yes
2.297	2.416	Yes
2.189	2.114	No
2.097	1.877	No
2.015	1.831	No
1.932	1.711	No
1.858	1.511	No

*Note.* Only the first 10 eigenvalues are reported.

The exploratory factor analysis was conducted with the 112 cases that contained all the responses for 57 items of the Familia Inventory (Taylor, 1996). The five-factor



model accounted for 43.3% of the variance in the 57 items used. The items loading on each factor was examined to determine the name of the factor. Factor One, named Adult and Child Reading Activities, accounted for 23.3% of the variance and consisted of 15 items. Factor Two, named Library Use, accounted for 5.9% of the variance and consisted of seven items. Factor Three, named Support for Extended Family and School, accounted for 5.1% of the variance and consisted of 11 items. Factor Four, named Parental Engagement and Monitoring, accounted for 4.8% of the variance and consisted of nine items. Factor Five, named Activities Related to Learning, accounted for 4.2% of the variance and consisted of 15 items. Generally, a minimum loading of .32 is desired, which indicates that there is approximately 10% overlapping variance with the other items in the same factor (Tabachnick & Fidell, 2001). Four of the factors, included at least one item with a loading of less than .32, specifically item 48 in Factor One, items 28 and 44 in Factor Three, item 32 in Factor Four, and items 51 and 19 in Factor Five. Correlations among the factors ranged from .12 to .36. Rotated factor loadings are presented in Table 8.

**Table 8** Oblimin Rotated Factor Loadings Using the Pattern Matrix for the EFA

Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
<i>Factor 1: Adult and Child Reading Activities</i>					
(M) 50. The adults in our home enjoy reading.	.700	.108	.027	.046	-.026
(M) 40. Adults in our home read the newspaper or news magazines.	.676	.081	.212	-.228	.123
(P) 41. We use books and magazines which we have at home.	.652	.093	.166	-.135	.134
(M) 7. We give our children books about their special interests.	.609	.214	-.028	.170	-.126
(R) 26. We have favorite books that we read over and over with our children.	.570	.198	-.100	.230	-.017
(M) 3. Our children see us read books, newspapers, and other materials.	.517	-.095	.009	.207	.303
(P) 9. We read aloud things seen during the day for our children.	.514	.198	-.157	.290	.114
(R) 2. We read materials to the children which they choose to hear.	.485	.276	-.092	.304	-.019
(R) 42. We read children's books together with our children.	.465	.291	-.119	.401	.021
(M) 8. We have magazines and newspapers around our home.	.464	.040	.076	-.168	.306
(R) 52. We help the children learn letters, numbers, colors, and other basic information.	.424	-.220	.119	.171	.242
(F, V) 11. The family recites rhymes, poems, and/or sings together.	.370	-.034	.047	.121	.265
(R) 33. At bedtime, we read to our children or they read to us.	.346	.338	.046	.227	-.100
(V) 45. We ask our children to name and describe toys they play with and objects they use.	.328	-.185	.311	.259	.185

**Table 8 Continued**

Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
(F) 48. Our family spends time working together.	.301	.199	.192	.145	.171
<i>Factor 2: Library Use</i>					
(L) 39. Our children use the library.	-.152	.798	-.018	-.012	.043
(L) 6. Family members borrow books from the library.	.141	.672	-.083	-.076	-.033
(L) 24. Our children can find books of interest to them in the library.	.144	.631	.022	-.028	.084
(L) 5. We go to the library with our children.	.243	.628	.048	.007	-.022
(L) 49. Our family uses the library for resources not available at home.	.124	.615	.235	-.188	.021
(L) 31. Our children participate in library programs (summer reading, story hours, puppet shows, etc.).	-.168	.499	.069	.043	.038
(R, E) 4. The older children and/or relatives read to the younger children.	.084	.415	-.026	.150	.259
<i>Factor 3: Support for Extended Family and School</i>					
(E) 30. Our children spend time with aunts, uncles, cousins, and relatives.	-.067	.022	.569	-.146	-.142
(S) 53. We go to parent conferences, meetings, or other school events.	.041	.210	.555	.045	.023
(E) 29. Our children spend time with their grandparents.	.009	-.129	.528	-.077	-.014
(E) 47. The grandparents and relatives give our children books for gifts.	.161	.248	.433	-.042	-.076
(W) 36. Our children use puzzles, mazes, dot-to-dot, or other writing games.	-.054	.048	.394	.165	.146

**Table 8 Continued**

Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
(E) 37. Our children enjoy fun activities with their relatives.	.013	.006	.377	.214	-.179
(S) 25. We visit our children's school.	-.100	.081	.340	.046	.261
(M) 27. The adults in our home use reading to learn how to do things.	.264	.173	.333	.215	.103
(W) 16. Family members write letters to friends and relatives.	.196	.081	.323	-.024	.070
(S) 28. We talk to our children's teachers about their progress in school.	.023	.177	.274	.083	.224
(T) 44. Our children watch educational TV programs designed for children their age.	.183	-.006	.193	.053	.082
<i>Factor 4: Parental Engagement and Monitoring</i>					
(V) 17. We encourage our children to describe how things are done.	.107	-.135	.113	.666	.091
(T) 35. Our children watch only TV programs with subject matter appropriate for children.	.145	-.140	.030	.612	-.071
(T) 13. The children watch less than two hours of TV per day.	-.018	.107	-.079	.476	-.110
(F) 10. We go on family outings together (walks, trips to the park, etc.).	-.015	.083	.323	.463	-.028
(S) 15. We make sure our children complete and understand homework.	.086	.020	-.341	.449	.192
(P) 18. Our children help find items and prices when we go shopping.	-.367	.047	.276	.379	.314
(P) 14. We help our children to follow printed directions.	.252	.139	-.021	.353	.115
(V) 23. We talk with our children about the world around us.	.009	.164	.058	.348	.250

**Table 8 Continued**

Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
(P) 32. We look up how to do things in books and magazines when we make things at home.	.060	.248	.090	.288	.138
<i>Factor 5: Activities Related to Learning</i>					
(S) 43. We talk to our children about how they feel about teachers and schoolmates.	.006	.009	.122	-.055	.675
(S) 34. We talk with our children about what happened at school.	.033	.074	-.042	-.123	.562
(T) 54. We monitor how much television and what kind of programs our children watch.	.383	-.107	-.167	.076	.555
(W) 55. We help our children with writing numbers, letters, and words.	.403	-.189	.004	.069	.529
(W) 46. Our children draw and color for enjoyment.	-.157	-.036	-.120	.108	.513
(T, V) 21. We discuss TV programs which the family has watched together or the children have watched.	-.008	.091	.065	.220	.433
(F) 38. Our children have regular tasks they must do to help at home.	.112	.113	-.078	-.152	.427
(W) 22. Our children use pencils, markers, crayons, etc.	-.100	.149	-.143	.163	.402
(F) 56. Our family has fun together.	.189	-.090	.146	-.076	.396
(V) 1. We talk with our children as we play, work, and carry out our daily routine.	.159	.099	.019	-.075	.385
(F) 57. We are a supportive family.	.147	.078	.052	-.098	.364
(E) 12. We share stories about our family and ancestors with our children.	.106	.176	-.007	.156	.348

**Table 8 Continued**

Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
(W) 20. The children help plan menus and daily activities for the family.	.016	.001	.138	.144	.329
(P) 51. Our children use games and toys which have printed directions.	.108	.040	.228	.048	.266
(T) 19. Our family has favorite TV programs that we watch together.	.215	.039	.060	.137	.256

*Note.* The items listed are the English equivalent items to those used in the present study. The original subscales to which the items belong are noted in parenthesis. (F subscale) Family Work and Play; (T subscale) Use of Television; (V subscale) Verbal Interactions in Home; (M subscale) Parental Modeling of Reading; (P subscale) Practical Reading in the Home; (R subscale) Shared Reading by the Family; (W subscale) Shared Writing by the Family; (E subscale) Support by Extended Family; (L subscale) Library Use by Family; (S subscale) Parental Support of School.

## **CHAPTER V**

### **CONCLUSION**

The purpose of this study was to explore the underlying factorial structure of a re-translated Spanish-language version of the Familia Inventory (Taylor, 1996) by (a) determining whether the a-priori 10-factor model proposed by the developer of the Familia Inventory (Taylor, 1996) could be validated using confirmatory factor analysis (CFA) with a Spanish-speaking sample of Hispanic families. A re-translated Spanish version of the Familia Inventory (Taylor, 1996) was used in the present study. In the event of poor CFA fit, the next step in this study was to, (b) determine whether the Familia Inventory four-factor model found by Gonzalez et al. (2011) using the English version could be replicated, and finally if poor model fit was also evident, the final step was to (c) conduct an exploratory factor analysis to determine the factors that best described the home literacy environment of Spanish-speaking Hispanic families. It was hypothesized that the developer's a-priori 10-factor model and the four-factor model found by Gonzalez et al. (2011) would not be supported with the Spanish re-translation of the Familia Inventory (Taylor, 1996) completed by Spanish-speaking Hispanic parents.

#### **Significant Findings**

Using data from 132 respondents (a response rate of 67%), the CFA model testing for the 10 subscales theorized by the developer of the Familia Inventory (Taylor, 1996) did not yield adequate model fit. In fact, the 10 subscales could not be completely

distinguished from each other. This called into question the structural validity of the developer's a-priori hypothesized subscales that underlie the inventory. Separate CFA models were tested for individual subscales to determine misfit. Out of the 10 subscales, six subscales did not yield adequate model fit suggesting that they are not unidimensional. These findings point to an inventory that needs reexamination due in part to poor model fit of the entire inventory and most of the subscales. The CFA model replicating the four subscales derived from the EFA conducted by Gonzalez et al. (2011) also yielded poor model fit. This was not unexpected given that the English version of the inventory was used.

These results suggest that the re-translated Spanish version of the Familia Inventory (Taylor, 1996) may not have been able to accurately capture the HLE of Hispanic families with the 10 original subscales theorized by the developer nor the replicated four-factor structure found in Gonzalez et al. (2011). Despite the attempt to correctly translate the English version into a Spanish version, problems between and within the subscales revealed that items did not adequately load on to their theorized subscales. The lack of factorial validity of the inventory called into question the appropriateness of the inventory for use with non-native English speakers and more importantly, non-Caucasian populations. In fact, research shows a frequent problem with measures of the HLE is their inappropriate use to assess home environments of culturally and linguistically diverse families with American standards for home literacy development and the Familia Inventory (Taylor, 1996) is no exception. Its original construction with Icelandic families and later standardization with an American sample



clearly did not take into account the home literacy practices of Hispanic families. Despite the author providing norms for Hispanic Americans, it is unclear whether the sample used was integrated in the standardization sample or was an independent sample. Further, the author did not provide information about the primary language of the Hispanic American sample despite having English and Spanish language versions of the instrument available.

The decision to conduct the present study with a re-translated version of the English Familia Inventory (Taylor, 1996) into Spanish was prompted by the findings by Gonzalez et al. (2011) who found that the English and Spanish versions of the Familia Inventory (Taylor, 1996) that were reported to be equivalent language versions were actually “two different instruments” (p. 480). After conducting a retranslation of the Spanish items into English and comparing the English retranslation to the original English items, many items were found to differ in meaning, suggesting a poor Spanish translation (Gonzalez et al., 2011). The results of the present study using the re-translated Spanish inventory are similar to those found in Gonzalez et al. (2011) conducted with the original Spanish version of the inventory. This suggests that the problems with the Familia Inventory (Taylor, 1996) go beyond its method of translation and instead point to inherent problems with the construction of the inventory and the HLE dimensions measured therein.

Due to the poor model fit found when conducting the 10- and four-factor confirmatory factor analyses, EFA analysis were subsequently conducted to determine what factors might underlie the 57 items of the inventory. Using the 57 re-translated

items of the Familia Inventory (Taylor, 1996) a five-factor model was derived. When naming the factors, the contribution of individual items was taken into account with items with higher loadings being more influential. Although, the present model included the 57 items, they are represented in five subscales instead of 10, as determined by Taylor (1996). The five factors were named: (1) Adult and Child Reading Activities, (2) Library Use, (3) Support for Extended Family and School, (4) Parental Engagement and Monitoring, and (5) Activities Related to Learning.

**Adult and Child Reading Activities.** The primary factor, Adult and Child Reading Activities, included items such as, *the adults in our home enjoy reading, adults in our home read the newspaper or news magazines, we have favorite books that we read over and over with our children, and we read children's books together with our children.* Shared reading has been widely researched and is supported by the notion that parents who read to their children are contributing to their oral language development (Hart et al., 2009; Burgess et al., 2002). Adult's literacy behaviors and the literacy related materials they provide have been shown to be associated with children's literacy development (Elliott & Hewison, 1994). Both adult reading behaviors (van Steensel, 2006; Hammer et al., 2003) and adult-child shared reading (van Steensel, 2006; Stephenson et al. 2008; Hood, Conlon, & Andrews, 2008) are included in researcher's HLE conceptualizations as one dimension or as separate dimensions. Similar to the first factor in the present study, Hart et al. (2009) measured the HLE with one dimension, which represented adult and child reading behaviors.

**Library Use.** The second factor, Library Use, included items such as, *our children use the library, family members borrow books from the library, our children can find books of interest to them in the library, and we go to the library with our children*. Often, the frequency of library visits (Hood, Conlon, & Andrews, 2008; Phillips & Lonigan, 2009) is measured in studies conceptualizing the HLE as a way to determine the learning opportunities that are provided to the child (Melhuish et al. 2008). On the contrary, Hammer et al. (2003) used a question inquiring about the frequency of library visits as a way to determine child interest in reading.

**Support for Extended Family and School.** The third factor, Support for Extended Family and School, included items such as, *our children spend time with aunts, uncles, cousins, and relatives, we go to parent conferences, meetings, or other school events, our children spend time with their grandparents, and we visit our children's school*. Parent participation in school activities has been widely supported in the literature as being associated with children's academic achievement (Fan & Chen, 2001), but due to conceptualizations of the HLE focusing on activities that occur in the home, it has largely been ignored as an HLE dimension. The inclusion of extended family in this factor is not unusual, as Hispanic families include both immediate and extended family members that play a role in transmitting values to younger children (Zayas & Solari, 1994). Often, extended family members of Hispanic children are involved in their care; therefore, also impacting the home literacy environment. Of the HLE conceptualizations reviewed, only the Familia Inventory (Taylor, 1996) included items pertaining to extended family members as a dimension of the HLE. Considering

this factor, it may be that the presence of extended family is relevant for the Hispanic HLE, but this will remain misunderstood unless it is studied directly with this population.

**Parental Engagement and Monitoring.** The fourth factor, Parental Engagement and Monitoring, included items such as, *we encourage our children to describe how things are done, our children watch TV programs with subject matter appropriate for children, we make sure our children complete and understand homework, and we talk with our children about the world around us.* This factor is unique in that it includes an area of interest to researchers conceptualizing the HLE, television watching habits, but this factor focuses on the monitoring of the activity. Researchers have included television watching habits (Phillips & Lonigan, 2009) and literacy focused television watching habits (van Steensel, 2006) as part of their HLE conceptualizations. Combined with parental monitoring of activities, this factor also focuses on parent engagement with children, such as through verbal interactions, which have been recognized as critical for preschoolers' language development (Hart & Risley, 2003).

**Activities Related to Learning.** The fifth factor, Activities Related to Learning, included items such as, *we talk with our children about what happened at school, we help our children with writing numbers, letters, and words, we discuss TV programs which the family has watched together or the children have watched, and we talk with our children as we play, work, and carry out our daily routine.* The variety of activities is meant to capture the opportunities children have to experience literacy and learning in

their homes. Oftentimes, researchers conceptualize the HLE with a broad dimension named learning opportunities, literacy activities, or literacy-related activities (Melhuish et al., 2008; Hammer et al., 2010; Hammer et al., 2003) that include activities relating to using writing materials, telling stories, engaging in games, drawing and coloring, and singing songs.

The lack of research with Spanish-speaking Hispanic families does not allow researchers to capture the literacy practices that are relevant in Hispanic children's homes. For example, the exclusion of items inquiring about the role of extended family members in the HLE demonstrates that researchers are not accurately conceptualizing the HLE of Hispanic families. Other information about Hispanic families that may be missed includes the unique literacy practices that are carried out in Hispanic homes such as, the imparting of moral messages to young children that emphasize cooperation and reciprocity (Reese & Gallimore, 2000; Perry, Kay, & Brown, 2008), the use of storytelling to impart cultural history and traditions to children (Boyce et al., 2010), and the use of "dichos" or popular sayings, that serve as a literacy tool to express cultural values and attitudes (Espinoza-Herold, 2007). These themes are not measured by mainstream HLE measures like the Familia Inventory (Taylor, 1996) and in turn miss important information represented in Hispanic families.

### **Recommendations for Further Research**

There is agreement among researchers that the HLE is multidimensional, but complex due to its various hypothesized dimensions, making consensus on a universal definition difficult. For those researchers who are interested in defining the HLE of

Spanish-speaking families, an obstacle frequently confronted is the lack of HLE measures available in Spanish. The Familia Inventory (Taylor, 1996) is a rarity in that it is used to assess the HLE and it is available in Spanish, but researchers interested in assessing the HLE of Spanish-speaking families may have to look elsewhere. Closer inspection of the user's manual (Taylor, 1996) reveals that the inventory lacks in psychometric data and the manual does not give detail of the underlying structure. Studies, including the present study, that have explored the underlying factor structure of the Spanish version of the Familia Inventory (Taylor, 1996) have found that the inventory fits poorly when tested with Spanish-speaking Hispanic families using the 10 hypothesized a-priori subscales.

The exploratory factor analysis conducted in the present study has revealed a five-factor solution that is better able to capture the HLE of Spanish-speaking Hispanic families. The finding that the original 10-factor model proposed by the developer of the Familia Inventory (Taylor, 1996) did not fit well, calls into question the use of the Spanish version of the inventory with Spanish-speaking families, proving that conceptualizing the HLE and for who it represents is no easy task. As is, the inventory does not prove to be culturally sensitive and instead may only represent the Icelandic families used during its construction. The five-factor solution that resulted from the exploratory factor analysis may serve as a starting point for researchers interested in studying the HLE of Spanish-speaking Hispanic families.

With its limitations, the Spanish version of the Familia Inventory (Taylor, 1996) is the only Spanish instrument available designed to measure the HLE. In its original

form, this inventory should be used with caution with Spanish-speaking families as they may differ from the Icelandic families that were used to construct the instrument. To examine how the HLE is carried out in Spanish-speaking Hispanic families, researchers should strive to explore how families engage in literacy activities with children through qualitative methods or with an emic perspective (e.g., an insider's perspective). This would allow researchers to gain information about how families interact with books and other print or non-print materials (e.g., digital technology), which may vary across homes and families (Edwards, 2007), especially for those who are ethnically diverse. Including the role of technology on measures of the HLE would provide information about children's experiences with learning of literacy skills via technologies (e.g., computers, lap tops, cell phones, iPads, tablets) available at home (Plowman, Stevenson, Stephen, & McPake). Research in this area would provide information about children's interactions with technology and more importantly whether they are exposed to literacy related materials purposefully. Sugland et al. (1995) suggests that the only way to learn about the parenting practices of racial/ethnic groups is to conduct qualitative studies that explore parenting dimensions that may differ from empirical work already conducted. Van Steensel (2006) recommends that both quantitative and qualitative methods be used when the goal is to understand what literacy activities are conducted in the home and how they can affect children's education and development.

What these researchers are suggesting is that the HLE be investigated through an emic lens or qualitative methodology, rather than continuing to conduct research on the HLE of ethnically diverse families with Caucasian conceptualizations (e.g., etc

perspective). While few, there are some studies that attempt to investigate or represent ethnic minority groups through qualitative methods, but there is limited improvement in understanding the HLE from a “bottom-up” (e.g., emic) perspective. Paired with an emic perspective, using a strengths-based perspective when developing HLE instruments may lead researchers to focus on families’ “talents, skills, and best qualities” (Gardner & Toope, 2011, p. 89). Focusing on the positive aspects of families combats the deficit perspective that is often taken that considers ethnically and linguistically families as at-risk with limited opportunities. Unless researchers take an emic approach (i.e., inside) or a mixed methods approach, the HLE will continue to be poorly understood, especially for non-dominant cultural groups such as Hispanic families. Once the HLE of Spanish-speaking Hispanic families is better understood, reliable and valid measures can be created based on empirically established HLE dimensions.

### **Implications for School Psychologists and Teachers**

Building a research base of the literacy practices that culturally and linguistically diverse families participate in would be invaluable for school psychologists and teachers who work directly with diverse families and their children (e.g., Hispanics). Children enter school with varying degrees of literacy experiences in their homes prior to school. Often, those children who have experienced poor HLEs receive targeted intervention in the areas of reading or early literacy, with recommendations extending to the home. To gain information about the HLE practices or to determine the effectiveness of interventions, school psychologists or teachers may use HLE measures. If working with Spanish-speaking families, school psychologists and teachers are at a disadvantage due



to the lack of measures available. Instead, it is recommended that a thorough interview be held with the parent to determine the family literacy practices, in order to compare them to the expectations of the school. It is not then unreasonable to expect that discrepant expectations may exist between the literacy practices and expectations of different cultural groups (e.g., Hispanics) and those expected of teachers in typical American/western style classrooms, a fertile ground for misunderstandings. For example, important discrepancies or misrepresentations in values, beliefs, or attitudes towards home child-rearing, (Bradley et al., 1994) involvement of extended family, and literacy practices may exist between the Caucasian/western view of independence and the non-western view of collectivism found in Hispanic families.

Most importantly, school psychologists and teachers should make reasonable efforts to determine whether the views Hispanic parents hold of early literacy development differ from those of mainstream American school systems. Having knowledge of Hispanic families' views can provide information to school psychologists and teachers about the child's skills and abilities. From the information gathered, unique family strengths could be identified and used to generate recommendations for classroom teachers and parents. Once adults in the school system are better able to understand the experiences of Hispanic children in their homes, literacy pedagogical instructional practices are likely to be more relevant for the children as they can be targeted to the child's experience leading to educational success.

## **Limitations of the Study**

A limitation of the study is the sample size of 132 (CFA) and 112 (EFA) used for the factor analyses. Although, there is no consensus on a minimum desirable level of sample size (MacCallum, Widaman, Zhang, & Hong, 1999), using the rule of three would have determined the sample size to be approximately  $n = 171$  ( $57 \text{ items} \times 3 = 171$ ). The fit indices used to determine model fit were selected due to their ability to be unaffected by sample size (Hu & Bentler, 1998). Further, the EFA model should be considered tentative as the parallel analysis conducted took sample size into account. A second limitation is the non-normality of the data. The MLR estimator was applied when conducting CFA analyses and principal axis factoring was used as the extraction method in the EFA analysis to correct this issue. A third limitation of the study is the homogeneity of the study population. The sample consisted of Hispanic families with low-socioeconomic backgrounds whose children attended BVCAA Head Start. Since the sample used in the present data differs from the original Icelandic sample used to standardize the inventory, researchers are encouraged to validate the Spanish version of the Familia Inventory (Taylor, 1996) with samples similar to the one used in the present study.

## **Summary and Conclusions**

The importance of the HLE is undoubtedly clear and therefore warrants measuring the HLE of children. The HLE has proven to be complex, with no consensus on a universal definition, only on its dimensionality. The adults in children's homes are considered to be the child's first teacher making them the creators of a HLE that will

determine the child's early language, literacy, and reading readiness. Although research on the HLE is well documented, research with ethnically and culturally diverse families, such as Hispanics, is less widespread. Often, when studies are conducted with Hispanic families Caucasian conceptualizations of the HLE are used. In an attempt to address issues with a poor translation (Gonzalez et al., 2011), a re-translation of the Familia Inventory (Taylor, 2006) was conducted of the English version into a Spanish language version.

The present study's inability to confirm the developer's 10-factor model points to an HLE instrument with flaws that originate within the subscales. The results found in this study are similar to the results found in a psychometric study by Gonzalez et al. (2011) using the Familia Inventory (Taylor, 1996). This is a concern and perhaps shows that the translation used in the original Spanish language version of the inventory is not the source of model misfit, but rather the inventory itself needs to be theoretically re-conceptualized. Instead of using a flawed inventory with Spanish-speaking Hispanic families, taking an emic approach to studying the HLE of ethnically and culturally diverse families will provide the most useful and accurate information. The information gained could be useful for research purposes in conceptualizing the HLE of Hispanic families, but also for school psychologists and teachers working directly with Hispanic families and their children.

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## APPENDIX

### RETRANSLATIONS CONDUCTED IN GONZALEZ ET AL. (2011) STUDY

Items with Significant Change of Meaning after the English Retranslation

Original English Item	Spanish Item	English Retranslation
4. Our older siblings share reading with our younger children	4. Los hijos mayores y los parientes leen a los hijos menores	4. The older children and relatives read to the younger children.
12. We share stories with our children about our family and other relatives	12. Con los niños compartimos historias acerca de los abuelos y los antepasados	12. We share stories about grandparents and ancestors with our children
17. We talk with our children about people and places in our community	17. Hablamos con nuestros hijos del mundo que nos rodea	17. We talk to our children about the world around us.
21. We talk with our children about the television programs they watch	21. Discutimos los programas de televisión que vemos juntos o que ellos ven	21. We discuss the television programs that we watch together or that they watch.
23. We sing songs and say rhymes with our children	23. La familia entera dice versos, poemas o canta junta	23. The whole family recites poetry, poems or sings together.
32. We share games, toys and activities with our children which involve printed directions	32. Ayudamos a nuestros hijos a seguir direcciones escritas	32. We help our children to follow written instructions.
36. We plan family activities with the children, such as meals, trips, daily routines	36. Nuestros hijos nos ayudan a planean las actividades diarias y los eventos especiales de la familia	36. Our children help us plan daily activities and the special events of our family.
51. We read aloud with the children things we see during the day.	51. Leemos en voz alta las cosas que ven durante el día, como señales en la calle o en la tienda	51. We read out loud the things that they see during the day, such as signs on the street or in the store.
52. Our children choose books for us to read to them	52. Les leemos los materiales que ellos escogen	52. We read the materials that they choose.
55. We help the children write notes and letters to friends and relatives	55. Los miembros de la familia escriben cartas a los amigos o familiares.	55. The members of the family write letters to friends or family.

Items with Missing Words or Added Words That Could Change the Overall Meaning

Original English Item	Spanish Item	English Retranslation
9. Our children use games and toys which have printed directions	Nuestros hijos utilizan juguetes que tienen instrucciones escritas	Our children use toys that have written instructions.
11. We encourage our children to explain how things work and how to do tasks	11. Pedimos a nuestros hijos que digan cómo hacer las cosas	11. We ask our children to explain how to do things.
20. Our children use pencils, markers, and crayons	20. Nuestros hijos usan marcadores y crayones	20. Our children use markers and crayons.
27. We give our children books about things of special interest to them.	27. Damos a nuestros hijos libros que les interesan especialmente	27. We give our children books that interest them specially.
31. Our children check out books from the library	31. Los miembros de la familia piden prestado libros de la biblioteca	31. Members of the family borrow books from the library.
41. We look up how to do things in books, manuals, and magazines when we make things at home.	41. Cuando hacemos las cosas en la casa vemos como hacen en los manuales o revistas.	41. When we do things at home we see how they do it in manuals or magazines
46. Our children use puzzles, mazes, dot-to-dot and/or other writing activities	46. Nuestros hijos usan rompecabezas, crucigramas, y otras actividades	46. Our children use puzzles, crossword puzzles, and other activities.
47. On special occasions, the grandparents or other relatives give the children books for gifts	47. Los abuelos u otros familiares les regalan libros	47. The grandparents or other relatives give them books as gifts
53. We encourage our children to understand and complete school homework	53. Nos aseguramos de que los niños entiendan y hagan sus tareas escolares	53. We ensure that the children understand and do their homework.
57. We are a supportive family.	57. Nos ayudamos uno al otro como familia.	57. We help each other as a family.