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Mother-Child Interactions Among Latino Families and European-American Families in Relation to Children's Language Outcomes

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MOTHER-CHILD INTERACTIONS AMONG LATINO FAMILIES AND EUROPEAN-AMERICAN FAMILIES IN RELATION TO CHILDREN'S LANGUAGE OUTCOMES

by

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ABSTRACT

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The number of Latino families in the United States is increasing dramatically. For some of the children in these families, the acquisition of reading skills is hampered by inadequate early language development. Early language development is a key predictor of reading success. Identifying ways in which parents in these families can help children acquire early language skills will better prepare them for acquiring reading skills.

This study used a new parenting measure, PICCOLO, to identify parenting behaviors that are related to children's language development. The primary focus of this project was on Spanish-speaking Latino families, but a group of English-speaking European-American families was used as a contrast group. Parenting behaviors, parenting differences between cultures, and relations between PICCOLO data and children's language outcomes were explored. Results indicated that there were fewer correlations between parenting behaviors of Latino parents and children's language than there were

between European American parents and children's behavior. Behaviors that were related to children's language for Latino families were combined into a factor that significantly predicted children's language. The behaviors that made up this factor seemed to be from an aspect of parenting that could be described as "hands-off responsiveness."

(158 pages)

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CHAPTER I

INTRODUCTION

Learning language is one of the most important tasks of early childhood. Early vocabulary and language development is a key predictor of children's later language ability and reading success (Scarborough, 1990). Supporting children's early language development is an effective way of promoting healthy long-term development by providing children with the skills that will enable them to experience success acquiring language and later, learning to read. While for many children the acquisition of language skills is seemingly effortless, other children struggle to develop the language skills that will allow them to be successful communicators and readers throughout their lives. One group of children who often struggle learning to read is children who come from families who do not speak English as their home language (Carlo et al., 2004; Snow, Burns, & Griffin, 1998). Before these children enter school, they have many experiences that either contribute to strong early language skills, or they do not. Exploring how children who are not native English speakers develop early language skills can aid intervention programs seeking to support children's language development.

Parents are influential in their children's development, including children's language development. Parent-child interactions contribute to children's early language development, and parents have a strong influence on children's early language abilities (Hart & Risley, 1995; Hubbs-Tait, Culp, Culp, & Miller, 2002; Tamis-LeMonda, Bornstein, & Baumwell, 2001). While the role of parent-child interactions in supporting their children's early language abilities has received considerable research attention,

more research is needed exploring this topic in families who are not native English speakers and who speak little English. The largest group of children in the U.S. who are not native English speakers is Latino children who speak Spanish as their home language, representing 20% of children in the U.S. (Van Hook & Fix, 2000). Identifying parent-child interactions among Spanish-speaking Latino families that facilitate children's early language development can aid intervention programs that seek to support the development of these children.

This study explored parent-child interactions in Spanish-speaking Latino families with the goal of identifying aspects of these interactions that contribute to successful language outcomes for children. Because early language ability is related to later school success (Scarborough, 1990), helping young children from Spanish-speaking families become skilled communicators is a form of early intervention that will contribute to their later academic and life success.

Importance of Early Language

Children's early language abilities are correlated with later success learning how to read, an important predictor of school and life success (Scarborough, 1990; Whitehurst, 2002). When children have strong early language abilities, they are in an ideal position to gain the later reading abilities that will allow them to excel both in school and in life in general. Children who have poor early language abilities, however, are more likely to have difficulties learning how to read. Providing early support for children's language development may help to decrease the number of children who

experience difficulties learning to read and face barriers to school success.

Language trajectories are typically set early in life, with children who have high language abilities when they are toddlers later having high language and reading abilities (National Research Council [NRC], 1998; Scarborough, 1990). Interventions aimed at promoting reading success are most successful when implemented before children enter school (NRC). Because early language abilities are a key to children's later reading success, it is important to provide early support for them and to seek to understand how early interactions, including parent-child interactions, can build these abilities.

Importance of Parent-Child Interactions

During the first few years of a child's life, interacting with parents is perhaps the singular most important experience influencing children's development. Even for children who spend much time in childcare, parent-child interactions remain a salient influence on developmental outcomes (NICHD Early Child Care Research Network, 2001). Research illustrating the importance of parent-child interactions has shown that early interactions are related to children's development in several domains, including their language development (Denham, 1993; NICHD Early Child Care Research Network, 2002; Steelman, Assel, Swank, Smith, & Landry, 2002). While pathways of development remain somewhat flexible throughout the lifespan, experiences children have in the first few years of life can influence long-term developmental outcomes (Shonkoff & Phillips, 2000). Better understanding how parent-child interactions support healthy early developmental outcomes can provide long-term benefits to children.

It is not just the quantity of parent-child interactions that are important for development. The quality of interactions also contributes to variation in children's developmental outcomes. Interactions that are warm and responsive tend to contribute to the most successful developmental outcomes, while harsh and intrusive parenting is related to poor developmental outcomes, particularly for European-American families (Hubbs-Tait et al., 2002; NICHD Early Child Care Research Network, 2001; Steelman et al., 2002). The majority of this research was based on findings from European-American families, which illustrates the need to explore parent-child interactions within different cultural contexts.

Recognizing that different cultural contexts may have different implications for children's development is important to better understand how parents can influence their children's development. For example, while an authoritarian parenting style, marked by much parental control and little warmth, is related to negative outcomes for European-American children, some evidence indicates that for African American children, and possibly other ethnic minority groups, an authoritarian parenting style is not related to negative child outcomes (Wachs, 1999). Other research indicates that activities typical of parent-child interactions in European-American samples may not be typical of parent-child interactions in Latino families (Anderson & Stokes, 1984; Cervantes & Perez-Granados, 2002; Eisenberg, 2002). These studies further illustrate the need for exploring how the same parenting behaviors can have different influences on developmental outcomes for children from different cultures. Understanding these issues and how the cultural context can influence the relations between parent behavior and children's

outcomes is informative for intervention programs seeking to support children's development.

As mentioned, parent-child interactions contribute to developmental outcomes in several domains of child development. This study looked exclusively at children's language outcomes. The importance of studying the relation between parent-child interactions and children's language outcomes is evidenced by the importance of early language abilities for later school and life success. By better understanding how parent-child interactions support children's language development within different family contexts, intervention programs will be able to provide support that is culturally appropriate.

Early Intervention Supports

Interventions aimed at supporting the language development of young children may offer support through center-based services, through home-based services, or through a combination of the two types of services. Programs that choose to offer home-based services likely do so with the belief that parents play an integral role in their children's development. Successful intervention programs have shown that including parents in the intervention process can contribute to the effectiveness of intervention services (Campbell, Pungello, Miller-Johnson, Burchinal, & Ramey, 2001; Weikart, 1989). The national evaluation of Early Head Start showed that at least part of the impact of Early Head Start on children's development was mediated through the impact of the program on parenting (Administration for Children, Youth, and Families [ACYF], 2002).

Understanding how different aspects of parent-child interactions are related to children's early language development can provide intervention programs with useful information to guide their intervention services and provide optimal support for children's language development. Extensive research has looked at the relations between parent-child interactions and children's language outcomes (e.g., Arnold, Lonigan, Whitehurst, & Epstein, 1994; Baumwell, Tamis-LeMonda, & Bornstein, 1997; Steelman et al., 2002; Whitehurst et al., 1988). While this information has been useful in designing intervention services, a better understanding is needed of parent-child interactions in relation to children's language development within specific groups of families whose children are at-risk for poor reading abilities. Such information can aid in identifying ways to support children's language development in these families.

Intervention services are provided to many different groups of at-risk children, including children with disabilities, children living in poverty, and children who are not native English speakers. There are many children in the U.S. who are not native English speakers, including Spanish-speaking children from Latino families.

Latino Families

The number of Latinos in the U.S. is increasing dramatically. Many of these families are recent immigrants to the U.S. Latinos are currently the largest minority group in the U.S., and based on current growth estimates, by the year 2050, one quarter of the projected population of the U.S. will be of Latino descent (U.S. Census Bureau, 2004.).

Intervention programs may target Latino families because children from these

families are at-risk for problems in school, including problems learning to read. Nationally, 59% of fourth-grade Latino children read below grade level compared to only 28% of fourth-grade European-American children (National Center for Education Statistics, 2003). A possible obstacle for some of these children is that they lack English skills, making it difficult to learn to read. However, multiple studies conducted with Spanish-speaking children show that some literacy skills transfer from Spanish to English (Lindsey, Manis, & Bailey, 2003; Proctor, August, Carlo, & Snow, 2006; Sparks, Patton, Ganschow, Humbach, & Javorsky, 2008; Tabors, Páez, & López, 2003). Thus, children with strong early language skills in Spanish are likely to become better readers eventually, even if they start school with few English language skills. Yet some of these children do not have strong language skills in either Spanish or English when they begin school, making it difficult for them to successfully learn to read.

Spanish and English are each used in varying amounts by these families, and it is difficult to predict how these families will negotiate the use of two languages. The U.S. has been called a foreign language graveyard (Portes & Hao, 2002). In the past, immigrants came to the U.S. speaking the language of their native country. Typically, their language was lost over a period of three generations. The first generation spoke primarily their native language and little English. The second generation was often fairly fluent in both their parent's native language and in English. By the third generation, children spoke little of their grandparent's language and often learned only English.

Although this trend can be seen to some extent among Latino immigrants (Padilla & Perez, 2003; Portes & Hao, 2002), there are some indications that the Spanish

language will not follow the same death march of many of the other immigrant languages. Latino immigrants are a unique group, both historically and currently. While most early immigrants to the U.S. were from European countries and had limited opportunities to travel back to their country of origin because of the extraordinary difficulty and expense, this may not be the case for Latino immigrants. Latino immigrants often come from countries geographically closer to the U.S., and travel between the U.S. and their native countries is relatively easy and inexpensive. This makes it easier for Latino immigrants to maintain ties with their families in their native country and to retain their native language.

In addition, the large numbers Spanish-speakers makes it less important for them to learn English, especially in some areas of the country. There are certain areas of the U.S. where Latinos are the majority group, including communities such as Hialeah, Florida, where 92% of residents speak Spanish as the primary language in the home (Shin & Bruno, 2003). These factors, ease of maintaining contact with native countries, and the large numbers of Spanish speakers in the U.S., suggest that Latino immigrants may be less likely to lose their native language than past groups of immigrants.

As noted, it is difficult to know to what extent Spanish and English are used by these families. Differing amounts of Spanish and English create quite different language environments for children. For this study, the interactions of families who identify themselves as Latino or Hispanic and who report primarily using Spanish in the home were studied. While this limits the generalizability of the research, it provides more accurate information for intervention programs that work with primarily Spanish-

speaking families and seek to support the early language abilities of Spanish-speaking children.

Some intervention programs that try to support language development among Spanish-speaking Latino families use a preschool-based intervention approach to provide an English immersion environment (Rodriguez, Diaz, Duran, & Espinosa, 1995; Winsler, Diaz, Espinosa, & Rodriguez, 1999). By the time children are eligible for these services, however, they have already developed some language skills, and deficits in language ability may already be present. In reality, school readiness begins during infancy, the time when children gain a foundation of language (Tamis-LeMonda & Rodriguez, 2008). Because language trajectories are often set early in life, it is important to identify ways in which to support the development of language before children are eligible for preschool services.

An alternative way to support the language development of these children is by identifying ways in which parent-child interactions contribute to children's early language development before age three. Identifying ways in which parents can support their children's earliest language development is likely to suggest specific parent-focused interventions. Because strong language skills, in either language, are related to more successful reading outcomes (Tabors et al., 2003), Spanish-speaking parents can contribute to their children's later reading success by supporting the early Spanish language abilities of their children.

This study explored parent-child interactions of families who primarily use Spanish in the home. This provides information for programs seeking to support the early

language abilities of Spanish-speaking children.

Research Questions

The purpose of this study was to explore parent-child interactions in Latino families and to identify aspects of parent-child interaction that are associated with the early language development skills of Latino children. The following research questions were used to identify ways in which parent-child interactions among Spanish-speaking Latino families contribute to children's early language development. While exploring these relations among English-speaking European-American families was not a primary topic of interest for the present study, data from these families were compared to data from Spanish-speaking families to explore similarities and differences between these two groups. This was done not in an attempt to show that parent-child interactions were superior in either culture, but to discover ways that culture influences parent-child interactions and their impact on development. Being able to recognize the ways in which culture influences parenting will enable intervention programs to provide more appropriate support for the families enrolled in their programs. Research questions include:

1. What positive parenting behaviors in the domains of affection, responsiveness, encouragement, and teaching/talking are typical of parent-child interactions in both groups of families (i.e., Spanish-speaking Latino families and English-speaking European-American families)?
2. How do positive parenting behaviors in the domains of affection,

responsiveness, encouragement, and teaching/talking that occur in the Spanish-speaking Latino families compare to positive parenting behaviors in the domains of affection, responsiveness, encouragement, and teaching/talking that occur in parent-child interactions in English-speaking European-American families?

3. Which of these positive parenting behaviors in the domains of affection, responsiveness, encouragement, and teaching/talking, within each group of families, are related to children's early language development?

Taken together, these questions will provide a better understanding of how Latino parents support their children's language development and which parenting behaviors early interventions should facilitate so Latino Spanish-speaking parents are better able to promote early language development in their children.

CHAPTER II

REVIEW OF THE LITERATURE

This chapter will identify the theoretical perspective and related cultural issues that will be used to guide this research and will then review literature relevant to the issues and research questions proposed in Chapter I. First, demographic trends in the U.S. will be explored to better understand the need for researching a Latino sample. Next, the influence of parent-child interactions on children's development, and more specifically, the influence of parent-child interactions on children's language development will be addressed. To do so, research from both Latino and non-Latino samples will be reviewed. Then, information about other aspects of the home language environment will be presented. Following this, the relations between children's early language skills and later reading outcomes for both Spanish-speaking and English-speaking children will be described. Next, information about the transfer of literacy skills between languages will be presented. Finally, the importance of children successfully learning to read will be addressed.

Theoretical Perspective

Urie Bronfenbrenner proposed a theory of development that notes the importance of many different ecological systems on development. According to Bronfenbrenner (1992), human development occurs because of interactions between a person and the settings and context in which the person lives and interacts. Development is viewed as a joint function of the individual and the environment. There are four main levels in which

development occurs. These levels are the microsystem, mesosystem, exosystem, and macrosystem.

The microsystem is the part of the environment that immediately surrounds the individual and is comprised of the people and institutions with which the individual frequently interacts. Interactions that take place between parents and children at home or caregivers and children in preschools and childcares are examples of microsystems. Mesosystems are the linkages between microsystems and are comprised of the processes that take place between two or more microsystems. An example of a mesosystem is the processes and interactions that take place between home and school for children. Exosystems are similar to mesosystems in that they are also linkages between settings. The difference is that the developing individual (in this case, the child) is not directly involved with one of the settings. The processes that take place between the home and the parent's workplace are an example of an exosystem. The macrosystem consists of the general characteristics of a given culture or social context. Social policies, historical events, and cultural beliefs are all part of the macrosystem an individual experiences.

Viewing development through this theoretical lens reveals that children are exposed to unique developmental systems on many levels. Different developmental influences exist in the macrosystem through the different cultural values and social conditions of their families and communities. Specific to language, Latino children may live in families in which the primary language is devalued by the larger community. Different developmental influences also exist in the microsystem through the different parent-child interactions that are characteristic of Latino families. Recognizing that these

differences exist underscores the importance of studying the development of children in Latino families to identify how their environments best support their development. Using research conducted with non-Latino families to support children's development in Latino families is likely not the most effective way to promote the most successful developmental outcomes.

The system with the most direct influence on development is the microsystem (Bronfenbrenner, 1992), and for children, the microsystem with the strongest influence on development is the home environment. As children grow, they are exposed to more systems, but for young children, the primary influence on development is the family. Parent-child interactions are an important aspect of the home language environment and have a pervasive influence on children's development (Hart & Risley, 1995). Because parent-child interactions play such a critical role in a child's development, it is important to understand how parent-child interactions in Latino families support children's language development. This will provide important information to guide the work of intervention programs aimed at promoting developmentally appropriate home language environments in Latino families.

Cultural Influences

Culture is part of the macrosystem to which a developing person is exposed, but the influence of culture is also present in interactions that occur within the microsystems of a developing person. Different cultures have different values and beliefs that can influence parenting behavior. Research has indicated that there are some differences in

parenting style between English-speaking European-American families and Spanish-speaking Latino families. While European-American mothers tend to emphasize individualistic goals and use parenting strategies consistent with promoting these goals, Latino mothers often emphasize socialistic goals and use parenting strategies that promote these goals (Harwood, Schoelmerich, Schulze, & Gonzalez, 1999).

Some findings have shown that first generation immigrant Latino mothers frequently use both praise and physical affection when interacting with their children and infrequently use harsh or punitive parenting behaviors (Calzada & Eyberg, 2002), yet other researchers have concluded that Latino parents tend to be more authoritarian than European-American parents (Steinberg, Dornbush, & Brown, 1992). One reason for an inconsistent pattern of findings when exploring cultural differences may be that Latino families do not represent just one culture. There are many different cultures represented by Latino families, and although there are similarities between these groups, there is also much diversity among these families and the values and parenting techniques they embrace (Martínez, 1999).

Parenting behaviors may vary by culture, but it is also possible that the effects of the same parenting behaviors also vary. For example, a study exploring the effects of maternal intrusiveness in parent-child interactions found that while in European-American families maternal intrusiveness is related to children's later displays of negativity toward their parents, there is no relation between maternal intrusiveness and child negativity in Mexican-American families (Ispa et al., 2004). The researchers theorize that parents in different cultures may have different reasons for engaging in the

same parenting behaviors and that the reasons why they engage in the behaviors are related to how the behaviors influence children. Some of the reasons for engaging in certain behaviors may be related to cultural values. This research highlights the need for not only exploring differences in parent-child interactions, but also for considering how these differences are related to children's development.

Exploring the effect of culture on parenting style is further complicated because of the many similarities between the styles of Latino parents and the styles of European-American parents. When asked about their parenting beliefs, immigrant mothers from South America showed little difference from European-American mothers (Bornstein & Cote, 2004). In addition, a nationally representative study exploring parental support, monitoring, and harsh punishment found few differences by race or ethnicity (Amato & Fowler, 2002). These results suggest that while it is important to understand that culture can influence parenting behaviors, it is also important to recognize that there is variability within cultures and that there are similarities between cultures. By comparing parent-child interactions that contribute to children's language development among both European-American families and Spanish-speaking Latino families, differences and similarities can be identified and implications for children's developmental outcomes explored. This information can help intervention programs tailor their services to meet the needs of the people they are serving.

The Rising Latino Population

Latinos, persons originating from Spanish-speaking countries, currently represent

the greatest percentage of people immigrating to the U.S. There are presently over 41 million people who identify themselves as Latino living in the U.S., up from only 3.5 million in 1970 (U.S. Census Bureau, 2004). Growth of the Latino population is due to both internal growth (persons of Latino descent who are born in the U.S.) and external growth (persons of Latino descent immigrating to the U.S.).

The Latino population continues to grow at a staggering rate and represents the largest minority group in the U.S., having exceeded the African-American population in the summer of 2001 (U.S. Census Bureau, 2004). Based on current growth estimates, by the year 2050, over 100 million people, or one quarter of the projected population of the U.S., will be of Latino descent (U.S. Census Bureau). This is possibly an underestimate, however, as the 1990 estimate for the year 2000 was nearly 9 million people too low (U.S. Census Bureau). Clearly, the demographic make-up of the U.S. will look dramatically different in 50 years than it does today.

Compared to the next largest category of U.S. immigrants, those from Asian nations, Latino immigrants tend to be relatively uneducated and poor; a trend that may be similar to immigrants in the past, but that is not representative of other immigrant groups today. Immigrants arriving from Asian nations tend to be well educated and relatively well off financially. While only 55% of Latino Americans have a high school diploma and only 10% have a bachelor's degree or higher, 87% of Asian Americans have a high school diploma and 47% have a bachelor's degree or higher (U.S. Census Bureau, 2005). In addition, the median income of Latino American families is $34,200, while Asian American families have the highest median income of any racial group in the U.S.,

$57,500 (U.S. Census Bureau). The low educational and income level of Latino families has implications for the quality of life they are able to enjoy in the U.S.

Children who do not read well may find school a frustrating experience and be more likely to drop out of high school. Latino youth have the highest high school dropout rate of any racial group and are more than two times as likely to drop out of high school than students of European-American descent (U.S. Census Bureau, 2004). The low rate of high school completion by Latinos may be related to the poor reading ability of many Latino youth (August & Hakuta, 1997). Latino children are more than twice as likely to read below grade level than their European-American peers (National Center for Education Statistics, 2003). The large number of Latino children who read below grade level represents a challenge to educators, but also represents a challenge for these children to pursue their American dreams. Reading is a fundamental life skill and has been identified as the key to school and later life success (Whitehurst, 2002). If children do not learn to read well, they often struggle in other areas of school. As they get older, learning is increasingly tied to the ability to obtain meaning from text and without this ability, school becomes a difficult task. Clearly, helping these children successfully learn to read is an important goal in adequately preparing them for their future. Because many of the skills necessary to successfully learn to read are obtained during the preschool and toddler years, providing support for the development of these skills early in life is important for adequately preparing children for reading success when they are in school.

Parent-Child Interactions

One way to provide support for children's early language skills is to help parents engage in interactions that will support children's language development. Parent-child interactions are important for many aspects of children's development, including children's language development. Much research has been conducted examining the nature and influence of parent-child interaction, albeit mostly in European-American populations. These studies show that variability in parent-child interactions contributes to differences in children's outcomes in several domains of development. The specific aspects of interactions included in this study are affection, responsiveness, encouragement, and teaching. Each of these aspects are discussed in the following sections.

Positive Affect

Other types of parent-child interactions are also related to positive child outcomes. The affect or emotional tone of parent-child interactions has important implications for development. Positive affect in parent-child interactions is related to increased cognitive abilities, school readiness scores, and performance in school (Estrada, Arsenio, Hess, & Holloway, 1987), while negative effect in parent-child interactions is related to less secure attachment relationships and lower child cognitive, social, and behavioral outcomes (NICHD Early Child Care Research Network, 2004).

Positive affect in parent-child language interactions is also related to higher child language abilities (Hart & Risley, 1995), while punitiveness, an example of a negative

affect behavior, is related to decreased kindergarten vocabulary scores (Culp, Hubbs-Tait, Culp, & Starost, 2001). Affective quality of interactions seems to vary by social class. Feedback given to children between the ages of 13 and 18 months living in homes receiving welfare showed negative affect 80% of the time; while in contrast, children living in professional homes received positive affect feedback 80% of the time (Hart & Risley). This difference contributes to different outcomes in children's language abilities and social relationship skills.

Responsiveness

Typically, interactions that are responsive to children and supportive of their abilities lead to the most successful developmental outcomes. Early maternal responsiveness to children and to their emotions predicts children's later social-emotional competence (Denham, 1993; Steelman et al., 2002). Responsiveness seems to develop a sense of trust in children, which enables them to successfully negotiate later social relationships. Responsiveness can also be beneficial for children's cognitive development. A study exploring different types of parenting clusters found that parents in the cluster showing high levels of warm responsiveness and low levels of restriction during the first 2 years of children's lives had children with both higher social abilities and higher cognitive abilities when the children were 40-months old (Smith, Landry, & Swank, 2000). Maternal responsiveness is also uniquely predictive of children's social and cognitive development when accounting for early childcare experiences (NICHD Early Child Care Research Network, 2001), a finding that illustrates the salient influence of parent-child interactions during early childhood.

Responsiveness is also related to children's language development and has been identified as an aspect of parenting that is central to children's early language (Tamis-LeMonda & Rodriguez, 2008). Being responsive to children and their attempts at communicating is correlated with increased language ability in children (Baumwell et al., 1997; Hart & Risley, 1995; Hobson, Patrick, Crandell, Perez, & Lee, 2004; Hoff-Ginsberg, 1991; Landry, Smith, Miller-Loncar, & Swank, 1997). Responsiveness can influence both the timing of language milestones and children's ability to engage in communication with others. Parental responsiveness is valuable to children's language learning because it shows they are listening to their children and are sensitive to their children's interests and abilities (Hart & Risley). To a child attempting to use language, a parent's response often provides the encouragement necessary for the child to keep trying. By responding to children and their attempts at communicating, parents are encouraging their children to use the language skills they have.

Encouragement and Nonintrusiveness

Another important aspect of parent-child interaction is non-intrusiveness, or allowing and encouraging children to establish autonomy and do things independently. Maternal intrusiveness with preschool aged children was negatively predictive of children's perceptual and verbal abilities in kindergarten (Hubbs-Tait et al., 2002). When mothers are intrusive, they may not be allowing children to practice using the skills they have or encouraging their children to acquire more skills. Parental encouragement of autonomy during the transition to school is related to problem-solving abilities in fourth grade (Mattanah, 1999). When parents encourage children to establish autonomy, they

are allowing them to develop abilities that will help the children both socially and cognitively.

Teaching and Talking

As may be expected, explicitly teaching and talking with children is related to some successful child development outcomes, especially to children's language and cognitive development. Engaging children in routine learning activities can help promote a foundation of early language and literacy (Tamis-LeMonda & Rodriguez, 2008). Certain characteristics of parental speech are related to children's language, including the total amounts of child directed speech, parent child conversation, use of affirmatives, responses, questions, nouns, modifiers, semantic contingency or topic continuation, and parental responsiveness, vocabulary, and attitudes (Bornstein, Haynes, & Painter, 1998; Hart & Risley, 1995; Snow, 1983). A study looking at children's early words found that when parents talked frequently about toys during interactions with their children, a high percentage of children's early words were labels (Goldfield, 1987). When parents talked frequently about behaviors, their children typically adopted a more social-centered form of speech. The amount of verbal input provided to children is also important and is related to higher language scores (Hart & Risely; Smith et al., 2000).

One specific type of teaching interaction that occurs frequently, particularly in middle-class Caucasian homes, is shared book reading – parents reading a book to or talking about a book with their child. Shared book reading is a frequent activity in many families and frequent book sharing is related to increases in children's early language abilities (Arnold et al., 1994).

There are several reasons why sharing books with children may be beneficial to children's language development. When sharing books with children, parents often label items of interest to the child, which can increase children's vocabulary (Ninio, 1980). Book reading also provides children with opportunities to imitate words and answer questions. In addition, when parents share books with their children, they are modeling good literacy behaviors. Modeling is an important teaching tool and when parents frequently share books with their children and seem to enjoy reading to them, children see reading as a worthwhile and enjoyable activity. Shared book reading can also help children gain knowledge about things such as sequencing of events and interpretation of behavior that will increase their background knowledge, making later reading comprehension easier (Tamis-LeMonda & Rodriguez, 2008).

Parent-Child Interactions in Latino Families

There is some evidence that shared book reading is less frequent in Latino families and other minority families. A study looking at frequency of shared book reading found that in Mexican American families, shared book reading is four times less frequent than it is in European-American families (Anderson & Stokes, 1984). In addition, a study of Spanish-speaking families showed that 48% of parents with less than 12 years of education never read to their children (Yarosz & Barnett, 2001). Children in Latino families also have fewer books available in their homes than children in European American families (Wagner et al., 1997). Such differences in shared book reading frequency have implications for children's exposure to literacy and opportunities for

language and literacy growth.

It is unclear whether Latino parents use shared book reading as an opportunity to teach language, as many European-American parents do. Mothers who are recent immigrants engage in positive book sharing behaviors when presented with the opportunity to read, although did not do so frequently (Boyce et al., 2004). Additionally, other research indicates that Latino families tend to use less helpful book reading styles (Bus, 2001). It is promising to note, however, that an intervention aimed at teaching Mexican American mothers to use more helpful shared book reading styles was successful (Valdez-Menchacha & Whitehurst, 1992).

Shared book reading for Spanish-speaking Latino families living in the U.S. may be problematic based on the availability of appropriate reading materials. While Spanish children's books are widely available online and in some large bookstores, many low-income Latino families are not able to access these resources. In addition, shared book reading may be a challenge for these families because of low parent literacy skills, which can hinder successful shared book sharing.

Along with shared book reading, other aspects of parent-child interaction may be different in Latino families. While many aspects of parent-child interaction may in Latino families may be similar to parent-child interactions in non-Latino families, differences are also possible. In addition, while many interactions may lead to the same outcomes for both Latino and non-Latino children, some types of interactions may influence development of Latino children differently. Thus, it is important to study Latino families to better understand how parent-child interactions contribute to children's development.

When Latino families are included in research, European-American families may be used as the ideal standard to which they are compared, which can lead to the conclusion that Latino parents have deficits in parenting skills (Moreno, 2002). In addition, the activities in which they are asked to participate in may be less common for Latino families. Some studies of Latino families use only English-speaking Latino families (Eisenberg, 2002), possibly because this is an easier group to study. While this is also an important group to study, collecting data only from English-speaking Latino families seriously limits the ability to generalize findings to Spanish-speaking Latino families. Similarly, some studies use Spanish-speaking families who live outside of the U.S. (Tabors et al., 2003; Valdez-Menchacha & Whitehurst, 1992). Again, this information is valuable, but does not address the unique needs of minority Spanish-speaking Latino families living in the U.S. Attempting to understand the interactions of Latino families without recognizing the cultural context in which they occur leads to misunderstandings about these interactions (Calzada & Eyberg, 2002; Moreno). By comparing the two groups with the recognition that cultural differences represent different ways of doing things and that neither group is necessarily "correct," a more accurate understanding of how parents support children's development can be achieved.

The research that has examined parent-child interaction in Latino families has shown both similarities to and differences from parent-child interactions in European-American families. When asked to teach their pre-school aged children the alphabet, Latina mothers responded by providing children with instruction that labeled letters and provided children with opportunities to practice letter names, both behaviors that may

typify interactions in European-American families (Moreno, 2002). However, this research also points to a difference between parent-child language interactions for Latino families. When the interaction is in Spanish, the mother is typically the expert and the child is the learner. In contrast, when interactions take place in English, these roles are often reversed to some extent. This reversal of roles in language interactions could have important implications for children's development.

Several authors note that in Latino families, a less formalized teaching style may be used by parents and other caregivers and that when studied in a more appropriate setting, the teaching styles of Latino families may be more similar to those of non-Latino families (Cervantes & Perez-Granados, 2002; Eisenberg, 2002). These researchers suggest that because shared book reading, a common research activity, may not be a familiar activity for Latino families, activities they are more familiar with such as cooking together, block play, and free play could provide important information about interactions in Latino families. When studied while participating in more familiar activities, parent-child interactions in Latino families have included language building activities (Cervantes & Perez-Granados; Eisenberg; Perez-Granados, 2002).

Clearly, parent-child interactions have important implications for children's development, including children's language skills. While this topic has been extensively studied in English-speaking European-American samples, more information is still needed about the nature of parent-child interaction in Spanish-speaking Latino families and how these interactions are related to children's development. These interactions are an important aspect of the microsystem to which children are exposed. Another aspect of

this microsystem is the home language environment children experience.

Early Language Skills

Differences in early parent-child interactions contribute to early differences in children's language skills. Because of this and other factors, children begin school with disparate language skills, which contribute to differential success learning to read. Children with strong early language skills are more likely to become good readers than are children with poor early language skills (National Research Council, 1998; Scarborough, 1990).

The acquisition, or lack thereof, of these skills is heavily dependent on the early experiences that children have. Interactions that children have in preschools, daycares, and at home are all influential in children's language development. Early home literacy experiences contribute to third-grade reading comprehension (Sénéchal & LeFevre, 2002). When children are exposed to interactions and environments that are rich in language and literacy, they are more likely to gain the skills that will allow them to successfully learn to read once they begin school. When they are not exposed to interactions and environments that are rich in language and literacy, they do not gain these skills as readily or rapidly.

There are several language and literacy skills that are important for children beginning to negotiate the task of learning to read. These early predictors of later reading success include decoding skills, phonological awareness, letter identification and letter-sound knowledge, early receptive and productive vocabulary acquisition, object naming

skills, knowledge about print, and pronunciation ability in productive language (Adams, 1990; Bryant, MacLean, Bradley, & Crossland, 1990b; Byrne, 1992; Catts, Fey, Zhang, & Tomblin, 1999; Ehri, 1992; Mason, 1992; Scarborough, 1990). Several of these skills will be described in more detail in the following paragraphs.

Decoding, the ability to figure out the pronunciation of a printed word, is dependent on the alphabetic principle, the understanding that letters represent sounds. Problems decoding have been found to be at the center of many reading problems (Lyon, 2002; Snow et al., 1998). Decoding ability is influenced by the amount and quality of book reading and by attitudes towards reading (DeTemple, 1999). For children, an early step in progressing in decoding abilities is the ability to identify separate letters.

Phonological awareness, the ability to recognize different sounds of speech, further increases children's progress toward decoding (Goldenberg, 2002). Early phonological skills are seen in rhyming and alliteration abilities (Lopez & Greenfield, 2004) and are built through interactions such as book reading and language games (Bryant, MacLean, & Bradley, 1990a; Caravalos & Bruck, 1993; Dickinson et al., 1999). For children who lack phonological awareness skills, decoding words is a slow and, at times, inaccurate process. Without the ability to read words accurately, comprehending what is read is difficult, if not impossible.

Problems may also stem from limited background knowledge (Francis, 2004; Garcia, 1991). Comprehension of what is read is aided by background knowledge. This knowledge allows children to comprehend what they read. For Spanish-speaking Latino children in the U.S., reading problems may be related to limited background knowledge,

which can be learned through language (Francis; Garcia). Reading comprehension is an important aspect of learning to read well because as children get older, reading is a component of learning in nearly all subject areas and children must be able to obtain meaning from text. Children gain background knowledge through life experiences.

Large vocabularies aid in the acquisition of background knowledge and are another necessary ingredient of reading success. The relation between early vocabulary size and later language and reading ability is well documented (e.g., Cook & Roggman, 2005; Scarborough, 1990; Sénéchal & LeFevre, 2002), and children with large vocabularies as toddlers and preschoolers tend to be better readers upon school entry. When children have large vocabularies, they are able to recognize more of the words that they read and are better able to comprehend the meaning of what they read.

The relation between children's vocabulary and later reading success is present when children are quite young. A study of low-income toddlers involved in the Early Head Start Research and Evaluation project (EHSRE) showed that children's vocabulary size at 36-months predicted their reading comprehension abilities in second grade 5 years later (Cook & Roggman, 2005). Catts (1991) noted that the available evidence clearly indicates that deficits in language ability during the preschool years can indicate children who are at-risk for not successfully learning to read when they enter school. Research with Spanish-speaking children has shown that vocabulary is an important predictor of reading abilities and that Spanish-speaking children may need vocabulary instruction in English in order to become strong readers (August, Carlo, Dressler, & Snow, 2005; Manis, Lindsey, & Bailey, 2004). While a large vocabulary is not the only factor for

successfully learning to read, it is a strong predictor of later reading ability and can help identify children who may experience difficulties learning to read.

Early language skills are important for reading success, regardless of whether they are obtained in English or in Spanish (Tabors et al., 2003). The following section will review research about the transfer of literacy skills and show that obtaining strong early language skills in either language can promote later reading success.

Transfer of Literacy Skills

Early language and literacy skills are important for children to successfully learn to read. For Latino children, these skills are also important (Tabors et al., 2003). Initially, there was much debate about whether children should learn these skills in Spanish or in English. Research conducted on this topic indicates that learning these skills in either language is fine because these are skills that transfer from one language to the other. Phonological skills in one language are correlated with phonological skills in the other language (Lindsey et al., 2003; Lopez & Greenfield, 2004). Phonological awareness in one language is the strongest predictor of phonological awareness in the other language (Dickinson, McCabe, Clark-Chiarelli, & Wolf, 2004). In a study of Latino first-, second-, and third-grade students enrolled in a bilingual school, Spanish language skills contributed to English reading comprehension scores beyond English language skills (Carlisle, Beeman, Davis, & Spharim, 1999). Other skills that may transfer include letter and word knowledge, understanding of print, memory of sentences, spelling, and decoding (Sparks et al., 2008). Because Spanish language skills transfer, some

researchers note the need to encourage children's language development their native language to maintain family solidarity and communication (Fillmore, 1991; Tabors).

Unfortunately, while there may be sufficient information to know how to best encourage these skills in English-speaking children, there does not seem to be adequate information to do so for Spanish-speaking children. While it is promising that supporting the emergence of early Spanish language and literacy skills in Spanish-speaking Latino children is likely to promote later reading success, it is still problematic because there is so little information about what parents do to support the emergence of these skills.

It is important to support the emergence of language and literacy skills in children's native language because while there is evidence that literacy skills transfer from one language to the other, there is also evidence that less transfer occurs when literacy skills in the native language are weak (Lopez & Greenfield, 2004). Children with limited proficiency in their native language not only have fewer literacy skills available to them when they begin to read, they also have fewer of these skills transfer to English if this is the language in which they are taught to read. Thus, an English-speaking child with fewer literacy skills than a Spanish-speaking child may have an easier time learning to read because few of the Spanish-speaking child's skills transfer.

Importance of Reading Skills

As mentioned in Chapter I, reading is a fundamental skill that is the foundation for both academic and life success (Whitehurst, 2002). Children who learn to read well when they begin school are in a position to gain an education that will allow them to

succeed in life while children who do not learn to read well when they begin school are more likely to qualify for special education services (Lentz, 1988), drop out of high school (NRC, 1998), and eventually parent children who also read poorly (Gadsden, 2000; Scarborough, 1990). Thus, for the children who never master this skill, the later ability to succeed in school and in life is compromised.

While in the early years of school children may be successful even if they do not read well, in the later years of school it is progressively more difficult to succeed academically without good reading skills. As children continue in school, learning in all subjects is increasingly dependent on their ability to read. Without the ability to gain meaning from text, learning in all subject areas is compromised. When learning is compromised, school is not an enjoyable pursuit and many children may not see it as worthwhile. When children do learn to read well, they are in a position to experience academic and life success.

There is a gap between the reading abilities of Caucasian students in the U.S. and the reading abilities of Latino students in the U.S. While 72% of Caucasian students read at or above grade level, only 41% of Latino students read at or above grade level (National Center for Education Statistics, 2003). This trend has existed since it was first studied in the 1970s and little progress has been made toward closing this gap. This gap builds on early language and literacy skill gaps that are present as early as age 3 (Dickinson et al., 2004).

As has been addressed, one of the primary reasons that Latino children likely have poor success learning to read is that many Latino children do not begin school with

strong enough language skills in either language to experience reading success. A major determinant of poor reading is limited oral vocabulary for Latino children (Garcia, 1991; Saville-Troike, 1984; Verhoeven, 1990). While many factors may contribute to the limited early language abilities of these children, parent-child interactions are of particular interest because of the direct effect these interactions have on children's early language and the potential for intervention programs to support interactions that are related to increased language abilities.

Summary

Parent-child interactions are important for children's development, including children's language development. This study will look at the influence of several aspects of parenting (affection, responsiveness, encouragement, and teaching) and how these parenting behaviors are related to children's language development in both Latino and European American families. Parent-child interactions in Latino families have not received as extensive research attention as parent-child interactions in European-American families. Because the cultural context may influence how parenting behaviors are related to children's development, exploring parent-child interactions in Latino families is important to understand how these interactions contribute to children's early language and literacy development. This is in turn important for children's later reading success, a fundamental life skill.

CHAPTER III

METHODS

Research Design

To explore the research questions identified in Chapter I, extant data from two studies were combined. For each of these studies, videotapes were obtained of parents interacting with their children when they are 24 and 36 months old. These videotapes were coded using an observational coding scheme of parent-child interactions developed for another project. Coded data were then explored in relation to child vocabulary at 36-months. Additional extant data from parent interviews provided information about family demographics that may be used in follow-up analyses.

In the following sections, more information will be provided about the two studies from which videotapes and extant data were used. Then, the procedures used to code the videotapes for the current study will be described. Next, measures that were used to collect the original data will be described. Finally, analyses planned to explore the research questions listed in Chapter I will be listed.

Extant Data Sources

The following sections describe the original research projects from which extant data are available for the present study. The overall design of each project and the general data collection procedures for those studies will be described. The procedures used for the present study, to create an integrated data set and conduct systematic analyses, will be

described separately in later sections.

The Early Head Start Research and Evaluation Project

The national EHSRE included 17 research sites from many different geographic areas of the U.S. and a research sample of over 2,000 families (for a more complete description of this project, see ACYF, 2002). A subsample of Spanish-speaking Latino families from that study is included in the present study. In addition, a subsample of English-speaking European-American families is used for comparisons in some analyses. Once the final sample of Latino families was identified, a sample of English-speaking European-American families was selected to be demographically similar to the sample of Latino families. Thus, the European-American sample was a purposive sample that was chosen to closely resemble the available sample of Latino families. The European-American sample was not statistically significantly different on an identified set of variables, including income, child gender, mother age, family size, and, if possible, mother vocabulary scores.

Families enrolled in the EHSRE had incomes that met federal poverty guidelines for enrollment in Early Head Start at the time they were recruited to participate in the research project. Both subsamples, Latino and European-American, include families from many different regions of the country (e.g., California, Iowa, Missouri, Utah, New York). When initially contacted to participate in this study, parents were asked whether they preferred to be interviewed in English or Spanish. Parents who reported a Latino/ Hispanic ethnicity and who chose to be interviewed in Spanish are included in the

subsample of Spanish-speaking Latino families.

To be included in the EHSRE, the main selection criteria were income and age of baby. After families were selected to participate in the evaluation, half were randomly assigned to the experimental group and received Early Head Start intervention services. The other families were assigned to the comparison group and did not receive Early Head Start intervention services. Early Head Start intervention services were provided to families in a center-based mode of service delivery, in a home-visit-based mode of service delivery, or in a mixture of the two. Regardless of mode of delivery, programs sought to provide families with information about child development and about how parents could best support this development.

As part of the EHSRE, mothers and children were videotaped playing together when children were 24 and 36 months old. During part of the videotaped interaction, mothers were given three bags, with the first bag containing a book and the other bags containing different types of toys for the mothers and children to play with. The different types of activities were used to elicit different types of play behavior. Mothers were told that the activity would take 10 minutes and were instructed to "spend this time with the toys in these three bags. During this activity, you may play with your child if you like. Just to remind you, please face front and try to stay on the mat. Please start with bag #1, move on to bag #2, and finish with bag #3." Mothers then had the opportunity to ask questions and were then told they could begin playing.

Different aspects of children's development were assessed using standardized tests at each of the time points at which they were videotaped. Data from the 36-month

assessment point will be used for the outcome variable of children's language skills. The outcome measure used to assess children's language skills will be described in a later section.

Bilingual Early Language and Literacy Support Project

The Bilingual Early Language and Literacy Support project (BELLS) project focused on providing home-based interventions to toddlers and preschool-based service to preschool-aged children (for this study, all children were younger than 36 months and were not receiving preschool services). This program was designed to support children's early language and literacy skills. This project was conducted in Salt Lake City in cooperation with the Guadalupe Schools. Families (n = 222) enrolled in this program if they met income guidelines and were primarily Latino (for a description of this project, see Innocenti, Boyce, Roggman, & Jump, 2006). Only the Spanish-speaking Latino families from this sample were included in the present study.

The BELLS sample consisted of families in two neighborhood communities within the Salt Lake City area. Families in one location received intervention services while families in the other location were used as the comparison group and received no intervention services, although some families in the comparison group accessed services from other community programs. Videotapes of families from both locations were used for the present study.

BELLS intervention services had two main components. The first intervention component was weekly home visits. One of the primary focuses of these home visits was

on increasing the quality and quantity of language and literacy interactions. A home visitor was assigned to each of the families during the first year of their child's life (or whenever the family entered the program), developed a relationship with the family, and continued making home visits until the children entered the preschool program, which was around 36 months. These home visitors typically interacted with the families in their primary language. The second component was a preschool program for 3- and 4-year-old children.

Videotaped interactions from families in the BELLS project were also obtained when children were 24 and 36 months old and were similar to interactions from the Early Head Start project. Mothers were given two different bags and were told that they had 15 minutes to play with the toys in the bags. Similar to the Early Head Start project, the first bag contained books (both English and Spanish books) while the second bag contained toys, allowing behavior in both situations to be studied. They were also told to begin with bag #1 and then move on to bag #2. Mothers had the opportunity to ask questions and were then instructed to begin playing.

Children's development was assessed when children were 24 and 36 months old. Only 36-month outcome data were analyzed. Children were assessed in both English and Spanish. Testing order was alternated so that half of the children were tested first in English and half were tested first in Spanish. This was done to limit testing affects possible because of being assessed in two languages.

Informed Consent

For families in both the EHSRE and BELLS projects, informed consent to

participate in the study was obtained (see Appendix A). Additional consent was obtained to complete the videotaped procedure. As part of this consent, families were informed that their videotapes might be used for other research and educational purposes. Thus, videotapes obtained from these families could be coded using the new coding scheme. The Institutional Review Board of Utah State University (protocol # 1133) approved the use of the new coding scheme on the videotapes from the Early Head Start and BELLS studies.

Parenting Interactions with Children Checklist: Observations Linked to Outcomes Project

Videotaped observations from both of the previously described studies were coded using the Parenting Interactions with Children Checklist: Observations Linked to Outcomes (PICCOLO; version 3.1), a measure that examines parenting behavior in four domains: affection, responsiveness, encouragement, and teaching/talking. Each video clip was between 10 and 15 minutes long. Each clip was coded by at least three coders and mean scores from the coders were used in analyses. Within each domain, either from seven or eight parenting behaviors were observed. Videotape clips were used from when the children were 24 and 36 months old (Roggman et al., 2006).

Most coders on this project were students at Utah State University (USU) and were primarily upper division undergraduate students majoring in the social sciences. All coders received online training and certification in research ethics from the National Institutes of Health. Other training about observational research and about parent-child interaction was also given to the students prior to videotape observation. Training was

intended to be brief, as PICCOLO was designed to be used by program staff who would not receive extensive training about how to use PICCOLO.

Coder reliability was established by looking at coder scores compared to a set of codes that were coded by a team of coders with established reliability. Reliability of coders was periodically examined and when coders dropped below a certain level, they were provided with additional training. Mean agreement scores of individual items ranged from .57 to .97. Another estimate of coder reliability, average difference from the mean, was also calculated. For this reliability indicator, lower numbers (either positive or negative) represent good reliability. The absolute value of average difference from mean for coders ranged from .00 to .52. Scores from two coders were dropped from analyses because these coders were unable to maintain high enough reliability. Their scores were replaced with scores from a reliable coder. Further information about the PICCOLO measure will be discussed in the Measures section.

Measures

For this project, data were used that were originally obtained from families through videotaped observation, child assessment, and parent interview. Videotaped observation provides the present study with the major independent variables, parent-child interaction scores on multiple positive parenting interaction behaviors. Child developmental assessments provided this study with the primary outcome variable, children's language scores. Data from parent interviews provide this study with demographic variables that allow a more thorough understanding of the parenting and

child language data. The following sections will describe the measures used to obtain all three types of data.

Direct Observation

The PICCOLO measure was used to code parent-child interactions. This measure was developed for use in Early Head Start programs. The measure was first written in English and tested for reliability and validity using a team of 16 observers and approximately 230 clips of parent-child interactions. Initial estimates of scale reliability had Cronbach's Alphas ranging from .80 to .92 for the European-American measure and .67 to .88 for the Latino measure. Preliminary validity testing showed relations between scores on PICCOLO and scores from previously coded data and will be discussed below. When items were not correlated with previously coded data, they were eliminated from the coding scheme.

The measure was translated to Spanish by a translation team consisting of both native Spanish speakers and bilingual English and Spanish speakers. Translation of the items was continually scrutinized and changes were made as necessary. Fluent Spanish speakers were then recruited to code videotaped observations of parents and children from Spanish-speaking families using the new measure.

The measure consists of descriptions of possible parent behavior that are categorized into four different behavioral domains. Coders rate each behavior as being either absent, barely there, or completely there in the videotaped interaction. The four behavior domains are affect/affection, responsiveness, encouragement, and teaching/ talking. Items in each of these domains are provided in Appendix B.

Concurrent validity for the measure was evaluated by looking at the relations between parent's scores on PICCOLO and parent's scores on other measures of parent behavior coded from the same video clips—the Columbia Scales of Parent Behavior (Berlin, Brady-Smith, & Brooks-Gunn, 2002). For example, at 36 months scores in all four parenting domains were statistically significantly related to parent supportiveness (positive correlation) scores in affection/affect, responsiveness, and encouragement of autonomy were statistically significantly related to parent intrusiveness, negativity, and detachment (negative correlations). Teaching/talking scores were related to parent intrusiveness (negative correlation), but were not related to negativity or detachment scores. These data indicate strong relations between parent's scores on PICCOLO and their scores on other measures of parent behavior and indicate that PICCOLO is measuring what it was designed to measure—good parenting behaviors.

Predictive validity for the measure was evaluated by looking at the relations between parent's scores on PICCOLO and children's development at later time points. PICCOLO was coded when children were 10, 14, 18, 24, and 36 months old (not all children have data from all ages). Children's developmental outcomes were also measured just before they entered Kindergarten, and these relations between the PICCOLO domains and these scores are discussed below. Several outcomes were measured, including children's emotion regulation, behavior problems, language development and cognitive ability. Validity analyses indicate that scores on the subscales of PICCOLO are predictive of children's current and later development (Roggman, Cook, Innocenti, Jump, & Christiansen, 2008a). Affection scores are related to fewer

behavior problems at 36 months, higher cognitive development scores at 24 and 36 months and prekindergarten, and higher vocabulary scores at both 36 months and prekindergarten. Responsiveness scores are related to both higher cognitive development and higher vocabulary scores at 24 and 36 months and prekindergarten. Encouragement scores are related to fewer behavior problems at 24 months, higher emotion regulation scores at 24 months, and higher cognitive development and vocabulary scores at 24 and 36 months and prekindergarten. Teaching scores are related to higher emotion regulation scores at 24 months and to higher cognitive development and vocabulary scores at 24 and 36 months and prekindergarten.

Child Assessment—Peabody Picture Vocabulary Test - Revised and Testo Vocabulario en Imagenes Peabody

The Peabody Picture Vocabulary Test-Revised (PPVT-III) and/or the Spanish version of this measure, the Testo Vocabulario en Imagenes Peabody (TVIP), were administered to children when they were 36 months old. For both studies, children were children were assessed in their homes. All assessors for both projects spoke the language of the children they tested (although Spanish speakers were not necessarily native Spanish speakers) and were trained in proper assessment techniques for the measures that were used.

The PPVT/TVIP measures children's receptive vocabulary. Children are shown a series of four different pictures and are asked to show or tell the assessor which picture best matches a word that the assessor gives the child. The PPVT-III was standardized using a sample of children and adults from the U.S. and the TVIP was standardized using

samples from Mexico and Puerto Rico. Reliability (internal consistency) for the PPVT-III ranges from .61-.88 (Dunn, Dunn, & Dunn, 1997). Reliability for the TVIP was estimated using internal consistency scores that ranged from .91 to .94 for the age range in this study (Dunn, Padilla, Lugo, & Dunn, 1986). Children's raw scores are converted to standardized scores with a mean of 100 and a standard deviation of 15.

Children in the BELLS project were assessed using both the PPVT and the TVIP while children in the EHSRE project were assessed in their stronger language. For this study, children in the BELLS project were assigned their better score as their outcome measure so that their scores are equivalent to the scores of children in the Early Head Start Evaluation who were tested in their stronger language. This measure, while not sufficient to provide a complete understanding of children's early language skills, gives an idea of how children are progressing.

Parent Interview and Assessment

Parents were interviewed at the same time points that children were assessed. These interviews typically took place the same day that children were assessed, although sometimes scheduling conflicts spread the interview and assessment over a longer period. Parents were given several different measures, but the primary variables of interest for this study were from demographic questions requesting information on parent age, parent education, family income, family size, birth order of child, and parent and child ethnicity. These variables allow a better understanding of how parent behavior is related to child outcomes and how demographic variables can influence these relations.

Parent vocabulary scores were also obtained for parents in both the EHSRE study

and the BELLS study. For parents in the EHSRE study, the Woodcock-Johnson (English) and Woodcock-Muñoz (Spanish) picture vocabulary test was used to measure vocabulary (Woodcock & Johnson, 1989; Woodcock & Muñoz-Sandoval, 1993). This test is part of the Woodcock-Muñoz language survey and is used to measure various aspects of both child and adult cognitive competence. It is available in both English and Spanish versions. Parents completed this measure as part of the 24-month-old child assessment. Parents are shown a series of pictures and are asked to provide the name of the object in the picture. Split-half reliability coefficients for the four scales of the language survey are in the .80s and .90s. Concurrent validity was evaluated by exploring correlations between scores on the language survey and scores on the Woodcock Language Proficiency Battery—Revised, with coefficients ranging from .70 to .90. Parents of children in the BELLS study completed the PPVT or TVIP. These measures are described in the section describing child measures. Because the two studies did not use the same measure of parent vocabulary, scores were transformed to standardized *z* scores to be used in analyses. Standardized *z* scores were used in place of standardized scores because only raw scores were available for those given the Woodcock-Johnson.

Problems and Limitations

Because this study used archival data, there were several limitations. There was only one outcome variable—the TVIP/PPVT. While this is a strong measure of children's early receptive language skills, it does not provide a complete picture of children's developing language competency. However, it was the only language outcome variable

that the two studies had in common.

Another problem is the way children in the EHSRE project were assessed. For bilingual children, a more complete picture of their language abilities could be obtained by measuring their skills in both languages and combining those scores to obtain a total language score. These data were available for the BELLS children, but not for the EHSRE children. To provide outcome scores equivalent to EHSRE children, only children's "best" language score were used in analyses.

Maternal language was identified as a possible covariate and an important demographic variable for use in analyses. Unfortunately, this variable was measured differently by the EHSRE project and the BELLS project. The EHSRE project obtained a measure of mother's productive vocabulary (Woodcock-Muñoz) while the BELLS project obtained a measure of mother's receptive vocabulary (TVIP). For non-native speakers, the difference between these two skills may be large. To explore this issue, a *t* test was conducted to see whether scores were statistically higher on one measure versus the other. This test was not significant ($t = -.22$), indicating that there were not differences in vocabulary scores due simply to which measure was used.

Another limitation to this research is that many of the children were enrolled in some type of intervention project, and the two different intervention projects had differing goals and strategies. Because it was archival data, treatment diversity existed and could not be eliminated, yet the primary research questions and goals of this project could still be addressed. This study did not seek to identify which type of intervention program was most successful at promoting children's development, only to identify

which parenting behaviors promoted more successful language outcomes in children. This information could then be used to develop interventions to help parents provide a better language environment for their children.

Planned Data Analyses

The following section lists each of the research questions and briefly describe the data analyses that were conducted for the research questions. When applicable, hypotheses for the outcomes of analyses will be provided. As already discussed, this study is part of a larger measurement development study. The research questions being analyzed for this study will provide important information about the validity of the measure, especially for Spanish-speaking Latino families, and will provide information about how culture influences parent-child interactions. This in-depth work is informative for the larger measurement development study.

Research Question 1

What positive parenting behaviors in the domains of affection, responsiveness, encouragement, and teaching/talking are typical of parent-child interactions in both groups of families (i.e., Spanish-speaking Latino families and English-speaking European-American families)? To address this question, descriptive data (mean score, standard deviation, and range) from each item of the four domains on the PICCOLO measure are provided. These data show which specific behaviors parents typically engage in within each domain and which specific behaviors are not common.

To provide a more thorough understanding of typical parent-child interactions in

both groups of families, simple analyses were conducted exploring whether these behaviors are related to or change with family and child characteristics. For both Latino and European-American families, the correlations between child age and each parent behaviors item was explored. Point-biserial correlations were used to explore whether each parent behavior item is related to child gender. For Latino families only, point-biserial correlations were used to explore whether parent generational status is related to each parent behavior item. Because there is little in the research literature looking at how these specific parent behaviors are influenced by the variables listed above, these analyses are exploratory and no specific hypotheses were made.

Research Question 2

How do positive parenting behaviors in the domains of affection, responsiveness, encouragement, and teaching/talking that occur in the Spanish-speaking Latino families compare to positive parenting behaviors in the domains of affection, responsiveness, encouragement, and teaching/talking that occur in parent-child interactions in English-speaking European-American families? To explore the behavioral differences between these two groups, data obtained from coding parent-child interactions in Spanish-speaking Latino families was compared to data obtained from coding parent-child interactions in English-speaking European-American families. To explore whether there are differences in individual parent behavior items between the two groups, correlations were explored between the behavior items and a variable indicating family culture/language.

A factor analysis was conducted separately for Latino families and for European-

American families to examine each domain and see if the items form a factor in each domain for each group. This was done for both a summary score of the two ages and separately for 24 months and 36 months.

For this research question, differences in both specific items and domain totals were explored because it is possible that while the total number of behaviors in each domain could be similar, the items contributing to the total score may be different. It is also possible that there are group differences in total domain scores. Domain summary scores were, therefore, used in a mixed-model repeated-measures ANOVA to explore whether there are differences between English-speaking and Spanish-speaking parents overall, for particular domains, and for the domains of affection/affect and responsiveness compared with the domains of encouragement of autonomy and teaching/talking. For this analysis, the between-subjects factor was culture/language and the within-subjects factor was type of domain.

It was hypothesized that there would be differences in parent behavior for Spanish speaking compared with English speaking parents by type of domain, with Spanish-speaking parents having higher scores in the affection/affect and responsiveness domains and English-speaking parents having higher scores in the encouragement of autonomy and teaching/talking domains. This hypothesis is based on previous work showing that Latino parents tend to be highly responsive and affectionate but are not as likely to encourage autonomy or teach their children at high levels (Calzada & Eyberg, 2002; Harwood et al., 1999).

Research Question 3

Which of these positive parenting behaviors in the domains of affection, responsiveness, encouragement, and teaching/talking, within each group of families, are related to children's early language development? This is the main research question of the present study. To explore this question, correlations between both individual scores and domain summary scores with child vocabulary scores at 36-months were explored. In addition, correlations between family demographic variables and child outcomes were explored. These analyses were conducted to identify possible covariates that influence children's language development. It is expected that some parenting behavior and overall domain scores will be correlated with child vocabulary and that there will be additional family demographic variables that are also related to child vocabulary. By identifying both domain scores that are related to children's vocabulary and covariates, more complex models exploring children's early language development can be explored.

To better understand how parent-child interactions can contribute to children's language development, path models were explored that used both domain summary scores that are related to child vocabulary and family demographic variables that are related to child vocabulary to predict child vocabulary. These models provide information about possible moderating or mediating relations between parent-child interactions and family demographics when predicting children's vocabulary. There is little available information about how parent behavior in Spanish-speaking families relates to children's language development, so no hypotheses were made for these families. For English speaking families, it was hypothesized that responsiveness and teaching/talking would be

positively related to children's language development (Hubbs-Tait et al., 2002; Tamis-LeMonda et al., 2001). It is also likely that affect/affection and encouragement are positively related to children's language development in these families, but these correlations were hypothesized to be weaker than the correlations of responsiveness and teaching/talking with children's language development.

CHAPTER IV

RESULTS

In this chapter, analyses will be reported that addressed the research questions described in Chapters I and III. For these exploratory questions, a *p* value of .05 was used as a cut-off point to determine statistical significance. All analyses were conducted using SPSS version 15. Questions will be discussed in the order they were listed in Chapter I. When applicable, follow-up analyses conducted to better understand the research findings will also be described. Table 1 provides an index to which analyses were conducted and what data were used in the analyses.

Table 1

Data Analysis Map

Type of analysis	Question	24 month	36 month	Latino	European American	Item-level data	Domain data
Descriptives of PICCOLO data by ethnicity	1	X	X	X	X	X	X
Paired *t* test by age	1	X	X	X	X	X	X
Correlations—PICCOLO scores with demographics	1	X	X	X	X	X	X
Partial correlations—ethnicity with PICCOLO scores, control maternal vocabulary	2	X	X	X	X	X	X
Repeated measures MANOVA	2	X	X	X	X		X
Exploratory factor analysis	2	X	X	X	X	X	
Partial correlations—PICCOLO scores with child vocabulary by maternal vocabulary	3	X	X	X	X	X	X
Regression predicting child vocabulary using	3	X	X	X		X	

Combining Samples

Prior to exploring the research questions, data from the two different projects had to be combined into one data set. Several steps were taken to do this. First, variables from the BELLS research project data were re-named so they could be merged into the same data file as the EHSR research project data set (e.g., “income” from the BELLS data set was renamed “ha1_4,” the name for the same variable in the EHSR data set). Because different categorical labels were used by the different projects, many variables were recoded or computed to be similar between the two files (e.g., “gender” was originally coded as either a 1 or 2 in the BELLS data set, but was recoded into a 0 or 1 to be similar to the EHSR data set). Once variables were labeled and computed the same in the two project data sets, the data were merged into one file, resulting in a file containing data from both Latino and European-American families from both research projects. The larger data set was then examined and comparable samples of Spanish-speaking Latino families and English-speaking European American families were selected.

Creating Comparable Samples

To evaluate demographic differences between the Latino families and the European-American families that were possible participants for this study, *t* tests were used to examine differences between the two cultures on variables deemed relevant to this study: income, child gender, maternal education level, maternal vocabulary score, and family size. Income was coded as a continuous number—the family’s monthly income. Child gender was coded as either 0 (female) or 1 (male). Maternal education

level was coded as either 1 (less than high school graduate), 2 (high school graduate or GED), or 3 (some college or more). Maternal education was coded this way because in the EHSR data set, accurate grade-level education data was not available and this was the most accurate education variable available. Different measures of maternal vocabulary were used by the two different studies, one measuring receptive vocabulary (PPVT/ TVIP) and one measuring expressive vocabulary (Woodcock-Johnson/Woodcock-Muñoz). For the Woodcock-Johnson/Woodcock- Muñoz data, standardized scores were not available. To allow this variable to be used in the current study, maternal vocabulary raw scores were converted to standardized *Z* scores for both types of maternal vocabulary. Family size was the number of people living in the household (including the child) and was grouped as either 2 or 3, 4 or 5, or 6 or more. This variable was coded in this way to be similar to the family size variable used in the FACES Head Start Evaluation Study (FACES Research Team, 2003).

Results from the *t* tests are shown in Table 2. All variables except income were statistically different between the Latino families and the European-American families in the sample of all possible participants. There were more boys in the Latino sample, maternal education level and vocabulary were lower in the Latino sample, and family size was bigger in the Latino sample. Three of these variables, gender, maternal education level, and family size, were deemed close enough that by removing outliers, it would be possible to eliminate statistical differences between the two groups on these variables. The fourth variable, maternal vocabulary, differed more between the two samples and was remarkably low in the Latino sample (Latino mean = -.38, European-American mean

Table 2

t *Test for Differences Between Latino and European-American Families: Original Sample*

Demographic	Latino mean	Latino *SD*	European-American mean	European-American *SD*	*t*
Income	$9,521	$7,101	$9,113	$7,140	-.63
Child gender	.59	.49	.48	.50	-2.56*
Mom education	1.50	.89	1.86	1.19	3.86**
Mom vocabulary	-.38	.85	.54	1.01	11.02**
Family size	2.59	.55	2.40	.53	-4.10**

Latino N = 171-210
European American N = 371-417
* p = .05
** p = .01

= .54). Given the importance of mothers' vocabulary for children's language development, it was more appropriate to control for mother vocabulary in subsequent statistical analyses that compared the two groups than to attempt to match the samples on this variable.

Because Latino families are the primary focus of this research and the potential number of European-Americans was larger, attempts were made to make the European-American families more similar to the Latino families and not to change the general demographic make-up of the Latino families. Thus, European-American families were identified for whom the focus child was a girl, the mother's education level was high, and family size was small. These families were considered outliers and were not included in the final sample used for analyses. This resulted in a total of 73 European-American families being excluded in the final sample used for analyses. A small number (n = 15) of Latino families who were extreme outliers were also eliminated from the sample, but this

did not substantially change the demographic make-up of the Latino sample. By eliminating these families from the sample, statistical differences between the two cultures disappeared for child gender, maternal education, and family size. These results are shown in Table 3. The geographic location of these families is shown in Table 4. Once this sample (N = 539; 195 Latino and 344 European American) was identified, data were ready to be analyzed in response to the research questions.

Addressing Research Questions

Each of the research questions identified in Chapter I is addressed in this section. The analytic procedure is described for each question and findings will be discussed in relation to the hypotheses given in Chapter III. Prior to addressing research questions, an overall correlation matrix was explored to look at correlations between all items to be used in analyses. This is included in Appendix B.

Table 3

t *Test for Differences Between Latino and European-American Families: Final Sample*

	Latino (n = 160-195)				European -American (n = 304-344)				
Variable	Min	Max	Mean	*SD*	Min	Max	Mean	*SD*	*t*
Income	$0	$35,000	$9,522	$7,122	$0	$50,000	$9,073	$7,322	-.64
Child gender	NA	NA	.59	.49	NA	NA	.51	.50	-1.85
Mom education	1	3	1.54	.91	1	3	1.70	1.23	1.58
Mom vocabulary	-1.95	1.65	-.39	.83	-1.40	1.97	.52	1.00	10.52**
Family size	1	10	2.56	.56	1	9	2.47	.54	-1.83

** p = .01

Table 4

Geographic Location of Latino and European-American Families: Final Sample

State	Latino	European-American
Arkansas	2	68
California	50	1
Colorado	52	0
Michigan	2	67
Missouri	0	1
New York	4	0
South Carolina	0	3
Tennessee	0	13
Utah	40	83

Research Question 1

What positive parenting behaviors in the domains of affection, responsiveness, encouragement, and teaching/talking are typical of parent-child interactions in both groups of families (i.e., Spanish-speaking Latino families and English-speaking European-American families)? To address this question, descriptive data (mean, standard deviation, and range) for all parent behavior items and overall domain scores at both 24 and 36 months for both cultures were examined.

Descriptive data. Scores for domain summary scores are given in Table 5 and scores for individual items are provided in Tables C-1 and C-2 in Appendix C. Both are summarized below. For Latino families, item scores ranged from .62 to 1.99 at 24 months and from .45 to 1.99 at 36 months (minimum score is 0; maximum is 2). Mean scores for each of the four domains were higher at 24 months than at 36 months. The

Table 5

Domain Mean Scores

	Latino age		European-American age	
Domain	24 months	36 months	24 months	36 months
Affection/affect	1.39	1.27	1.49	1.41
Responsiveness	1.63	1.60	1.70	1.68
Encouragement	1.37	1.30	1.51	1.47
Teaching/talking	1.11	1.05	1.16	1.14

n = 134-172

responsiveness domain had the highest mean score at both ages, and the teaching/talking domain had the lowest domain score at both ages. European-American families showed a similar pattern of results: scores were higher at 24 months than at 36 months, the lowest domain mean scores were in the teaching/talking domain at both ages, and the highest domain mean scores were in the responsiveness domain at both ages. The range of item scores for European-American families was .66 to 1.99 at 24 months and .61 to 1.95 at 36 months.

Overall, these results indicate that the observed behaviors are fairly typical of interactions in both Latino and European-American families. The vast majority of mean scores were above 1 (for 120 of a possible 132 behavior items), indicating that the behaviors were observed at least some of the time. Scores for European-American families were typically a little higher than for Latino families, although not always significantly so. It is interesting to note that the items that were the low mean scores and high mean scores were similar across cultures and ages.

Age changes. To look at possible age changes on behavior items from 24 months

to 36 months within each ethnic group, paired *t* tests were conducted. Table 6 shows significant differences by age in Latino families, and Table 7 shows significant differences by age in European-American families. Interestingly, the behaviors that changed with age were similar across cultures for domains 1 and 3, but different for domains 2 and 4. For Latinos, several items in domain 2 and no items in domain 4 changed with child age, while for European-Americans, several items in domain 4 and no items in domain 2 changed with child age.

For both cultures, parents typically did less of the behavior as children got older. The only exceptions to this were that for Latino families, the mean score for the item "replies to children's words or vocalization" increased between 24 and 36 months, and

Table 6

Differences in PICCOLO Items by Age: Latino

	Mean			
Parent behavior and domain	24 month	36 month	Difference	*t*
Touches child affectionately – Affection	.78	.58	.20	3.48**
Smiles at child – Affection	1.24	1.09	.15	2.99**
Praises child – Affection	.72	.59	.14	2.45*
Responds to child's emotions – Responsiveness	1.30	1.19	.11	1.99*
Replies to child's words or sounds – Responsiveness	1.43	1.56	-.13	-2.96**
Physically helps child do something – Encouragement	1.40	1.29	.11	2.53*
Offers suggestions to help child – Encouragement	1.32	1.22	.10	2.25*
Affection/affect domain score	1.39	1.31	.08	3.11**

n = 113-116
* $p = .05$
** $p = .01$

Table 7

Differences in PICCOLO Items by Age: European-American

	Mean			
Parent behavior and domain	24 month	36 month	Difference	*t*
Touches child affectionately – Affection	.81	.56	.25	4.98**
Smiles at child – Affection	1.35	1.24	.11	2.34*
Praises child – Affection	.78	.61	.17	3.56**
Physically helps child do something – Encouragment	1.31	1.19	.12	2.64**
Verbally encourages child's efforts – Encouragment	1.17	1.03	.15	3.23**
Labels objects or actions – Teaching	1.68	1.55	.13	3.33**
Talks to child about characteristics of objects – Teaching	.80	.67	.13	2.84**
Asks child for information – Teaching	1.66	1.73	-.07	-2.15*
Affection/affect domain score – Teaching	1.47	1.40	.08	3.73**

n = 262-266
* $p = .05$
** $p = .01$

for European-American families, the mean score for the item "asks child for information" increased between 24 and 36 months. It is interesting to note that both of these items are language items.

Influence of demographics. As part of this research question, the relations between child and family characteristics and PICCOLO scores were explored. First, correlations between child gender and PICCOLO scores were examined. There were no significant correlations between child gender and PICCOLO scores for Latino families. Table 8 shows significant correlations for European-American families (positive correlations indicate that mothers do more of the behavior with boys while negative correlations indicate

Table 8

Correlations Between Gender and PICCOLO Scores: European-American

Parent behavior and domain	Age in months	Correlation with gender
Pays attention to what child is doing - Responsiveness	24	.20*
Responds to child's emotions – Responsiveness	24	.14*
Praises child – Affection	36	.13*
Encourages child to handle toys – Encouragement	36	-.12*

n = 127-316
* *p* =.05

mothers do more of the behavior with girls). The responsiveness domain seemed to be influenced most by gender; of the four significant correlations, two ("parent is attentive to what child is doing;" "parent responds to child's emotional expression or affect") are from the responsiveness domain. Both of these correlations are positive, meaning the mother was more responsive to boys than to girls. There was only one item with a significant negative correlation with gender—"parent allows child to handle toys."

For Latino families, the correlations between generation status and PICCOLO scores were also examined. Generation status was coded as either 1 (mother was not born in the U.S.) or 2 (mother was born in the U.S., but grandparents were not). This variable is not necessarily an indicator of level of acculturation but simply indicative of where the parent was born. A positive correlation indicates that mothers who were born in the U.S. did more of the behavior indicated in the item. Significant correlations are shown in Table 9. There were nine items that were significantly correlated with generation status—three when children were 24 months and six when children were 36 months. The most interesting item is "parent touches child affectionately." This item was positively

Table 9

Correlations Between Generation Status and PICCOLO Scores: Latino

Parent behavior and domain	Age in months	Correlation w/generation status
Touches child affectionately – Affection	24	.25*
Is engaged in interacting with child – Affection	24	-.28**
Shows child how to do something – Teaching	24	-.23**
Touches child affectionately – Affection	36	-.34**
Shows emotional support toward child – Affection	36	.21*
Responds to child's emotions – Responsiveness	36	.25**
Verbally encourages child's efforts – Encouragement	36	.23*
Talks to child about characteristics of objects - Teaching	36	.28**
Asks child for information – Teaching	36	.28*

n = 99-126
* $p = .05$
** $p = .01$

correlated with generation status at 24 months and negatively correlated with generation status at 36 months, meaning it occurred more frequently among mothers born in the U.S. when the child was 24 months old, but less frequently among mothers born in the U.S. when the child was 36 months old. Only two other items ("parent is engaged in interacting with child" at 24 months; "parent demonstrates how to do something for child" at 24 months) were negatively correlated with generation status, meaning these behaviors were less common for mothers who were born in the U.S.

Research Question 2

How do positive parenting behaviors in the domains of affection, responsiveness, encouragement, and teaching/talking that occur in the Spanish-speaking Latino families compare to positive parenting behaviors in the domains of affection, responsiveness, encouragement, and teaching/talking that occur in parent-child interactions in English-

speaking European-American families?

Partial correlations. To explore this question, partial correlations between culture and PICCOLO scores controlling for maternal vocabulary were first explored. Significant correlations are shown in Table 10. Ethnicity is categorically coded as a 3 for Latino or 1 for European-American. (African American families were coded as "2" in the original EHSR data set and these categorical labels were not changed so that data could be analyzed later with African American families included.) Thus, positive correlations indicate that Latina mothers do more of the behavior while negative correlations indicate that European-American mothers do more of the behavior.

There are many significant correlations, indicating that culture does influence parenting behavior for these items. There are 32 significant correlations, but only seven of these are positive ["parent is close to child" (24 and 36months), "parent follows what child is trying to do" (24 months), "parent positions self to be able to respond to child's needs" (24 and 36 months), "parent physically helps child" (24 months), "parent demonstrates how to do something for child" (24 months)]. This indicates that European-American mothers typically engage in most of the observed behaviors more frequently than Latina mothers. It was hypothesized that Latina mothers would show higher scores in affection/affect and responsiveness than European-American mothers, but this hypothesis was only weakly supported. In the affection/affect domain, the domain summary scores were correlated with culture and European-American mothers scored higher at both ages. Most statistically significant item correlations also favored European-American mothers, but one item, "parent is physically near the child," was higher for

Table 10

Correlations Between Latino Culture and PICCOLO Scores

Parent behavior and domain	Age in months	Correlation
Is physically near the child – Affection	24	.14**
Shows emotional support toward child – Affection	24	-.23**
Follows what child is trying to do – Responsiveness	24	.12*
Responds to child's emotions – Responsiveness	24	-.19**
Looks at child when child talks or makes sounds - Responsiveness	24	-.13*
Positions self to be able to respond to child's needs - Responsiveness	24	.16**
Replies to child's words or sounds – Responsiveness	24	-.25**
Supports child's choices or activity changes – Encouragement	24	.17**
Verbally encourages child's efforts – Encouragement	24	-.21**
Shows enthusiasm about what child is doing – Encouragement	24	-.14**
Shows child how to do something – Teaching	24	.15**
Does activities in a sequence of steps – Teaching	24	-.10*
Asks child for information – Teaching	24	-.21**
Speaks in a warm tone of voice – Affection	36	-.10*
Is physically near the child – Affection	36	.20*
Uses positive expressions with child – Affection	36	-.14**
Shows emotional support toward child – Affection	36	-.34**
Follows what child is trying to do – Responsiveness	36	.11*
Responds to child's emotions – Responsiveness	36	-.30**
Positions self to be able to respond to child's needs - Responsiveness	36	.12*
Replies to child's words or sounds – Responsiveness	36	-.17**
Waits for child's response after making a suggestion - Encouragement	36	-.17**
Supports child's choices or activity changes – Encouragement	36	-.17**
Verbally encourages child's efforts – Encouragement	36	-.27**
Shows enthusiasm about what child is doing – Encouragement	36	-.15**
Explains reasons for something to child – Teaching	36	-.12*
Does activities in a sequence of steps – Teaching	36	-.10*
Asks child for information – Teaching	36	-.28**
Affection total score	24	-.10*
Encouragement total score	24	-.14**
Affection total score	36	-.15**
Encouragement total score	36	-.18**

* $p = .05$
** $p = .01$

Latino families at both 24 and 36 months. In addition, responsiveness domain summary scores were not significantly correlated with ethnicity at either time and Latina mothers had higher scores on the items “parent follows what child is trying to do” and “parent positions self to be able to respond to child’s needs” at both ages.

ANOVA analysis. Because it is difficult to accurately interpret the correlations given the large number of them, a mixed-model repeated-measures ANOVA analysis tested multivariate differences in PICCOLO domain scores by ethnicity. For this analysis, the between-subjects factor was culture and the within-subjects factor was domain. The ANOVA analysis was undertaken to answer three questions: (a) Whether there are differences between English-speaking and Spanish-speaking parents overall, (b) Whether there are differences between English-speaking and Spanish-speaking parents for particular domains, and (c) Whether there are differences for the domains of affection/ affect and responsiveness compared to encouragement and teaching/talking. For this analysis, separate analyses were done for 24- and 36-month parenting data. In this analysis, maternal vocabulary score was used as a covariate. There were no significant main effects at 24 months. At 36 months there was a significant main effect for maternal language ($F = 4.84$, $p = .01$, $\text{eta}^2 = .04$).

To answer the second question, concerning which domains show differences by culture, the interaction effect was examined. This effect was significant only at 36 months ($F = 3.59$, $p = .03$, $\text{eta}^2 = .03$), meaning that the two groups, English-speaking and Spanish-speaking families, score significantly differently on PICCOLO at 36 months. Univariate *t* tests were conducted as simple effects tests, a post-hoc procedure

recommended by Stevens (2002). These results indicated that all domains differed significantly. As was shown in the previous correlation analyses, scores were higher for European-American families in all domains at all times.

The last question addressed by the ANOVA analysis was whether scores in the domains of affection/affect and responsiveness were different than scores in the domains of encouragement and teaching/talking. It was hypothesized that Latino families would have higher scores in the domains of affection/affect and responsiveness and that European-American families would have higher scores in the domains of encouragement and teaching/talking. This test showed that there were no significant effects at 24 months, but there was a significant effect for the encouragement and teaching/talking domains at 36 months ($F = 6.11$, $p = .01$, $eta^2 = .02$), but not for the affection/affect and responsiveness domains. As hypothesized, English-speaking families had higher scores in these two domains than Spanish-speaking families.

Exploratory factor analyses. As part of this research question, exploratory factor analyses were also conducted to see whether domain structure varied by culture and whether the items assigned to each domain truly formed a scale. Because it is possible that the domain structure varies by age, this was done both separately by age and averaged across age. There were very few differences in the factor structure between ages and both looked similar to the factor structure identified by the analysis looking at the averaged scores, therefore, the analyses exploring the factor structure using the averaged scores will be reported.

For each of these analyses, direct oblimin rotation was used. This rotation was

chosen because it is the preferred method when the factors are not assumed to be independent. All items from the four domains were first entered into an analysis to explore whether they fell into four separate domains (this was done separately for each culture). For both cultures, the items seemed to form one large domain and a couple of smaller domains. For Latino families, 27 of the 33 items loaded highest on the first factor. For European American Families, 23 of the 33 items loaded highest on the first factor. Loadings for each of the items on the first factor are shown in Table 11. Next, the analysis was forced to form four factors. The items still seemed to form one main factor. These analyses seemed to indicate that the items are highly correlated and not separate factors statistically.

Analyses were then conducted for each domain (within each culture) to see whether the items within each domain formed just one factor. When not forced to a certain number of factors, there was one main factor for each culture. However, there were still several items that seemed to form separate, smaller factors. Once each domain was forced to only one factor, there were only three items [("parent is physically near the child" (domain 1), "parent replies to child's words or vocalizations," (domain 2), and "parent verbally encourages child's efforts" (domain 3)] that did not clearly fit within their respective domain (factor loading < .35) for Latino families and two items [("parent is physically near the child" (domain 1), ("parent positions self to be able to respond to child's needs" domain 2)] that did not clearly fit within its respective domain for European-American families. Several of the items that do not fit well in their respective domains are related to physical positioning. Families were asked by interviewers to sit on

Table 11

Factor Loadings on First Factor for All Domains Combined

Parent behavior and domain	Loadings on factor 1 - Latino	Loading on factor 1 – European-American
Touches child affectionately – Affection	.44	.56
Speaks in a warm tone of voice – Affection	.68	.55
Smiles at child – Affection	.68	.61
Praises child – Affection	.56	.63
Is physically close to child – Affection	.15	.28
Uses positive expressions with child – Affection	.67	.76
Is engaged in interacting with child – Affection	.74	.60
Shows emotional support toward child – Affection	.59	.78
Pays attention to what child is doing - Responsiveness	.37	.50
Changes pace or activity to meet child's interests or needs – Responsiveness	.67	.38
Is flexible about child's change of activities or interests – Responsiveness	.51	.46
Follows what child is trying to do – Responsiveness	.75	.62
Responds to child's emotions – Responsiveness	.63	.74
Looks at child when child talks or makes sounds - Responsiveness	.33	.55
Positions self to be able to respond to child's needs – Responsiveness	.23	.30
Replies to child's words or sounds – Responsiveness	.48	.47
Physically helps child do something - Encouragement	.63	.45
Waits for child's response after making a suggestion – Encouragement	.65	.62
Encourages child to handle toys – Encouragement	.54	.29
Supports child's choices or activity changes - Encouragement	.59	.54
Supports child in doing things on his/her own - Encouragement	.46	.17
Verbally encourages child's efforts – Encouragement	.60	.74
Offers suggestions to help child – Encouragement	.67	.64
Shows enthusiasm about what child is doing - Encouragement	.81	.76
Shows child how to do something – Teaching	.65	.34
Explains reasons for something to child - Teaching	.52	.63
Suggests activities to extend what child is doing - Teaching	.75	.51

(*table continues*)

Parent behavior and domain	Loadings on factor 1 - Latino	Loading on factor 1 – European-American
Repeats or expands child's words or sounds - Teaching	.49	.53
Labels objects or actions for child – Teaching	.58	.58
Engages in pretend play with child	.58	.50
Does activities in a sequence of steps	.64	.49
Talks to child about characteristics of objects	.54	.57
Asks child for information	.58	.56

a mat and face the camera. Because of this, scores on physical position items are very high and when reliability of the items is analyzed, they frequently do not fit well in their respective domains. Factor loadings for each of the items are shown in Table 12 for Latino families and Table 13 for European-American families.

This factor analysis was performed to look at how well the items fit into the four domains statistically. Items were either written to reflect the four developmental domains or selected from other parenting measures to reflect the domains. This was done before coded data was completed. The results of the factor analysis indicate that while the four domains are clearly not statistically separate and while there is overlap between the domains, there is also adequate statistical validity to keep the items in the four domains. This is important because conceptually, the four domains are separate aspects of parenting and looking at them separately is both easier for coders and has practical use. When used as an intervention tool, this allows practitioners to see the domains in which parents have strengths.

Table 12

Factor Loadings for Separated Domains: Latino

Affection	Factor loading	Responsiveness	Factor loading	Encouragement	Factor loading	Teaching	Factor loading
Touches child affectionately	.56	Pays attention to what child is doing	.69	Physically helps child do something	.78	Shows child how to do something	.63
Speaks in a warm tone of voice	.74	Changes pace or activity to meet child's interests or needs	.70	Waits for child's response after making a suggestion	.71	Explains reasons for something to child	.69
Smiles at child	.76	Is flexible about child's change of activities or interests	.68	Encourages child to handle toys	.78	Suggests activities to extend what child is doing	.70
Praises child	.66	Follows what child is trying to do	.74	Supports child's choices or activity changes	.80	Repeats or expands child's words or sounds	.68
Is physically close to child	.11	Responds to child's emotions	.69	Supports child in doing things on his/her own	.73	Labels objects or actions for child	.69
Uses positive expressions with child	.79	Looks at child when child talks or makes sounds	.61	Verbally encourages child's efforts t	.34	Engages in pretend play with child	.64
Is engaged in interacting with child	.72	Positions self to be able to respond to child's needs	.42	Offers suggestions to help child	.62	Does activities in a sequence of steps	.75
Shows emotional support toward child	.76	Replies to child's words or sounds	.32	Shows enthusiasm about what child is doing	.75	Talks to child about characteristics of objects	.63
						Asks child for information	.66

Table 13

Factor Loadings for Separated Domains: European-American

Affection	Factor loading	Responsiveness	Factor loading	Encouragement	Factor loading	Teaching	Factor loading
Touches child affectionately	.50	Pays attention to what child is doing	.52	Physically helps child do something	.51	Shows child how to do something	.55
Speaks in a warm tone of voice	.70	Changes pace or activity to meet child's interests or needs	.53	Waits for child's response after making a suggestion	.67	Explains reasons for something to child	.66
Smiles at child	.62	Is flexible about child's change of activities or interests	.70	Encourages child to handle toys	.62	Suggests activities to extend what child is doing	.74
Praises child	.57	Follows what child is trying to do	.75	Supports child's choices or activity changes	.71	Repeats or expands child's words or sounds	.51
Is physically close to child	.35	Responds to child's emotions	.75	Supports child in doing things on his/her own	.59	Labels objects or actions for child	.59
Uses positive expressions with child	.87	Looks at child when child talks or makes sounds	.65	Verbally encourages child's efforts t	.64	Engages in pretend play with child	.66
Is engaged in interacting with child	.71	Positions self to be able to respond to child's needs	.13	Offers suggestions to help child	.65	Does activities in a sequence of steps	.67
Shows emotional support toward child	.81	Replies to child's words or sounds	.59	Shows enthusiasm about what child is doing	.68	Talks to child about characteristics of objects	.66
						Asks child for information	.56

Research Question #3

Which of these positive parenting behaviors in the domains of affection, responsiveness, encouragement, and teaching/talking, within each group of families, are related to children's early language development? This is the main research question of this study, and it was hypothesized that for both cultures, some parent behaviors would be related to children's language outcomes. As noted in Chapter III, children's language scores could be in either English or Spanish, whichever language they knew better. For European-American families, it was specifically hypothesized that the domains of responsiveness and teaching/talking would be related to children's language outcomes. No specific hypotheses were made for Latino families, because there is so little research literature from which to derive sound hypotheses.

Covariates. To explore possible covariates, correlations between child and family characteristics and child language scores were analyzed. These variables included income, child gender, maternal education, maternal vocabulary, family size, and for Latino families, generation status. For families in both cultures, the only variable significantly correlated with child language scores was maternal vocabulary score, Latino $r = .19$, $p < .05$, European-American $r = .24$, $p < .01$. Because this item was different between the two samples, it was used as a covariate.

Partial correlations. To analyze how parent behavior influences child language outcomes, partial correlations between PICCOLO scores and child language scores were first analyzed, controlling for maternal vocabulary. Significant correlations from these

analyses are shown in Table 14 for Latino families and in Table 15 for European-American families.

For Latino families, there were few correlations between parent behavior and child language score. No overall domain scores were correlated with child language scores. Interestingly, of the eight significant correlations, seven were from 24-month parent behavior to 36-month child language score. In addition, three of these correlations were negative (24- and 36-month "parent touches child affectionately" and 24-month "parent supports child's choices or activity changes).

For European-American families, there are 16 correlations from 24-month parent behavior to child language scores and 14 correlations from 36-month parent behavior to child language scores. In addition, all overall domain scores at both ages are significantly correlated with child language scores for European Americans.

Table 14

Correlations Between PICCOLO Scores and Child Language, Controlling for Maternal Vocabulary: Latino

Parent behavior and domain	Age in months	Correlation
Touches child affectionately – Affection	24	-.20*
Uses positive expressions with child – Affection	24	.18*
Is engaged in interacting with child - Affection	24	.18*
Looks at child when child talks or makes sounds - Responsiveness	24	.18*
Supports child's choices or activity changes - Encouragement	24	-.18*
Offers suggestions to help child – Encouragement	24	.28**
Shows enthusiasm about what child is doing - Affection	24	.20*
Touches child affectionately – Affection	36	-.25**

n = 123-136
* $p = .05$
** $p = .01$

Table 15

Correlations Between PICCOLO Scores and Child Language, Controlling for Maternal Vocabulary: European-American

Parent behavior and domain	Age in months	Correlation
Speaks in a warm tone of voice – Affection	24	.15*
Praises child – Affection	24	.17**
Uses positive expressions with child - Affection	24	.12*
Shows emotional support toward child - Affection	24	.17**
Changes pace or activity to meet child's interests or needs - Responsiveness	24	.13*
Is flexible about child's change of activities or interests - Responsiveness	24	.22**
Follows what child is trying to do - Responsiveness	24	.22**
Replies to child's words or sounds - Responsiveness	24	.15*
Waits for child's response after making a suggestion - Encouragement	24	.23**
Supports child's choices or activity changes - Encouragement	24	.25**
Supports child in doing things on his/her own - Encouragement	24	.19**
Offers suggestions to help child - Encouragement	24	.19**
Explains reasons for something to child - Teaching	24	.12*
Suggests activities to extend what child is doing - Teaching	24	.16**
Repeats or expands child's words or sounds - Teaching	24	.27**
Asks child for information – Teaching	24	.22**
Uses positive expressions with child - Affection	36	.13*
Follows what child is trying to do - Responsiveness	36	.18**
Looks at child when child talks or makes sounds - Responsiveness	36	.15*
Replies to child's words or sounds - Responsiveness	36	.17**
Waits for child's response after making a suggestion - Encouragement	36	.27**
Offers suggestions to help child - Encouragement	36	.13*
Shows child how to do something - Teaching	36	.16**
Suggests activities to extend what child is doing - Teaching	36	.17**
Engages in pretend play with child - Teaching	36	.14*
Does activities in a sequence of steps - Teaching	36	.15*
Talks to child about characteristics of objects - Teaching	36	.12*
Asks child for information - Teaching	36	.14*
Affection/Affect	24	.15*
Affection/Affect	36	.14*

(*table continues*)

Parent behavior and domain	Age in months	Correlation
Responsiveness	24	.35**
Responsiveness	36	.17*
Encouragement	24	.27**
Encouragement	36	.16**
Teaching/Talking	24	.22**
Teaching/Talking	36	.23**

n = 120-280
* $p = .05$
** $p = .01$

Formation of Latino factor. For Latino families, it had been hypothesized that some overall domain scores would be correlated with children's language, but this was not the case. Because this was an exploratory study, other ways of combining items were explored. The correlations between individual PICCOLO items and child language do not, when considered singularly, merit strong statements about whether or not parent behavior predicts child language development. The purpose of the item-level analysis was to provide an exploratory description of the parenting behaviors that are associated with child language, but because analysis at the item level requires a large number of statistical tests, conventional statistical inference is limited. Item-level analyses are also limited in their utility for intervention programs needing information to provide adequate assistance to Latino families. The possibility of the items that were correlated with children's language forming a factor was explored as a means to generate scores that combined items in useful ways.

When PICCOLO items were originally developed, they were written based on constructs from the research literature on parenting. Thus, the organization of items into domains was based primarily on face validity as decided upon by the measure

development team and advice from practitioners. Statistically, items have some degree of overlap and do not fit as neatly into four domains as they do conceptually (as illustrated by the factor analysis conducted as part of research question #2). Therefore, it seemed appropriate to analyze the five PICCOLO items significantly correlated with child language as a factor score. Items that were negatively correlated with child language were not included. Scale reliability of these five items ("parent uses positive expressions with child," "parent is engaged in interacting with child," "parent looks at child when child is talking or making sounds," "parent offers verbal suggestions to help child," and "parent shows enthusiasm about child's activities") was analyzed and was sufficiently high to form a factor using these items, Cronbach's *alpha* = .74. Table 16 shows additional results from this reliability analysis. The correlation between this factor and children's vocabulary was .29**. This factor was then entered into a regression analysis along with maternal vocabulary. Results from this analysis are shown in Table 17.

Table 16

Reliability Analysis for Latino Language Factor

Parent behavior and domain	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Cronbach's alpha if item deleted
Uses positive expressions with child - Affection	6.20	1.42	.49	.70
Is engaged in interacting with child - Affection	5.85	1.61	.55	.70
Looks at child when child talks or makes sounds - Responsiveness	6.09	1.56	.28	.78
Offers verbal suggestions to help child - Encouragement	6.32	1.29	.59	.66
Shows enthusiasm about what child is doing - Affection	6.29	1.13	.70	.61

Table 17

Regression Predicting Child Vocabulary Using Latino Factor Score

Variable	Beta	R^2	Change R^2
Model 1			
Maternal vocabulary	.17*	.03	
Model 2			
Maternal vocabulary	.16	.09	.06
Latino factor score	.25**		

** $p = .01$

Maternal vocabulary score was entered first and was a significant predictor. However, when this parenting factor was entered in the second step, maternal vocabulary was no longer a significant predictor of child's vocabulary, only the parenting factor. This means that the parenting factor makes a difference at equal levels of maternal vocabulary, but maternal vocabulary does not have independent predictive value over and above parenting behavior.

Follow-up Analyses

Because correlations for PICCOLO items and domains with child vocabulary differed so dramatically between the two cultures and were not necessarily as hypothesized for Latino families, several analyses were conducted to better understand how parents influence language development in Latino families.

t test for PPVT and TVIP differences. First, a *t* test looked at differences between mean scores of children assessed using the PPVT and children assessed using the TVIP. This showed a significant difference between scores, $t = 8.99$**. The mean score for children assessed using the PPVT was 80.67 while the means score for children assessed

using the TVIP was 96.67.

Correlations by child outcome language. The next analysis looked at correlations between maternal behavior and child language separately for children assessed using the PPVT and children assessed using the TVIP. This analysis indicates that for children assessed using the PPVT, the items correlated with child vocabulary and the size of the correlations look similar to those of children in the European-American group. This group was small, however (N = 35), so few of these correlations are statistically significant. For children assessed using the TVIP, the correlations were very small and the pattern was not similar to that of children in the European-American group.

Regression analysis by child outcome language. The differences between PPVT and TVIP measures were also a concern in relation to analysis of the constructed parenting factor in relation to child language. The constructed parenting factor was entered into a regression analysis along with both maternal vocabulary score and the categorical variable indicating whether children were assessed in English or Spanish. This variable was chosen because follow-up analyses indicated some differences between these two groups and because at these young ages, the language measures in English and Spanish are not equivalent. When entered together into a regression equation, all three scores significantly contributed to children's language scores. PICCOLO scores and maternal vocabulary were positive predictors, meaning that higher scores on these variables were related to higher child language scores. The language version score was a negative predictor, meaning children assessed in English typically had lower language scores. Results from this analysis are shown in Table 18.

Table 18

Regression Predicting Child Vocabulary Using Latino Factor Score, Maternal Vocabulary, and Language Version

Variable	Beta	R^2
Latino factor score	.17**	.17
Maternal vocabulary	.21**	
Language version	-.33**	

Correlation between generation status and child language outcome. Another analysis looked at how generation status influenced child vocabulary. The correlation between generation status and children's language is negative, $r = .21$, suggesting that children's language skills are worse the longer these families, who all chose to be interviewed in Spanish, have lived in the US. Because the sample was defined as Spanish-speaking families, the Latino group in both generation levels chose to be interviewed in Spanish. Some of these children, however, were assessed in English. Results suggest that there is a group of Latino families who, even though they may have lived in the US for several years, still use primarily their native language, and their children's language development is poorer than that of children in more recent immigrant families.

CHAPTER V

DISCUSSION

Discussion of Findings

This study examined how parent-child interactions influence child language outcomes, particularly for Latino families. It also explored group differences, between Spanish-speaking Latino mothers and English-speaking European-American mothers, in parent-child interactions and how these interactions contribute to children's language outcomes differently within each group. Previous research shows that responsive parents who spend a lot of time talking with their children tend to have children who become better talkers and, eventually, better readers (Baumwell et al., 1997; Hart & Risley, 1995; Hobson et al., 2004; Hoff-Ginsberg, 1991; Landry et al., 1997). The majority of this research is based on European-American samples, and although there has been increasing research attention on the language development of Latino children (e.g., Rodriguez et al., 1995; Tabors et al., 2003; Winsler et al., 1999), little of this research has focused on the contribution of parents to their children's early language development. Given the increasing numbers of Latino families living in the U.S. and the unique challenges children from these families face in becoming successful students and readers, this is a topic that merits further exploration.

Parenting behaviors in both Latino and European-American families were coded from videotaped interactions of parents and children playing together. Parenting behavior was coded in four parenting domains: affection/affect, responsiveness, encouragement,

and teaching/talking. Extant demographic and child outcome data were then used to explore how these parenting behaviors contributed to children's language development and how culture influenced these contributions. Implications from the results of these analyses are discussed in the following sections, organized according to the research questions identified in Chapter I. Insights from Bronfenbrenner's (1992) ecological theory of child development are used to offer explanations and understandings of the research findings.

Typical Parent-Child Interactions

Description of findings. To begin to understand how parent-child interactions influence children's language development, what occurs within these interactions was first explored. Descriptive data from each of the individual parent behavior items showed that, in general, the parenting behaviors coded were prevalent throughout the parent-child play interactions when children were both 24 and 36 months old. On a 0 to 2 scale, the lowest mean score of any item for either culture was .45 ("parent explains reasons for something to child") in Latino families when children were 36 months old. No other mean scores were below .50, and few were below 1 (12 of 132). A score of 1 indicated that the parent did the particular behavior at least some of the time throughout the interaction. No domain mean scores, with items averaged, were below 1.0, indicating that for most items, most parents did the behavior at least some of the time.

Overall, the age influences on scores were typically higher for European-American families and for children who were 24 months old, although not always statistically so. No hypothesis was made about how parent behavior would differ by age,

but it is not surprising that parents did interact differently with 24-month-old children than they did with 36-month-old children. The abilities and needs of a 24-month-old child are quite different than those of a 36-month-old child. For example, the language abilities and attention span of a child would both likely increase during this time period, which may partially explain why parenting behavior changed. Parenting behavior is influenced by child behavior and would not be expected to look the same at 24 months as it does at 36 months.

Additional analyses looked at how several demographic variables influence PICCOLO scores. Differences between 24- and 36-month data (separately for Latino and European-American families) show that for families in both groups, there were many changes with age, although the patterns were somewhat different by culture. For affection/affect, the items that changed were identical for the two cultures: parent touches child affectionately, parent smiles at child, and parent praises child. For each of these items, parents participated in the behavior more frequently when children were younger.

Theoretical interpretation. These findings are interesting when considered in the context of Bronfenbrenner's (1992) theory of child development. This theory noted that the influence of parents on their child's development typically decreased as the children got older and were exposed to a broader environmental context. While it is possible that the PICCOLO measure described behaviors that are typical of parent-child interactions when the children are 24 months old than when they are 36 months old and that other behaviors occur more frequently when children are 36 months old, it is also possible that parents are engaging in the behaviors less frequently because their role is changing. By

36 months, many children are enrolled in preschool or daycare settings that also influence their development. This increases the number of microsystems a child is exposed to and the frequency of parent-child interactions may, in turn, be affected by this.

The existence of differences in behavior by culture is not surprising when interpreted using Bronfenbrenner's (1992) theory. His theory noted that there are differences within each system to which a child was exposed. The two groups studied for this project represent different cultures because they have different ethnicities, languages, and traditions. Culture is part of the macrosystem of child development, the system that is most distant from the child. The influence of culture is not as direct to the child as are influences that are part of proximal systems, yet the influence of culture can still be strong. Because culture can influence the way parents think and act, culture can have an influence on children's development through parent-child interactions. This idea will be explored further in the following section.

Influence of Culture

Description of findings. Overall, analyses showed that culture was related to the parenting behaviors that were observed within parent-child interactions. This is not surprising—other research has also found differences by culture in how parents interact with their children (Anderson & Stokes, 1984; Cervantes & Perez-Granados, 2002; Eisenberg, 2002). What was surprising about this finding was that the direction of differences was not as hypothesized. It was hypothesized that Latino parents would show more affection/affect and responsiveness in their interactions with their children based on previous work noting the prevalence of these types of behaviors in Latino culture

(Calzada & Eyberg, 2002; Harwood et al., 1999). Little evidence for this was found within the current research sample. European-American parents, compared with Latino parents, participated more frequently in behaviors from all of the four parenting domains.

Possible explanations. Although these results seem to contradict some of the previous research about Latino families, as well as some common stereotypes about the Latino culture, there is some other research with similar findings. A study comparing Mexican-American mothers and European-American mothers found some differences between parenting styles, but concluded that there were more similarities than differences between the two groups (Hill, Bush, & Roosa, 2003).

Additionally, the methods used by previous research and the samples studied differ in ways that may contribute to the differences in findings. Calzada and Eyberg (2002) studied only Dominican and Puerto Rican mothers, only self-reported behaviors were obtained, and children were between the ages of 2 and 6. These differences from this study and could influence the pattern of findings. The children in the Harwood and colleagues (1999) study were between the ages of 12 and 15 months, much younger than children in this study. Additionally, only Puerto Rican mothers were studied.

There are also several other possible reasons why this finding was not as hypothesized. First, it may be that the students who coded the videotapes differed. That is, different people coded European-American families than coded Latino families. It is possible that those who coded the European-American families scored families differently than those who coded Latino families. To explore this possibility, some coders "switched" coding teams and coded clips from different cultures. Correlations between

European-American coders' scores and Latino coders' scores are .68 in the affection domain, .33 in the responsiveness domain, .36 in the encouragement domain, and .53 in the teaching/talking domain. These are only moderate correlations, showing that coders did code somewhat differently.

It is also possible that the affection/affect and responsiveness domains do not adequately capture the range of possible affection/affect and responsiveness behaviors, particularly those that Latino parents engage in frequently or that PICCOLO is not sensitive enough to capture these differences. As part of the development of this measure, steps were taken to ensure that the range of parenting behaviors in Latino families was captured: Latino parents/students were interviewed about the applicability of the PICCOLO items for their culture, other possible behaviors were identified and added to the original coding scheme, and items were not deleted from the final version of the measure until the applicability of the item for both cultures was evaluated. Because PICCOLO uses a simple 0, 1, or 2 coding system, there is little variability in scores. This limits the sensitivity for the measure in identifying differences between parents.

Perhaps the most viable alternative explanation is that the uniqueness of this Latino sample—low-income Latino families for whom Spanish is the primary language spoken in the home—do not capture the characteristics of the larger Latino population. Because this is such a unique group of Latino families, the cultural macrosystem to which they are exposed may be very different than the cultural macrosystem to which other Latino families are exposed. Certainly, there is not only a single Latino culture to which these families are exposed.

Socioeconomic status is another important aspect of the macrosystem a child experiences. Research has found many differences in the home environment and learning opportunities of low-income homes compared to higher-income homes (Eisenberg, 2002; Hart & Risley, 1995). One study compared low-income and middle-income Mexican-American mother-child dyads and found that SES had an effect on the amount of positive feedback given and complexity of the interaction, with middle-income moms providing more of both. While culture likely influenced the parenting styles of the families included in this sample, a similar SES likely contributed to similarities between the two samples that were not hypothesized. It is possible that being poor is as influential on child development as is culture.

The variability in the cultural macrosystems Latino families experience is important for understanding differences in behavior between these families and non-Latino families. The group of Latino families this research focused on is different from other groups of Latino families and was selected to represent a group of Latino families whose children were at highest-risk for poor language outcomes and reading skills. Indeed, just the prevalence with which Spanish is used in these families indicates that there is something unique about them. Most previous research using Latino families has also used samples that are not representative of the entire spectrum of Latino families (e.g., Latino families who speak English, families living in Puerto Rico, only Mexican-American families, etc.). In addition, the group of European-American families used as a comparison group is also a unique, low-income group that is likely not representative of the larger European-American population. Comparing research findings drawn from

these unique samples and attempting to extrapolate findings to the larger Latino population is unwise, yet often happens because of the lack of representative samples.

Theoretical interpretation. While culture is part of the macrosystem of development, which is the level of developmental influences most distant to the child, this should not be interpreted to mean that the influence of culture on children's development is not strong. Macrosystems of development are distant from the child, but their influence can be pervasive across other levels of development also because macrosystems affect mesosystems and microsystems. The finding that parent-child interactions differ by culture illustrates how this is possible. The influences of the more distant system (culture) can directly influence the child's development through interactions with parents.

Intervention programs often seek to improve children's early language development. To be successful, such programs need to recognize and work with the unique aspects of the populations they serve. This research highlights several important considerations for such programs. First, parent-child interactions are different in Latino families than they are in European-American families. Continuing to view interactions typical of European-American families as the norm amidst a continually changing demography will hamper intervention efforts. Second, differences in interactions have important implications for children's development. Not only do differences in behavior exist which can lead to different outcomes for children, but the same behaviors are related to children's outcomes in different ways in Latino families than they are in European-American families. Third, Latino families are not homogeneous and

considerably more research needs to be done before these differences are understood in a way that will be helpful for intervention programs. This research focused on a unique sub-group of the Latino population and by doing so, some interesting characteristics of this group that may differ from other Latino subgroups were noted. However, this research was only able to scratch the surface of these differences. Because data were collected for different projects that were not informed of the research objectives of this particular study, insufficient data were available to explore this issue in depth. Understanding differences in parent-child interactions of different subgroups of Latino families should be the focus of future research designed to assist intervention programs in meeting their goals.

Parent Contributions to Children's Language Development

Parent contributions in European-American families. It was hypothesized that for families in both cultures, parent behavior would be related to children's language development. For European-Americans, the domains of responsiveness and teaching/talking were hypothesized to be correlated with child vocabulary based on extensive research showing that parent responsiveness and verbal behavior are important for children's later language success (Baumwell et al., 1997; Hart & Risley, 1995; Hobson et al., 2004; Hoff-Ginsberg, 1991; Landry et al., 1997). Strong correlations between parenting behaviors in these domains and children's language were found, particularly for the responsiveness domains. Because less research has looked at how affection/affect and encouragement influence children's language development, no

specific hypotheses about these domains were made. However, these domains of parenting also seem to be important for children's language development as several items in these domains were also associated with children's language outcomes.

Theoretical interpretation. The strength of these associations corresponds with Bronfenbrenner's (1992) assumption that microsystems have strong influences on development. For young children, parent-child interactions are perhaps the primary microsystem of development. Interactions that occur with parents and in the home have a formative influence on children's development, both cognitive and emotional, that can last well into childhood and even to adulthood (Shonkoff & Phillips, 2000). These correlations also correspond with work by previous researchers noting that responsiveness and talking with children are important for children's language development (Hubbs-Tait et al., 2002; NICHD Early Child Care Research Network, 2001; Steelman et al., 2002). For European-American families, it seems clear that responding to children, both to their communicative attempts and other behaviors, and talking with children are important for language development.

For this study, there were several behaviors from the affection domain, as well as overall affection domain scores from both times, that were associated with children's language. Less previous research has looked at the link between affection and children's language outcomes, so no specific hypothesis about these correlations was made. However, Hart and Risley (1995) did find that the affective quality of parent-child verbal interactions differed by social class, with children living in higher-SES receiving affirmative and positive feedback more frequently than children in lower-SES homes.

This aspect of the home language environment children experience has important implications for children's language development. While the behaviors described by Hart and Risley were specific to language interactions, the behaviors coded as part of the affection domain for PICCOLO were applicable to more general parent-child interactions. The finding that these behaviors are important for language outcomes for European-American children further demonstrates the importance of positive affect for children's language interactions.

Encouragement, as captured by the items used in PICCOLO coding, generally means that the parent supports the child's efforts to do things on his/her own and offers appropriate assistance (either verbal or physical). This is a domain of parenting that has received considerably less research attention and is somewhat controversial since encouraging children to be independent and autonomous is not universally considered an important component of parenting. Nevertheless, this type of parenting seems important for children's language outcomes because the domain score for European-American families is significantly related to children's outcomes.

Parent contributions in Latino families. The picture is less clear for Latino families. Of a possible 70 correlations between parenting behavior and children's language development, there were only eight statistically significant correlations. Only eight observed parenting behaviors by Latina mothers were associated with children's language and three were negative, thus predicting smaller vocabularies in children (for European-American families, no significant correlations were negative). One item, "parent touches child affectionately," was negatively related to children's language

development at both 24 and 36 months. Why this might be is unclear. However, when scale reliability and predictive validity of the PICCOLO measure were subsequently analyzed, this item showed poor scale reliability and predictive validity across the three cultures. Because of this, “parent touches child affectionately” was not included in later versions of the PICCOLO measure (which was not yet finalized when these analyses were conducted).

The other behavior that was negatively correlated with child language, “parent supports child’s choices or activity changes,” was originally worded “parent allows child to choose or change activities.” This item was coded using the original wording for about half of the PICCOLO coding. Upon discussion with coders, it was realized that many coders were coding parents who just sat back and did nothing with their child highly on this item, which does not really capture “encouragement.” As such, the item was re-worded, but data using the original wording were included in the analyses. This provides a possible explanation for this unexpected finding. However, the negative correlations disappear when testing language is controlled or when PPVT and TVIP outcome data are analyzed separately.

The items that were positively correlated with child language for Latino families were made into a factor used in a regression analysis. Mother vocabulary score and the language the child was assessed in were also entered in this analysis. Results indicated that a factor from the five items were a strong predictor of children’s language outcomes. Although these items do not come from only one of the PICCOLO domains, they likely represent a dimension of parenting in these families that is important for children’s

language development. The five items, uses positive expressions with child, is engaged in interacting with child, looks at child when child talks or makes sounds, offers verbal suggestions to help child, and shows enthusiasm about what child is doing, are items that are responsive to the child in very nonintrusive way. They show that the parent is engaged with and interested in what the child is doing, but that the parent is allowing the child to do things without excessive input from the mother. This could be thought of as hands-off responsiveness.

For intervention programs working with Spanish-speaking Latino families, this may provide a starting point to promote children's language development. The behaviors included in this predictive parenting factor were: "parent uses positive expressions with child," "parent is engaged in interacting with child," "parent looks at child when child is talking or making sounds," "parent offers verbal suggestions to help child," and "parent shows enthusiasm about child's activities."

Interpretation. While no specific hypotheses were made about which domains of parenting would be related to children's language, it is nevertheless surprising that no domains are related to children's language in this sample of Latino children, particularly the teaching/talking domain. Because this seems to be such an important aspect of parenting, at least conceptually, for children's language development, further work should be done to explore why there are not stronger associations between parents' conversational interactions with their children and the children's language outcomes in this subgroup of Latino families.

Earlier work on the larger measurement development project showed more and

stronger correlations between PICCOLO items and language outcomes. Specifically, when the correlations between PICCOLO scores for Latino families and children's language development are examined, many individual items and several domain scores are correlated with children's vocabulary (Roggman & Innocenti, 2007; Roggman et al., 2008b). However, some of these findings included only children whose vocabulary was assessed in English (PPVT) and many of these families reported that English was the primary language spoken in the home. Other data were analyzed using child assessment language as a control variable and showed a more consistent pattern of positive correlations between PICCOLO domain scores and children's language. For the sample used in this study, only Spanish-speaking Latino families were included. All mothers indicated that they spoke primarily Spanish in the home. Children could be assessed in either language. When the Latino sample used in this study is divided into children whose language outcome is TVIP (Spanish) versus those whose language outcome is PPVT (English), results seem to indicate very few connections between parent behavior and child language for those whose outcome is TVIP and stronger connections between parent behavior and child language for those whose outcome is PPVT. Each of these groups is relatively small (TVIP $N = 62$; PPVT $N = 34$) and correlations from one group likely cancel out correlations from the other group when data are used in the same analyses. When analyzed separately, it seems that parenting behavior is not influencing children's language development uniformly across this Latino group.

Future Research

How parents in Latino families can help their children develop strong language skills is not clearly understood. There are several areas future research could explore that would increase our understanding of this topic and help intervention programs work more effectively with parents in these families.

First, research needs to better differentiate between groups of Latino families. This research indicated that even within the unique group of Latino families selected for research there is variability in parenting and how parenting influences children's behavior. The parenting styles of recent immigrants are likely different from the parenting styles of families who have been in the United States for a longer amount of time. Parenting styles of parents from Mexican descent are likely different from the parenting styles of parents from Puerto Rican or Dominican or Guatemalan descent. And the parenting styles of those who use primarily Spanish are likely different from the parenting styles of those who use primarily English. These are just some of the differences within Latino families that may influence parenting styles and need to be better understood.

Another topic that needs more research attention is whether there are more variables influencing the acquisition of language that were not identified. For Latino families included in this study, very few parenting behaviors were identified. Research could identify and explore other possible parenting behaviors that influence children's language development. Similarly, the five behaviors that were positively correlated to children's language and that were then formed into a factor that predicted children's

language should be further explored. These five behaviors seem to represent a dimension of parenting that could be described as hands-off responsiveness. Future research could look at how well these behaviors predict children's language development in other samples and what other parenting behaviors fit within this dimension of parenting.

Future research should also include more than one outcome variable. Because this study used extant data, it was not possible to explore more language outcomes. While vocabulary is an important component of early language development, a more complete picture would be obtained by using more outcome variables.

Limitations

There are several limitations of this study that should be kept in mind when interpreting this data. The first, which has been addressed several times throughout this discussion, is that these samples represent unique populations. First, all participants in this study were low-income, making results applicable primarily to low-income families. In addition, the Latino sample used in this research was selected to represent families whose children face unique challenges learning language and eventually learning to read. Results obtained from this sample should not be extrapolated to the larger Latino population. The European-American sample was chosen to be similar demographically to the Latino sample and is not necessarily representative of any particular group of European-Americans. While research often seeks to have wide applicability, there are times when it is important to study a smaller group of people. This study sought to provide information for intervention programs that work with low-income, Spanish-

speaking families. Only by drawing a sample that represents this unique group could this goal be accomplished. For this study, efforts were made to identify a sample that would be indicative of Latino families whose children were at the highest-risk for language development problems. Thus, Latino families who had been in the U.S. for multiple generations and may, therefore, have been more acculturated to U.S. culture and English language use were not part of this Latino sample. The differences between groups of Latino families seem to indicate that it is not enough to simply look at differences between Latino families and European-American families.

Another limitation to this research is that it used extant data. This is particularly a problem for children's language outcomes. As part of a larger study, most children were assessed in either Spanish or English but not both. It would have been ideal to assess all children using both the PPVT and the TVIP. By doing so, a combination score of language could have been obtained as a better indicator of children's overall language development. However, EHSR children were not assessed in this way. There is a numerically large difference between the mean PPVT and TVIP scores, but it is hard to interpret this. Because both the TVIP and PPVT were normed using monolingual speakers, it is particularly difficult to interpret the scores of bilingual Spanish-speaking children on these measures (Tabors et al., 2003). Children who were assessed using the PPVT had lower mean scores (80.64) than children who were assessed using the TVIP (96.67), but it is unknown if their combination scores would have also been lower. It is possible that they had nearly equal skills in English and Spanish and that their combination scores would have been similar to the combination scores of the children

who spoke primarily one language.

Another explanation for differences between the mean PPVT and TVIP scores is the Flynn effect, which notes that there is a rise in the average IQ of populations across time, resulting in the need to renorm tests every 15 years or so (Berger, 2005). The version of the TVIP used was published in 1986 and the version of the PPVT used was published in 1995. While it is unlikely that norms changed more than a standard deviation in these 9 years, it is possible that the Flynn effect influenced scores to some extent. Differences between the TVIP scores and the PPVT scores may also be due to a limited range of TVIP scores, which ranged from 82 to 132 while PPVT scores had a wider range, 40 to 116. The standard deviation of the two measures also differed—8.3 for the TVIP and almost double (16.3) for the PPVT.

Another limitation of the extant data set was the availability of only one measure of children's language. The PPVT/TVIP measures only children's receptive vocabulary. While it is a strong measure, using more than one measure would provide a more accurate estimate of children's early language development and provide a measure of English vocabulary, which is the expected school language in the US. Understanding which parenting behaviors support overall language development and which support English language development would add strength to the suggestions made to intervention programs.

In this study, some families received early intervention services and some families did not. Both projects from which data were taken, EHSR and BELLS, had an intervention component that half of the participants received. These services include

home-based center-based, or a combination of child development services. Some programs used purely one approach of service delivery while other programs used a mixture of the various methods. In addition, some families dropped out of the intervention services but remained part of the research sample. Because intervention services varied widely and because of the difficulty in documenting type of intervention received, the effects of early intervention were not examined in this study. While this is a limitation, the role of parents in supporting their children's language was the primary goal of this study and this goal was accomplished without looking at the effects of intervention programs.

Conclusion

Parents play an important role in their children's development. For this study, the role of parents in supporting their children's language development, particularly for Spanish-speaking Latino families, was explored. While previous research has provided a fairly thorough understanding of how parents in English-speaking European-American families support their children's language development, the same information is not available for Spanish-speaking Latino families. By using a new measure of parent-child interactions, this study sought to provide information about how parents in Spanish-speaking Latino families support their children's language development so that this information could then be used by intervention programs.

Results indicate that Spanish-speaking Latino families support children's language development in different ways than do English-speaking European-American

families. For Spanish-speaking Latino families, there were only a few key parenting behaviors correlated with language outcomes. These key behaviors included “parent uses positive expressions with child,” “parent is engaged in interacting with child,” “parent looks at child when child is talking or making sounds,” “parent offers verbal suggestions to help child,” and “parent shows enthusiasm about child’s activities.” These behaviors can provide a starting point for intervention programs that work with such families. Immigration trends indicate that the number of Spanish-speaking families living in the U.S. will continue to grow. Because the language and reading abilities of this group are low, it is important to continue identifying ways to support their children’s early language development. Bronfenbrenner’s (1992) ecological theory of child development noted the important role of parent-child interactions in very young children’s development, thus, future research should continue to examine how parents in Spanish-speaking Latino families can support their children’s early language development.

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APPENDICES

Appendix A

Informed Consent Forms

Utah State
UNIVERSITY

EARLY HEAD START RESEARCH PARTNERSHIP
(801) 797-0779 or (800) 915-9963
Fax: (801) 797-3845

24 Month Videotaping Consent Form

My child and I are taking part in the Early Head Start research by Utah State University and Mathematica Policy Research, funded by the U. S. Department of Health and Human Services. This part of the study will help researchers learn how mothers and their children play, learn, and solve problems.

I understand that my child and I will be videotaped for about 30 minutes while we play, learn, and solve problems.

I understand that the activities filmed by videotape are confidential and will be used for research and educational purposes only. I understand that the videotape may be edited and that copies will be made for research and educational use. I also understand that while the images and voices (and possibly the first names) of my child and me will be on the videotape, no identifying information such as full name or address will be recorded on the tape or box or released to any one except as may be required by law. The research staff who view the videotape will have signed an assurance of confidentiality that says that they agree with all these restrictions. I understand that the research based on these videotapes is likely to continue for several years, and the videotapes will not be destroyed.

I understand that my participation in this study is voluntary. I may stop participating in the videotaped activities at any time. I understand that the $20 gift certificate I will receive for allowing the interviewer to interview me and assess my child represents full compensation for my participation.

I have had an opportunity to ask any questions I may have and have received a satisfactory explanation of any language or information I did not fully understand. I agree to participate and to permit the voices and images of me and my child to be videotaped. I have the authority to invite the interviewers to enter and remain on the premises in order to conduct the videotaping.

I have received a copy of this consent form. I understand that I can contact Dr. Lori Roggman at (801) 797-1545 or at (800) 915-9963 if I require any additional information about the study or have any questions.

Mother's Name	Mother's Signature	Date
Child's Name	Interviewer's Signature	Date

Utah State
UNIVERSITY

EARLY HEAD START RESEARCH PARTNERSHIP
(801) 797-0779 or (800) 915-9963
Fax: (801) 797-3845

Level II Videotaping Consent:
Informed Consent for Additional Research and Educational Uses

The interviewer has explained to me about the additional consent requested for this study. I give additional permission for the videotape to be reproduced and shown at conferences and workshops, used for training researchers and interviewers, and for other research and educational purposes. I understand that no identifying information will be used. I understand that the compensation payment discussed earlier represents full compensation for participation in the study by me and my child, and no additional compensation will be provided.

Please check one box and sign this form.

☐ Additional consent given.

☐ Additional consent **NOT** given.

Mother's Name	Mother's Signature	Date
Child's Name	Interviewer's Signature	Date

INFORMED CONSENT FORM

Date Revised : March 1, 2004

Bilingual Early Language and Literacy Support (BELLS)

Purpose: The purpose of this study is to learn more about how young children learn to talk and how learning to talk in English and Spanish affects early reading skills.

What does participation involve? I understand that:

1. This study will last from the time that my child is in kindergarten until my child finishes first grade.
2. Participation in this study will involve my child and me. An assessor will conduct the assessments on my child at school or alternative site. An assessor will conduct assessments on me at an agreed upon site (community center or school) and videotape my child and I in the spring of my child's kindergarten and first grade years. Assessments will occur over 2-3 visits, accommodating the needs of 5 and 6 year-old children.
3. My child and I will be assessed in with language and literacy assessments in both English and Spanish and I will be asked to complete several questionnaires during the assessor visits.
4. My child and I will be videotaped while participating in several activities for 15 minutes.
5. In case we move, the BELLS project will use the information I have shared, and an attempt will be made to try to contact me, unless I have withdrawn from the study.
6. We maintain the right to contact you after this study ends to provide information about the study and to request your involvement in possible future studies.

New Findings

During the course of this study I will be informed of any significant findings (either good or bad), such as changes in the risks or benefits resulting from participation in the research, or new alternatives to participation which might cause me to change my mind about continuing in the study. If new information is provided, my consent to continue participating in this study will be re-obtained.

Risks

There is minimal risk associated with participating in this study.

Benefits

An anticipated benefit of this study is the improvement of English literacy skills by improving services for children from Spanish-speaking homes.

Payment

I will be paid $40.00 for each assessment (spring of my child's kindergarten and first grade years).

Voluntary nature of participation and right to withdraw without consequence

Participation in research is entirely voluntary. I may refuse to participate or withdraw at any time without consequence or loss of benefits.

Confidentiality

Information related to my child and me, both written and videotaped, will be treated in strict confidence to the extent provided by law. My identity will be coded and will not be associated with any published results. My code number and identity will be stored separately in a locked file, and will be destroyed 5 years after the end of the study and then destroyed. Only study personnel will have access to the data. Videotapes will be kept for 5 years after the end of the study and then destroyed.

INFORMED CONSENT FORM

Date Revised: March 1, 2004

IRB Approval Statement
The Institutional Review Board (IRB) for the protection of human subjects at Utah State University has reviewed and approved this research project. If you have any questions or concerns about this approval, please contact the IRB Office at (435) 797-1821.

Questions? If I have any questions about participation in the study, I can contact Mark Innocenti at Utah State University (1-800-887-1699).

Copy of Consent: I have been given two copies of the Informed Consent. I will sign both copies and keep one copy for my files.

Investigator Statement: I certify that the research study has been explained to the above individual, by me or my staff, and that the individual understands the nature and purpose, the possible risks and benefits associated with taking part in this research study. Any questions raised have been answered.

Consent: I have read the above description of the BELLS project. By signing this consent form, I agree to allow my son/daughter and our family to participate.

Child's Name	Address, City, and Zip Code
Parent's Name	Phone Number
Parent Signature	Date
Project Director	March 1, 2004 Date
Witness	Date

BELLS INFORMED CONSENT FOR ADDITIONAL RESEARCH AND EDUCATIONAL USES OF VIDEOTAPE
(LEVEL II)

The interviewer has explained to me about the additional consent requested for this study. I give additional permission for the videotape to be reproduced and shown at conferences and workshops, used for training researchers and interviewers, and for other research and educational purposes. I understand that no identifying information will be used. I understand that the compensation payment discussed earlier represents full compensation for participation in the study by me and my child, and no additional compensation will be provided.

Please check one box and sign this form

_ Additional consent given

_ Additional consent **NOT** given

_____ _____
Parent/Caregiver's Printed Name Child's Printed Name

_____ _____ _____ _____
Parent/Caregiver's Signature Date Interviewer's Signature Date

Appendix B

Overall Correlation Matrix

Table B-1

Overall Correlation Matrix

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Affection Total Score 24 months														
2. Affection Total Score 36 months	.43**													
3. Responsiveness Total Score 24 months	.64**	.33**												
4. Responsiveness Total Score 36 months	.35**	.65**	.44**											
5. Encouragement Total Score 24 months	.68**	.34**	.69**	.41**										
6. Encouragement Total Score 36 months	.35**	.71**	.50**	.71**	.47**									
7. Teaching Total Score 24 months	.60**	.31**	.55**	.31**	.63**	.35**								
8. Teaching Total Score 36 months	.44**	.62**	.40**	.55**	.43**	.63**	.49**							
9. Touches child affectionately 24 months	.59**	.21**	.29**	.18**	.35**	.18**	.33**	.24**						
10. Speaks in a warm tone of voice 24 months	.65**	.22**	.44**	.17**	.49**	.17**	.35**	.23**	.25**					
11. Smiles at child 24 months	.62**	.27**	.42**	.25**	.35**	.26**	.28**	.28**	.23**	.32**				
12. Praises child 24 months	.62**	.32**	.40**	.26**	.45**	.24**	.44**	.29**	.25**	.27**	.17**			
13. Is physically close to child 24 months	.29**	.07	.32	.14*	.21**	.09	.17**	.13*	.13**	.14**	.13**	.08		
14. Uses positive expressions with child 24 months	.78**	.35**	.47**	.28**	.55**	.26**	.49**	.35**	.28**	.52**	.47**	.38**	.18**	
15. Is engaged in interacting with child 24 months	.62**	.21**	.50**	.21**	.48**	.17**	.52**	.27**	.23**	.54**	.25**	.26**	.29**	.50**
16. Shows emotional support toward child 24 months	.76**	.33**	.59**	.30**	.59**	.25**	.42**	.29**	.26**	.52**	.37**	.38**	.22**	.67**
17. Pays attention to what child is doing 24 months	.26**	.15*	.51**	.19**	.20**	.19**	.23**	.14*	.12	.06	.04	.24**	.24**	.18**

(table continues)

Variable	15	16	17	18	19	20	21	22	23	24	25	26	27	28
1. Affection Total Score 24 months														
2. Affection Total Score 36 months														
3. Responsiveness Total Score 24 months														
4. Responsiveness Total Score 36 months														
5. Encouragement Total Score 24 months														
6. Encouragement Total Score 36 months														
7. Teaching Total Score 24 months														
8. Teaching Total Score 36 months														
9. Touches child affectionately 24 months														
10. Speaks in a warm tone of voice 24 months														
11. Smiles at child 24 months														
12. Praises child 24 months														
13. Is physically close to child 24 months														
14. Uses positive expressions with child 24 months														
15. Is engaged in interacting with child 24 months														
16. Shows emotional support toward child 24 months	.44**													
17. Pays attention to what child is doing 24 months	.39**	.25**												

(table continues)

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
18. Changes pace or activity to meet child's interests or needs 24 months	.29**	.11*	.56**	.24**	.43**	.19**	.25**	.19**	.10*	.28**	.21**	.13**	.14**	.21**
19. Is flexible about child's change of activities or interests 24 months	.34**	.23**	.70**	.37**	.47**	.29**	.18**	.23**	.10*	.31**	.22**	.15**	.16**	.32**
20. Follows what child is trying to do 24 months	.51**	.17**	.71**	.21**	.63**	.27**	.39**	.23**	.18**	.50**	.26**	.26**	.23**	.46**
21. Responds to child's emotions 24 months	.63**	.27**	.73**	.29**	.53**	.24**	.46**	.29**	.24**	.46**	.39**	.31**	.18**	.59**
22. Looks at child when child talks or makes sounds 24 months	.29**	.00	.58**	.32**	.28**	.11*	.26**	.11*	.04	.17**	.25**	.11*	.09	.35**
23. Positions self to be able to respond to child's needs 24 months	.17**	.06	.18**	.10	.23**	.13**	.23**	.05	.17**	.01	.02	.07	.44**	.13**
24. Replies to child's words or sounds 24 months	.38**	.21**	.56**	.34**	.37**	.19**	.39**	.23**	.11*	.27**	.18**	.23**	.10*	.34**
25. Physically helps child do something 24 months	.32**	.13*	.17**	.08	.55**	.24**	.34**	.21**	.36**	.23**	.14**	.18**	.16**	.21**
26. Waits for child's response after making a suggestion 24 months	.37**	.17**	.58**	.36**	.65**	.28**	.41**	.33**	.14**	.30**	.24**	.19**	.10*	.30**
27. Encourages child to handle toys 24 months	.21**	.13*	.28**	.27**	.53**	.27**	.16**	.10	.11*	.30**	.13**	.10*	.10*	.17**
28. Supports child's choices or activity changes 24 months	.39**	.25**	.54**	.29**	.70**	.36**	.24**	.26**	.17**	.34**	.25**	.21**	.13**	.31**
29. Supports child in doing things on his/her own 24 months	.21**	.08	.39**	.19**	.61**	.29**	.19**	.13*	.09	.20**	.11*	.10*	.10*	.17**
30. Verbally encourages child's efforts 24 months	.63**	.36**	.45**	.30**	.67**	.34**	.54**	.36**	.37**	.32**	.27**	.60**	.14**	.52**
31. Offers suggestions to help child 24 months	.44**	.20**	.46**	.23**	.61**	.23**	.54**	.35**	.14**	.33**	.15**	.33**	.11*	.37**
32. Shows enthusiasm about what child is doing 24 months	.68**	.35**	.55**	.38**	.70**	.32**	.59**	.35**	.29**	.45**	.40**	.39**	.23**	.61**

(table continues)

Variable	15	16	17	18	19	20	21	22	23	24	25	26	27	28
18. Changes pace or activity to meet child's interests or needs 24 months	.28**	.27**	.11											
19. Is flexible about child's change of activities or interests 24 months	.18**	.39**	.25**	.48**										
20. Follows what child is trying to do 24 months	.54**	.46**	.31**	.40**	.51**									
21. Responds to child's emotions 24 months	.32**	.71**	.32**	.22**	.36**	.42**								
22. Looks at child when child talks or makes sounds 24 months	.23**	.33**	.43**	.06	.19**	.24**	.41**							
23. Positions self to be able to respond to child's needs 24 months	.16**	.07	.08	-.05	.08	.17**	.15**	.01						
24. Replies to child's words or sounds 24 months	.30**	.38**	.15*	.18**	.20**	.18**	.38**	.33**	.07					
25. Physically helps child do something 24 months	.23**	.15**	.00	.18**	.10*	.31**	.15**	-.03	.22**	-.03				
26. Waits for child's response after making a suggestion 24 months	.29**	.36**	.18**	.45**	.41**	.42**	.36**	.30**	.06	.32**	.16**			
27. Encourages child to handle toys 24 months	.22**	.26**	.03	.29**	.30**	.43**	.18**	.07	.06	.13**	.24**	.24**		
28. Supports child's choices or activity changes 24 months	.20**	.40**	.06	.46**	.62**	.54**	.36**	.12*	.06	.22**	.25**	.51**	.41**	
29. Supports child in doing things on his/her own 24 months	.18**	.28**	.06	.29**	.43**	.48**	.21**	.18**	.21**	.17**	.23**	.34**	.51**	.59**
30. Verbally encourages child's efforts 24 months	.31**	.51**	.23**	.08	.17**	.28**	.49**	.20**	.16**	.27**	.32**	.25**	.18**	.27**
31. Offers suggestions to help child 24 months	.45**	.40**	.20**	.24**	.17**	.39**	.36**	.24**	.19**	.29**	.25**	.35**	.19**	.24**
32. Shows enthusiasm about what child is doing 24 months	.52**	.57**	.19**	.21**	.24**	.40**	.49**	.27**	.21**	.42**	.28**	.33**	.25**	.31**

(table continues)

Variable	29	30	31	32	33	34	35	36	37	38	39	40	41	42
18. Changes pace or activity to meet child's interests or needs 24 months														
19. Is flexible about child's change of activities or interests 24 months														
20. Follows what child is trying to do 24 months														
21. Responds to child's emotions 24 months														
22. Looks at child when child talks or makes sounds 24 months														
23. Positions self to be able to respond to child's needs 24 months														
24. Replies to child's words or sounds 24 months														
25. Physically helps child do something 24 months														
26. Waits for child's response after making a suggestion 24 months														
27. Encourages child to handle toys 24 months														
28. Supports child's choices or activity changes 24 months														
29. Supports child in doing things on his/her own 24 months														
30. Verbally encourages child's efforts 24 months	.17**													
31. Offers suggestions to help child 24 months	.24**	.36**												
32. Shows enthusiasm about what child is doing 24 months	.27**	.57**	.44**											

(table continues)

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
33. Shows child how to do something 24 months	.31**	.08	.27**	.13*	.34**	.16**	.56**	.27**	.22**	.25**	.16**	.21**	.08	.21**
34. Explains reasons for something to child 24 months	.34**	.19**	.37**	.25**	.35**	.20**	.64**	.29**	.22**	.15**	.13**	.30**	.04	.28**
35. Suggests activities to extend what child is doing 24 months	.42**	.17**	.41**	.12	.51**	.25**	.73**	.35**	.17**	.27**	.22**	.32**	.08	.34**
36. Repeats or expands child's words or sounds 24 months	.34**	.19**	.41**	.25**	.39**	.20**	.57**	.31**	.14**	.23**	.20**	.25**	.14**	.30**
37. Labels objects or actions for child 24 months	.47**	.19**	.36**	.28**	.48**	.19**	.60**	.30**	.22**	.37**	.20**	.31**	.11*	.44**
38. Engages in pretend play with child 24 months	.36**	.25**	.38**	.18**	.32**	.21**	.68**	.34**	.19**	.16**	.14**	.29**	.13**	.23**
39. Does activities in a sequence of steps 24 months	.40**	.18**	.32**	.17**	.36**	.24**	.69**	.34**	.25**	.11*	.22**	.31**	.09	.29**
40. Talks about characteristics of objects 24 months	.37**	.30**	.33**	.24**	.35**	.25**	.65**	.32**	.23**	.17**	.15**	.28**	.10*	.33**
41. Asks child for information 24 months	.41**	.26**	.38**	.29**	.51**	.31**	.55**	.33**	.23**	.34**	.22**	.26**	.17**	.43**
42. Touches child affectionately 36 months	.29**	.60**	.28**	.31**	.24**	.36**	.25**	.39**	.29**	.11*	.13*	.23**	.10*	.17**
43. Speaks in a warm tone of voice 36 months	.22**	.61**	.17**	.45**	.22**	.55**	.10*	.35**	.07	.21**	.10*	.17**	-.04	.20**
44. Smiles at child 36 months	.33**	.73**	.26**	.50**	.28**	.50**	.19**	.37**	.10*	.19**	.34**	.18**	.01	.32**
45. Praises child 36 months	.28**	.64**	.19**	.37**	.21**	.43**	.19**	.42**	.14**	.12*	.14**	.32**	.02	.16**
46. Is physically close to child 36 months	.08	.24**	.14*	.09	.03	.16**	.09	.16**	.09	.00	.04	.07	.08	.09
47. Uses positive expressions with child 36 months	.34**	.81**	.22**	.57**	.28**	.58**	.25**	.47**	.11*	.14**	.23**	.19**	.09*	.34**
48. Is engaged in interacting with child 36 months	.23**	.58**	.19**	.43**	.16**	.44**	.30**	.50**	.04	.18**	.11*	.24**	.02	.19**
49. Shows emotional support toward child 36 months	.31**	.76**	.24**	.61**	.25**	.43**	.12*	.12*	.21**	.16**	.06	.29**	.11*	.33**
50. Pays attention to what child is doing 36 months	.14*	.42**	.18**	.56**	.14**	.30**	.13*	.35**	.06	.03	.11	.14*	.00	.13

(table continues)

Variable	15	16	17	18	19	20	21	22	23	24	25	26	27	28
33. Shows child how to do something 24 months	.35**	.12*	.13*	.19**	.09	.25**	.11*	.14**	.02	.02	.38**	.21**	.16**	.10*
34. Explains reasons for something to child 24 months	.23**	.24**	.09	.12*	.12**	.20**	.27**	.11*	.11*	.25**	.15**	.25**	.08	.16**
35. Suggests activities to extend what child is doing 24 months	.40**	.29**	.11	.29**	.19**	.37**	.33**	.12*	.15**	.22**	.27**	.37**	.17**	.25**
36. Repeats or expands child's words or sounds 24 months	.28**	.23**	.07	.16**	.12*	.24**	.28**	.23**	.14**	.47**	.16**	.28**	.14**	.15**
37. Labels objects or actions for child 24 months	.45**	.41**	.12*	.20**	.21**	.34**	.39**	.24**	.05	.30**	.21**	.36**	.20**	.21**
38. Engages in pretend play with child 24 months	.40**	.22**	.27**	.09	.06	.22**	.23**	.14**	.18**	.21**	.15**	.12*	.01	.03
39. Does activities in a sequence of steps 24 months	.24**	.24**	.12	.09	-.01	.11*	.30**	.14**	.27**	.22**	.22**	.21**	.00	.08
40. Talks about characteristics of objects 24 months	.30**	.29**	.26**	.10*	.13**	.19**	.29**	.18**	.19**	.19**	.16**	.23**	.08	.11*
41. Asks child for information 24 months	.37**	.42**	.17**	.23**	.17**	.31**	.42**	.21**	.13**	.36**	.23**	.40**	.15**	.33**
42. Touches child affectionately 36 months	.12*	.13*	.16*	.11*	.14**	.13*	.15**	.02	.03	.06	.19**	.15**	.03	.15**
43. Speaks in a warm tone of voice 36 months	.11*	.17**	.08	.09	.19**	.19**	.10*	-.02	-.04	.04	.09	.13*	.14**	.24**
44. Smiles at child 36 months	.16**	.27**	.04	.16**	.20**	.16**	.23**	.01	.05	.21**	.06	.17**	.15**	.25**
45. Praises child 36 months	.13*	.18**	.16**	.03	.08	.12*	.12*	-.03	-.02	.16**	.08	.08	.08	.09
46. Is physically close to child 36 months	.02	.00	.03	-.04	.00	.03	.03	-.02	.06	-.08	.07	-.02	-.07	.00
47. Uses positive expressions with child 36 months	.17**	.33**	.07	.05	.22**	.14**	.29**	.05	.09	.15**	.08	.15**	.08	.23**
48. Is engaged in interacting with child 36 months	.17**	.12*	.06	.06	.12*	.11*	.10	-.04	.06	.11*	.03	.08	.04	.12*
49. Shows emotional support toward child 36 months	.14*	-.03	.18**	.04	.26**	.08	.08	.23**	.07	.10*	.10*	.19**	.07	.30**
50. Pays attention to what child is doing 36 months	.05	.12	.21**	.02	.13*	.01	.12	.14*	-.02	.21**	-.04	.17**	-.01	.13*

(table continues)

Variable	29	30	31	32	33	34	35	36	37	38	39	40	41	42
33. Shows child how to do something 24 months	.07	.16**	.41**	.22**										
34. Explains reasons for something to child 24 months	.07	.33**	.35**	.27**	.27**									
35. Suggests activities to extend what child is doing 24 months	.25**	.29**	.51**	.41**	.49**	.40**								
36. Repeats or expands child's words or sounds 24 months	.16**	.35**	.25**	.40**	.12**	.30**	.25**							
37. Labels objects or actions for child 24 months	.16**	.40**	.38**	.45**	.21**	.30**	.32**	.34**						
38. Engages in pretend play with child 24 months	.05	.35**	.36**	.45**	.33**	.32**	.45**	.31**	.32**					
39. Does activities in a sequence of steps 24 months	.05	.39**	.30**	.41**	.34**	.37**	.52**	.25**	.23**	.44**				
40. Talks about characteristics of objects 24 months	.09	.39**	.27**	.32**	.24**	.37**	.34**	.35**	.40**	.39**	.30**			
41. Asks child for information 24 months	.19**	.40**	.31**	.44**	.10*	.30**	.34**	.30**	.44**	.17**	.31**	.34**		
42. Touches child affectionately 36 months	.06	.23**	.14**	.17**	.11*	.19**	.15**	.13**	.17**	.19**	.12*	.25**	.19**	
43. Speaks in a warm tone of voice 36 months	.13*	.17**	.06	.14**	.05	.01	.08	-.01	.09	.06	.11*	.08	.15**	.17**
44. Smiles at child 36 months	.13**	.20**	.17**	.28**	.09	.09	.15**	.17**	.11*	.13**	.11*	.15**	.19**	.31**
45. Praises child 36 months	-.03	.27**	.18**	.22**	.03	.05	.08	.18**	.13*	.21**	.06	.22**	.10*	.37**
46. Is physically close to child 36 months	-.07	.12*	-.03	.07	.01	.09	.06	.00	.04	.09	.06	.13**	.00	.09
47. Uses positive expressions with child 36 months	.09	.28**	.16**	.30**	.05	.13*	.11*	.13*	.13*	.19**	.14**	.26**	.24**	.30**
48. Is engaged in interacting with child 36 months	.05	.18**	.15**	.11*	.14**	.21**	.22**	.19**	.12*	.19**	.19**	.25**	.15**	.22**
49. Shows emotional support toward child 36 months	.09	.29**	.03	.18**	.08	.13*	.15**	.20**	.20**	.22**	.21**	.		
50. Pays attention to what child is doing 36 months	-.02	.16**	.07	.15*	.02	.09	-.02	.12	.12	.04	.10	.17**	.11	.20**

(table continues)

Variable	43	44	45	46	47	48	49	50	51	52	53	54	55	56
33. Shows child how to do something 24 months														
34. Explains reasons for something to child 24 months														
35. Suggests activities to extend what child is doing 24 months														
36. Repeats or expands child's words or sounds 24 months														
37. Labels objects or actions for child 24 months														
38. Engages in pretend play with child 24 months														
39. Does activities in a sequence of steps 24 months														
40. Talks about characteristics of objects 24 months														
41. Asks child for information 24 months														
42. Touches child affectionately 36 months														
43. Speaks in a warm tone of voice 36 months														
44. Smiles at child 36 months	.40**													
45. Praises child 36 months	.22**	.31**												
46. Is physically close to child 36 months	.20**	.05	.03											
47. Uses positive expressions with child 36 months	.53**	.59**	.38**	.20**										
48. Is engaged in interacting with child 36 months	.39**	.32**	.29**	.27**	.43**									
49. Shows emotional support toward child 36 months	.50**	.44**	.35**	.11*	.67**	.36**								
50. Pays attention to what child is doing 36 months	.27**	.22**	.26**	.04	.40**	.43**	.37**							

(table continues)

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
51. Changes pace or activity to meet child's interests or needs 36 months	.13**	.33**	.31**	.63**	.22**	.54**	.10**	.27**	.08	.09	.18**	.05	.01	.09.
52. Is flexible about child's change of activities or interests 36 months	.06	.29**	.25**	.65**	.18**	.44**	.10	.12**	-.01	-.01	.05	.06	.02	.07
53. Follows what child is trying to do 36 months	.13*	.43**	.30**	.71**	.17**	.57**	.16**	.32**	.07	.04	.09	.10	.05	.09
54. Responds to child's emotions 36 months	.27**	.64**	.27**	.71**	.23**	.57**	.23**	.42**	.09	.11*	.20**	.15**	.09	.26**
55. Looks at child when child talks or makes sounds 36 months	.16**	.34**	.28**	.62**	.12*	.35**	.20**	.31**	.01	.01	.20**	.09	.12*	.16**
56. Positions self to be able to respond to child's needs 36 months	.07	.08	.08	.11	.04	.11*	.10	.18**	.01	.02	.10*	.00	.17**	.10
57. Replies to child's words or sounds 36 months	.23**	.37**	.36**	.30**	.61**	.25**	.33**	.23**	.15**	.16**	.14**	.09	.13*	.10
58. Physically helps child do something 36 months	.23**	.37**	.30**	.30**	.30**	.61**	.25**	.33**	.23**	.15**	.16**	.14**	.09	.13**
59. Waits for child's response after making a suggestion 36 months	.22**	.42**	.40**	.48**	.27**	.69**	.26**	.41**	.13*	.09	.16**	.18**	.08	.17**
60. Encourages child to handle toys 36 months	.12*	.38**	.41**	.50**	.28**	.64**	.15**	.27**	-.01	.07	.12	.11	.02	.06
61. Supports child's choices or activity changes 36 months	.21**	.43**	.43**	.58**	.39**	.71**	.22**	.29**	.09	.11*	.22**	.11*	.03	.14**
62. Supports child in doing things on his/ her own 36 months	.03	.31**	.18**	.43**	.18**	.55**	.05	.16**	-.05	.05	.06	.01	-.03	.01
63. Verbally encourages child's efforts 36 months	.36**	.60**	.29**	.41**	.34**	.62**	.28**	.51**	.19**	.13**	.25**	.22**	.10	.27**
64. Offers suggestions to help child 36 months	.23**	.40**	.31**	.44**	.28**	.65**	.26**	.56**	.16**	.07	.11*	.21**	.04	.17**
65. Shows enthusiasm about what child is doing 36 months	.35**	.67**	.38**	.57**	.38**	.73**	.30**	.54**	.13*	.18**	.22**	.21**	.10*	.34**

(table continues)

Variable	15	16	17	18	19	20	21	22	23	24	25	26	27	28
51. Changes pace or activity to meet child's interests or needs 36 months	.03	.06	.04	.23**	.27**	.16**	.05	.07	.02	.08	.10	.16**	.22**	.24**
52. Is flexible about child's change of activities or interests 36 months	-.01	.08	.08	.16**	.31**	.15**	.09	.12*	.09	.08	-.01	.17**	.16**	.21**
53. Follows what child is trying to do 36 months	.06	.06	.06	.10	.20**	.18**	.05	.02	.13*	.03	.05	.09	.17**	.13
54. Responds to child's emotions 36 months	.08	.28**	.16	-.02	.15**	.01	.30**	.15**	.12*	.23**	.01	.18**	.10	.15**
55. Looks at child when child talks or makes sounds 36 months	.05	.15**	.23**	-.05	.15**	.04	.17**	.31**	.07	.28**	-.06	.09	.02	.10*
56. Positions self to be able to respond to child's needs 36 months	.02	.02	.06	-.06	.06	.05	.11*	.03	.19**	-.07	.08	-.01	-.09	.-06
57. Replies to child's words or sounds 36 months	.08	.10	.11*	.17**	.24**	.128	.02	.12*	-.11*	.31**	.14**	.12*	.24**	.15**
58. Physically helps child do something 36 months	.10	.08	.10**	.11*	.17**	.24**	.12*	.02	.12*	-.11*	.31**	.14**	.12*	.24**
59. Waits for child's response after making a suggestion 36 months	.09	.12*	.17*	.13*	.21**	.17**	.13*	.09	.09	.20**	.12*	.21**	.13*	.26**
60. Encourages child to handle toys 36 months	.07	.10*	.21**	.15**	.25**	.26**	.04	.08	.01	.11*	.12*	.17**	.33**	.26**
61. Supports child's choices or activity changes 36 months	.12*	.17**	.16	.27**	.35**	.27**	.14**	.08	.06	.18**	.11	.12**	.29**	.32**
62. Supports child in doing things on his/ her own 36 months	.05	.03	.03	.13**	.13*	.11*	-.03	-.03	.08	.12*	.03	.10	.31**	.16**
63. Verbally encourages child's efforts 36 months	.13**	.31**	.11	.07	.15**	.13**	.31**	.11	.07	.13*	.21**	.21**	.01	.23
64. Offers suggestions to help child 36 months	.11*	.11*	.13*	.12*	.10	.15**	.13**	.06	.09	.10*	.16**	.19**	.13*	.12*
65. Shows enthusiasm about what child is doing 36 months	.21**	.32**	.17**	.08	.21**	.18**	.30**	.16**	.13*	.25**	.16**	.16**	.21**	.23**

(table continues)

Variable	29	30	31	32	33	34	35	36	37	38	39	40	41	42
51. Changes pace or activity to meet child's interests or needs 36 months	.19**	.08	.04	.13*	.07	.09	.07	.11*	.04	.01	.01	.07	.13*	.11*
52. Is flexible about child's change of activities or interests 36 months	.20**	.06	.05	.10	.02	.03	.09	.08	.06	.09	.01	.09	.09	.09
53. Follows what child is trying to do 36 months	.13**	.11*	.10*	.12*	.10*	.07	.13*	.09	.07	.14**	.06	.17**	.08	.12**
54. Responds to child's emotions 36 months	.04	.27**	.08	.26**	-.01	.17**	.04	.14**	.14**	.15**	.23**	.17**	.24**	.27**
55. Looks at child when child talks or makes sounds 36 months	.09	.08	.11*	.16**	.06	.10	.08	.20**	.13*	.15**	.14**	.15**	.07	.16**
56. Positions self to be able to respond to child's needs 36 months	-.05	.04	.08	.10	.09	.06	.02	.03	.12*	.05	.12*	.01	.04	-.02
57. Replies to child's words or sounds 36 months	.25**	.09	.17**	.20**	.10*	.18**	.11*	.15**	.15**	.15**	.25**	.22**	.38**	.25**
58. Physically helps child do something 36 months	.15**	.25**	.09	.17**	.20**	.10*	.18**	.11*	.15**	.15**	.15**	.25**	.22**	.38**
59. Waits for child's response after making a suggestion 36 months	.19**	.17**	.09	.17**	.09	.21**	.1`**	.16**	.09	.11*	.22**	.13*	.24**	.18**
60. Encourages child to handle toys 36 months	.33**	.09	.06	.18**	.11*	.05	.13*	.11*	.10	.09	.07	.09	.10*	.11*
61. Supports child's choices or activity changes 36 months	.42**	.33**	.16**	.19**	.23**	.11*	.13*	.18**	.13*	.11*	.12*	.15**	.11*	.25**
62. Supports child in doing things on his/ her own 36 months	.30**	-.01	.11*	.08	-.02	.04	.10	.07	.01	.03	-.01	.03	.07	.07
63. Verbally encourages child's efforts 36 months	.02	.41**	.18**	.28**	.07	.17**	.17**	.13*	.19**	.18**	.23**	.24**	.27**	.37**
64. Offers suggestions to help child 36 months	.13*	.23**	.24**	.19**	.17**	.16**	.15**	.16**	.16**	.19**	.18**	.14**	.18**	.23**
65. Shows enthusiasm about what child is doing 36 months	.19**	.36**	.24**	.36**	.11*	.13**	.18**	.18**	.18**	.21**	.21**	.27**	.23**	.25**

(table continues)

Variable	43	44	45	46	47	48	49	50	51	52	53	54	55	56
51. Changes pace or activity to meet child's interests or needs 36 months	.29**	.30**	.16**	.10*	.27**	.27**	.25**	.21**						
52. Is flexible about child's change of activities or interests 36 months	.06	.31**	.25**	.11*	.01	.32**	.15**	.31**						
53. Follows what child is trying to do 36 months	.38**	.30**	.24**	.17**	.38**	.39**	.36**	.28**	.50**	.58**				
54. Responds to child's emotions 36 months	.42**	.40**	.27**	.13**	.57**	.31**	.79**	.38**	.24**	.31**	.33**			
55. Looks at child when child talks or makes sounds 36 months	.13**	.25**	.18**	.05	.29**	.33**	.36**	.45**	.23**	.19**	.25**	.43**		
56. Positions self to be able to respond to child's needs 36 months	.02	.07	.29**	.08	.04	.03	.08	.00	-.07	.02	.06	-.01		
57. Replies to child's words or sounds 36 months	.23**	.29**	.12**	.23**	.22**	.19**	.16**	.31**	.14**	.28**	.19**	.09	.20**	.08
58. Physically helps child do something 36 months	.25**	.23**	.29**	.12**	.23**	.22**	.19**	.16**	.31**	.14**	.28**	.19**	.09	.20**
59. Waits for child's response after making a suggestion 36 months	.38**	.33**	.20**	.10*	.32**	.26**	.43**	.17**	.45**	.29**	.36**	.37**	.34**	.04
60. Encourages child to handle toys 36 months	.44**	.28**	.17**	.11**	.32**	.30**	.37**	.15**	.48**	.38**	.46**	.33**	.28**	-.09
61. Supports child's choices or activity changes 36 months	.17**	.45**	.37**	.17**	.10*	.40**	.22**	.38**	.17**	.59**	.53**	.37**	.22**	-.07
62. Supports child in doing things on his/ her own 36 months	.32**	.29**	.12**	.12*	.26**	.22**	.28**	.05	.38**	.48**	.50**	.29**	.15**	-.01
63. Verbally encourages child's efforts 36 months	.32**	.34**	.51**	.08	.50**	.23**	.54**	.26**	.11*	.13**	.22**	.51**	.15**	.17**
64. Offers suggestions to help child 36 months	.27**	.19**	.29**	.07	.32**	.35**	.35**	.23**	.26**	.13**	.32**	.33**	.32**	.05
65. Shows enthusiasm about what child is doing 36 months	.47**	.50**	.37**	.15**	.65**	.50**	.57**	.35**	.31**	.25**	.37**	.54**	.29**	.18**

(table continues)

Variable	57	58	59	60	61	62	63	64	65	66	67	68	69	70
51. Changes pace or activity to meet child's interests or needs 36 months														
52. Is flexible about child's change of activities or interests 36 months														
53. Follows what child is trying to do 36 months														
54. Responds to child's emotions 36 months														
55. Looks at child when child talks or makes sounds 36 months														
56. Positions self to be able to respond to child's needs 36 months														
57. Replies to child's words or sounds 36 months														
58. Physically helps child do something 36 months	.08													
59. Waits for child's response after making a suggestion 36 months	.32**	.25**												
60. Encourages child to handle toys 36 months	.29	.31	.36											
61. Supports child's choices or activity changes 36 months	.26**	.34**	.52**	.50**										
62. Supports child in doing things on his/ her own 36 months	.24**	.15**	.32**	.51**	.50**									
63. Verbally encourages child's efforts 36 months	.28**	.39**	.27**	.16**	.27**	.10*								
64. Offers suggestions to help child 36 months	.30**	.29**	.40**	.37**	.28**	.27**	.30**							
65. Shows enthusiasm about what child is doing 36 months	.45**	.34**	.40**	.37**	.36**	.31**	.51**	.44**						

(table continues)

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
66. Shows child how to do something 36 months	.16**	.28**	.28**	.27**	.19**	.37**	.23**	.56**	.18**	.07	.10	.11*	.06	.05
67. Explains reasons for something to child 36 months	.31**	.44**	.28**	.33**	.29**	.40**	.37**	.65**	.13**	.13*	.25**	.16**	.11*	.27**
68. Suggests activities to extend what child is doing 36 months	.30**	.43**	.29**	.43**	.29**	.52**	.32**	.69**	.15**	.20**	.21**	.18**	.11**	.24**
69. Repeats or expands child's words or sounds 36 months	.28**	.38**	.20**	.34**	.23**	.32**	.32**	.52**	.12*	.17**	.20**	.26**	.02	.20**
70. Labels objects or actions for child 36 months	.20**	.36**	.20**	.35**	.21**	.40**	.28**	.57**	.11*	.12*	.09	.15**	.06	.17**
71. Engages in pretend play with child 36 months	.23**	.39**	.21**	.38**	.21**	.31**	.29**	.65**	.11*	.11*	.11*	13**	.07	.22*
72. Does activities in a sequence of steps 36 months	.27**	.37**	36**	.29**	.32**	.41**	.40**	.71**	.14**	.12*	.20**	.16**	.11*	.24**
73. Talks to child about characteristics of objects 36 months	.29**	.38**	.25**	.36**	.27**	..33**	.26**	.61**	.21**	.14**	.10	.24**	.10	.19**
74. Asks child for information 36 months	.29**	.42**	.27**	.36**	.36**	.51**	.32**	.50**	.14**	.17**	.14**	.24**	.02**	.25**
75. Gender	.05	.01	.10	.03	-.01	-.04	.01	.03	.02	-.03	-.02	.06	.02	.02
76. Maternal Vocabulary	.16**	.18**	.16*	.25**	.18**	.17**	.15**	.15**	.05	.09	.08	.13*	-.01	.17**
77. Income	.05	.02	.08	.05	.04	.03	-.01	-.04	.01	.05	.01	.07	.06	.04
78. Maternal Education	.10*	.08	.19**	.18**	.09	.09*	.06	.07	.07	.09	.11*	.01	-.04	.08
79. Family Size	-.07	-.02	.13*	.05	-.02	-.01	.02	-.09	.01	-.07	-.06	-.01	.11*	-.11*
80. Assessment Language	.15**	.26**	.14**	.18**	.22**	.28**	.11*	.18**	.06	.07	.12*	.11*	-.11*	.08
81. Child language	.11*	.04	.24**	.10	.17**	.06	.20**	.16**	-.02	.10*	-.01	.14**	.12*	.12*
82. Generation status	.06	.19**	.14	.08	.08	.16**	.00	.13*	.13*	-.02	.01	.08	-.10	-.02
83. Latino Factor Score	.80**	.36**	.63**	.36**	.76**	.33**	.69**	.42**	.30**	.57**	.41**	44**	.25**	.78**

(table continues)

Variable	15	16	17	18	19	20	21	22	23	24	25	26	27	28
66. Shows child how to do something 36 months	.10	.02	.10	.11*	.09	.13*	.04	.02	-.04	.08	.15**	.18**	.08	.13*
67. Explains reasons for something to child 36 months	.18**	.23**	.11	.03	.14**	.12*	.21**	.09	.05	.12*	.16**	.21**	.05	.16**
68. Suggests activities to extend what child is doing 36 months	.20**	.17**	.09	.21**	.21**	.19**	.14**	.04	.08	.14**	.18**	.22**	.10*	.17**
69. Repeats or expands child's words or sounds 36 months	.13*	.18**	.04	.15**	.13*	.12*	.17**	.09	-.05	.22**	.05	.22**	.00	.12*
70. Labels objects or actions for child 36 months	.14**	.11*	-.02	.08	.04	.12*	.09	-.05	-.02	.09	.18**	.13*	.07	.08
71. Engages in pretend play with child 36 months	.21**	.17**	.15*	.08	.14**	.16**	.15**	.10*	.10	.15**	.00	.13*	.03	.10
72. Does activities in a sequence of steps 36 months	.16**	.20**	.14*	.17**	.15**	.14**	.25**.	06	.13*	.18**	.16**	.24**	.04	.22**
73. Talks to child about characteristics of objects 36 months	.17**	.20**	.16*	.05	.17**	.12**	.17**	.08	.01	.08	.25**	.15**	.02	.09
74. Asks child for information 36 months	.11*	.24**	.00	.05	.19**	.12*	.23**	.10	.00	.19**	.19**	.19**	.18**	.30**
75. Gender	.07	.09	.13*	.01	.03	-.01	.10*	.07	-.05	.04	.02	-.07	-.07	-.05
76. Maternal Vocabulary	.10*	.26**	.00	.07	.04	.03	.14**	.11*	-.11*	.27**	-.05	.17**	.13**	.10*
77. Income	.04	.00	.13*	.15**	.07	.09	-.01	.02	.03	-.03	.04	.06	-.01	.06
78. Maternal Education	.06	.08	.10	.14**	14**	.02	.08	.14**	-.04	.22**	-.02	-.12*	.02	.07
79. Family Size	-.05	-.12*	.10	.04	.00	.06	.00	.08	.04	.02.	02	-.01	.05	-.02
80. Assessment Language	-.04	.20**	.06	.03	.04	-.05	.20**	.11*	-.17*	.27**	-.01	.20**	.10*	.24**
81. Child language	.12*	.10*	.08	.11*	.16**	.20**	.05	.05	.09	.09	.06	.18	.04	.09
82. Generation status	-.14*	.13*	.18*	.04	.07	-.09	.11*	.03	-.03	.05	-.04	.09	.06	.12*
83. Latino Factor Score	.75**	.67**	.28**	.29**	.29**	.56**	.57**	.35**	.22**	.43**	.31**	.41**	.26**	.35**

(table continues)

Variable	29	30	31	32	33	34	35	36	37	38	39	40	41	42
66. Shows child how to do something 36 months	.14*	.08	.18**	.03	.25**	.08	.16**	.18**	.08	.18**	.14**	.12*	.04	.20**
67. Explains reasons for something to child 36 months	.06	.27**	.18**	.27**	.17**	.25**	.24**	.21**	.22**	.26**	.26**	.24**	.24**	.32**
68. Suggests activities to extend what child is doing 36 months	.13**	.16**	.24**	.22**	.19**	.24**	.30**	.20**	.14**	.20**	.21**	.18**	.18**	.24**
69. Repeats or expands child's words or sounds 36 months	-.02	.25**	.22**	.21**	.14**	.17**	.17**	.29**	.27**	.18**	.18**	.21**	.24**	.28**
70. Labels objects or actions for child 36 months	.20**	.36**	.20**	.35**	.21**	.40**	.28**	.57**	.11*	.12*	.09	.15**	.06	.17**
71. Engages in pretend play with child 36 months	.08	.19**	.27**	.21**	.15**	.11*	.23**	.16**	.16**	.34**	.22**	.18**	.14**	.12**
72. Does activities in a sequence of steps 36 months	.12*	.25**	.22**	.28**	.18**	.28**	,33**	.20**	.09	.29**	.41**	.23**	.24**	.26**
73. Talks to child about characteristics of objects 36 months	-.01	.31**	.19**	.21**	.17**	.13*	.12*	.18**	.20**	.15**	.12*	.29**	.20**	.40**
74. Asks child for information 36 months	.18**	.33**	.13**	.25**	.11*	.21**	.23**	.16**	.27**	.14**	.19**	.26**	.33**	.20**
75. Gender	-.03	.05	-.01	.06	.00	-.01	-.02	.03	.02	.03	.01	.05	-.03	-.01
76. Maternal Vocabulary	.14**	.18**	.08	.17**	.01	.09	.09	.14**	.17**	.05	.07	.10*	.16**	.11*
77. Income	.01	.03	.01	-.01	-.02	-.08	-.05	-.04	.04	-.06	-.04	.04	.05	-.03
78. Maternal Education	.05	.06	.03	.09	.07	.00	.03	.02	.03	-.01	.11*	.04	.05	.09
79. Family Size	.02	-.06	-.01	-.03	.00	-.03	-.04	.09	-.03	.04	.02	.05	-.05	.01
80. Assessment Language	.14**	.25**	-.01	.14**	-.10*	.05	.08	.08	.11*	.02	.12*	.04	.29**	.16**
81. Child language	.07	.10*	.21**	.12*	.09	.12*	.14**	.23**	.12*	.11*	.06	.12*	.09	.01
82. Generation status	.08	.13*	-.01	-.04	-.14*	.08	.01	-.05	-.01	-.01	.02	.07	.11*	.18**
83. Latino Factor Score	.28**	.57**	.74**	.84**	.37**	.36**	.53**	.39**	.55**	.46**	.40**	.39**	.49**	.20**

(table continues)

Variable	43	44	45	46	47	48	49	50	51	52	53	54	55	56
66. Shows child how to do something 36 months	.18**	.14**	.23**	.06	.17**	.36**	.14**	.23**	.23**	.06	.23**	.12**	.29**	-.09*
67. Explains reasons for something to child 36 months	.19**	.25**	.33**	.13**	.32**	.23**	.35**	.16**	.10*	.02	.17**	.32**	.19**	.12**
68. Suggests activities to extend what child is doing 36 months	.28**	.30**	.30**	.10*	.33**	.32**	.31**	.15**	.29**	.18**	.36**	.28**	.27**	.08
69. Repeats or expands child's words or sounds 36 months	.18**	.26**	.28**	.11*	.28**	.24**	.23**	.20**	.14**	.09*	.19**	.28**	.12*	.14**
70. Labels objects or actions for child 36 months	.25**	.19**	.20**	.08	.31**	.40**	.29**	.28**	.24**	.12**	.27**	.25**	.19**	.05
71. Engages in pretend play with child 36 months	.26**	.29**	.23**	.12**	.33**	.39**	.27**	.30**	.12**	.08	.21**	.24**	.23**	.14**
72. Does activities in a sequence of steps 36 months	.17**	.21**	.21**	.19**	.25**	.33**	.25**	.14*	.18**	.01	.12**	.26**	.17**	.28**
73. Talks to child about characteristics of objects 36 months	.13**	.17**	.36**	.09	.28**	.19**	.23**	.30**	.11**	.01	.13**	.22**	.17**	.13**
74. Asks child for information 36 months	.37**	.25**	.21**	.12**	.38**	.29**	.42**	.25**	.22**	.17**	.28**	.39**	.16**	.02
75. Gender	-.05	-.05	.10*	.06	-.02	.04	-.01	.05	-.02	-.04	-.08	-.02	.04	.04
76. Maternal Vocabulary	.17**	.12*	.10*	-.05	.14**	.07	.19**	.14*	.12*	.09	.06	.15**	.11*	-.13**
77. Income	.02	-.01	.07	.02	.05	.03	-.01	.07	.04	.02	.03	.-02	.07	.04
78. Maternal Education	.05	.11*	.00	-.02	.06	.01	.05	.16**	.01	.08	.00	.07	.05	.03
79. Family Size	-.06	-.01	.00	-.02	.01	.03	-.06	.07	.06	.00	.01	-.05	.10*	.07
80. Assessment Language	.20**	.17**	.16**	-.08	.15**	.03	.36**	.12*	.09*	.07	-.02	.20**	.09*	-.10*
81. Child language	.01	.01	.02	.05	.08	.09*	-.01	.02	.06	.06	.14**	-.02	.11*	.03
82. Generation status	.11*	.07	.11*	-.08	.13*	-.02	.27**	.08	.01	.09	-.01	.24**	.05	-.08
83. Latino Factor Score	.16**	.30**	.23**	.05	.32**	.20**	.26**	.14*	.10*	.08	.12*	.23**	.17**	.10

(table continues)

Variable	57	58	59	60	61	62	63	64	65	66	67	68	69	70
66. Shows child how to do something 36 months	.17**	.29**	.31**	.20**	.22**	.09	.09	.44**	.24**					
67. Explains reasons for something to child 36 months	.32**	.21**	.25**	.18**	.16**	.10*	.43**	.31**	.32**	.18**				
68. Suggests activities to extend what child is doing 36 months	.32**	.20**	.40**	.32**	.30**	.27**	.32**	.55**	.35**	.42**	.41**			
69. Repeats or expands child's words or sounds 36 months	.32**	.18**	.16**	.10*	.16**	.02	.40**	.19**	.30**	.09*	.28**	.19**		
70. Labels objects or actions for child 36 months	.21**	.26**	.27**	.27**	.23**	.17**	.24**	.35**	.31**	.32**	.26**	.28**	.19**	
71. Engages in pretend play with child 36 months	.31**	.06	.18**	.17**	.12*	.12*	.24**	.36**	.36**	.32**	.32**	.42**	.24**	.29**
72. Does activities in a sequence of steps 36 months	.29**	.26**	.34**	.09	.15**	.09*	.33**	.38**	.38**	.38**	.42**	.47**	.28**	.23**
73. Talks to child about characteristics of objects 36 months	.20**	.29**	.14**	.07	.10*	.02	.41**	.26**	.30**	.25**	.35**	.30**	.30**	.36**
74. Asks child for information 36 months	.34**	.26**	.38**	.31**	.34**	.20**	.41**	.27**	.42**	.16**	.27**	.30**	.25**	.45**
75. Gender	-.01	-.01	-.02	-.07	-.06	-.10*	.05	-.02	-.01	-.04	.05	.02	.02	-.01
76. Maternal Vocabulary	.26**	-.04	.15**	.06	.16**	.10*	.13**	.13**	.17**	.02	.04	.12*	.10	.08
77. Income	-.02	.02	.05	.04	.01.	05	.03	.00	-.03	.00	-.01	-.02	-.03	-.06
78. Maternal Education	.09	.04	.08	.00	.10*	.01	.09	.08	.06	.02	-.03	.06	.09	-.05
79. Family Size	.03	.07	-.04	.03	-.03	.03	-.06	-.02	-.03	-.02	-.04	-.06	.02	-.01
80. Assessment Language	.23**	.03	.33**	.08	.26**	.12*	.32**	.07	.20**	.07	.16**	.10*	.11*	.00
81. Child language	.10*	.06	.10*	.04	.02	.01	-.06	.11*	.05	.12**	.10*	.13**	.12*	.10*
82. Generation status	.03	.02	.15**	.06	.16**	.11*	.24**	.02	.07	.03	.13*	.15**	-.01	-.03
83. Latino Factor Score	.24**	.16**	.17**	.13*	.22**	.08	.29**	.24**	.38**	.11*	.29**	.29**	.25**	.22**

(table continues)

Variable	71	72	73	74	75	76	77	78	79	80	81	82	83
66. Shows child how to do something 36 months													
67. Explains reasons for something to child 36 months													
68. Suggests activities to extend what child is doing 36 months													
69. Repeats or expands child's words or sounds 36 months													
70. Labels objects or actions for child 36 months													
71. Engages in pretend play with child 36 months													
72. Does activities in a sequence of steps 36 months	.47**												
73. Talks to child about characteristics of objects 36 months	.26**	.26**											
74. Asks child for information 36 months	.13**	.25**	30**										
75. Gender	.02	.03	.07	-.02									
76. Maternal Vocabulary	.05	.11*	.02	.20	-.02								
77. Income	-.09	.00	.02	-.01	.00	.06							
78. Maternal Education	.02	.12**	.05	.06	.03	.18**	.07						
79. Family Size	-.09*	-.08	-.06	-.08	-.03	.04	.32**	-.04					
80. Assessment Language	.00	.19**	-.01	.33**	-.08	.31**	-.01	.05	-.10*				
81. Child language	.15**	.08	.12**	.02	.00	.13**	.08	.01	.06	-.35**			
82. Generation status	-.02	.07	.09	.26**	-.04	.17**	.19**	.03	-.06	.53**	-.17**		
83. Latino Factor Score	.30**	.30**	.25**	.25**	.04	.17**	.02	.08	-.06	.06	.18**	-.06	

* $p = .05$
** $p = .01$

Appendix C

PICCOLO by Item Descriptive Data

Table C-1

PICCOLO by Item Descriptive Data: Latino

Parent behavior	Age in months	Mean	*SD*	Min	Max
Touches child affectionately	24	.80	.57	0	2
Touches child affectionately	36	.52	.50	0	2
Speaks in a warm tone of voice	24	1.83	.34	0	2
Speaks in a warm tone of voice	36	1.76	.33	.5	2
Smiles at child	24	1.25	.52	0	2
Smiles at child	36	1.08	.58	0	2
Praises child	24	.68	.57	0	2
Praises child	36	.53	.49	0	2
Is physically close to child	24	1.99	.06	1.38	2
Is physically close to child	36	1.99	.07	1.43	2
Uses positive expressions with child	24	1.48	.43	0	2
Uses positive expressions with child	36	1.38	.45	0	2
Is engaged in interacting with child	24	1.83	.30	.33	2
Is engaged in interacting with child	36	1.82	.30	.33	2
Shows emotional support toward child	24	1.24	.48	0	2
Shows emotional support toward child	36	1.11	.50	0	2
Pays attention to what child is doing	24	1.90	.23	1	2
Pays attention to what child is doing	36	1.87	.28	.8	2
Changes pace or activity to meet child's interests or needs	24	1.44	.44	0	2
Changes pace or activity to meet child's interests or needs	36	1.34	.47	0	2
Is flexible about child's change of activities or interests	24	1.64	.42	0	2
Is flexible about child's change of activities or interests	36	1.61	.45	0	2
Follows what child is trying to do	24	1.72	.37	.5	2
Follows what child is trying to do	36	1.65	.38	.33	2
Responds to child's emotions	24	1.27	.49	0	2
Responds to child's emotions	36	1.16	.51	0	2
Looks at child when child talks or makes sounds	24	1.60	.44	0	2

(*table continues*)

Parent behavior	Age in months	Mean	*SD*	Min	Max
Looks at child when child talks or makes sounds	36	1.57	.46	0	2
Positions self to be able to respond to child's needs	24	1.98	.09	1.13	2
Positions self to be able to respond to child's needs	36	1.97	.11	1	2
Replies to child's words or sounds	24	1.46	.47	0	2
Replies to child's words or sounds	36	1.60	.44	0	2
Physically helps child do something	24	1.43	.45	.33	2
Physically helps child do something	36	1.27	.49	0	2
Waits for child's response after making a suggestion	24	1.18	.55	0	2
Waits for child's response after making a suggestion	36	1.14	.55	0	2
Encourages child to handle toys	24	1.79	.32	.5	2
Encourages child to handle toys	36	1.76	.35	0	2
Supports child's choices or activity changes	24	1.37	.52	0	2
Supports child's choices or activity changes	36	1.39	.51	0	2
Supports child in doing things on his/her own	24	1.64	.40	0	2
Supports child in doing things on his/her own	36	1.67	.40	.5	2
Verbally encourages child's efforts	24	.83	.58	0	2
Verbally encourages child's efforts	36	.66	.52	0	2
Offers suggestions to help child	24	1.34	.45	0	2
Offers suggestions to help child	36	1.24	.46	0	2
Shows enthusiasm about what child is doing	24	1.38	.50	0	2
Shows enthusiasm about what child is doing	36	1.30	.51	0	2
Shows child how to do something	24	1.31	.48	0	2
Shows child how to do something	36	1.23	.49	0	2
Explains reasons for something to child	24	.62	.57	0	2
Explains reasons for something to child	36	.45	.44	0	2
Suggests activities to extend what child is doing	24	1.08	.47	0	2
Suggests activities to extend what child is doing	36	1.02	.49	0	2
Repeats or expands child's words or sounds	24	1.20	.52	0	2
Repeats or expands child's words or sounds	36	1.15	.43	0	2
Labels objects or actions for child	24	1.59	.46	0	2

(*table continues*)

Parent behavior	Age in months	Mean	*SD*	Min	Max
Labels objects or actions for child	36	1.56	.38	.67	2
Engages in pretend play with child	24	1.24	.53	0	2
Engages in pretend play with child	36	.123	.62	0	2
Does activities in a sequence of steps	24	.66	.55	0	2
Does activities in a sequence of steps	36	.64	.51	0	2
Talks to child about characteristics of objects	24	.83	.54	0	2
Talks to child about characteristics of objects	36	.74	.47	0	2
Asks child for information	24	1.42	.48	0	2
Asks child for information	36	1.44	.46	.33	2
Domain 1	24	1.39	.27	.42	2
Domain 1	36	1.27	.28	.54	1.88
Domain 2	24	1.63	.21	.80	2
Domain 2	36	1.60	.24	.81	2
Domain 3	24	1.37	.32	.31	2
Domain 3	36	1.30	.32	.38	1.88
Domain 4	24	1.11	.35	.07	2
Domain 4	36	1.05	.31	.33	1.89

N = 134-172 domains
167-172 (36 months)
135-139 (24 months)

Table C-2

PICCOLO by Item Descriptive Data: European-American

Parent behavior	Age in months	Mean	*SD*	Min	Max
Touches child affectionately	24	.83	.73	0	2
Touches child affectionately	36	.61	.67	0	2
Speaks in a warm tone of voice	24	1.87	.32	0	2
Speaks in a warm tone of voice	36	1.86	.32	0	2
Smiles at child	24	1.36	.59	0	2
Smiles at child	36	1.26	.66	0	2
Praises child	24	.80	.67	0	2
Praises child	36	.62	.64	0	2
Is physically close to child	24	1.96	.14	1	2
Is physically close to child	36	1.95	.18	0	2
Uses positive expressions with child	24	1.62	.47	0	2
Uses positive expressions with child	36	1.57	.49	0	2
Is engaged in interacting with child	24	1.81	.35	.33	2
Is engaged in interacting with child	36	1.81	.34	0	2
Shows emotional support toward child	24	1.57	.52	0	2
Shows emotional support toward child	36	1.56	.52	0	2
Pays attention to what child is doing	24	1.93	.22	1	2
Pays attention to what child is doing	36	1.92	.24	1	2
Changes pace or activity to meet child's interests or needs	24	1.39	.58	0	2
Changes pace or activity to meet child's interests or needs	36	1.39	.60	0	2
Is flexible about child's change of activities or interests	24	1.66	.48	0	2
Is flexible about child's change of activities or interests	36	1.70	.45	0	2
Follows what child is trying to do	24	1.62	.48	0	2
Follows what child is trying to do	36	1.58	.51	0	2
Responds to child's emotions	24	1.53	.52	0	2
Responds to child's emotions	36	1.54	.54	0	2
Looks at child when child talks or makes sounds	24	1.75	.42	0	2
Looks at child when child talks or makes sounds	36	1.69	.44	0	2
Positions self to be able to respond to child's needs	24	1.91	.22	1	2

(*table continues*)

Parent behavior	Age in months	Mean	*SD*	Min	Max
Positions self to be able to respond to child's needs	36	1.91	.21	1	2
Replies to child's words or sounds	24	1.77	.40	0	2
Replies to child's words or sounds	36	1.82	.37	0	2
Physically helps child do something	24	1.31	.61	0	2
Physically helps child do something	36	1.21	.63	0	2
Waits for child's response after making a suggestion	24	1.33	.65	0	2
Waits for child's response after making a suggestion	36	1.42	.64	0	2
Encourages child to handle toys	24	1.86	.32	0	2
Encourages child to handle toys	36	1.83	.42	0	2
Supports child's choices or activity changes	24	1.59	.53	0	2
Supports child's choices or activity changes	36	1.63	.50	0	2
Supports child in doing things on his/her own	24	1.76	.40	0	2
Supports child in doing things on his/her own	36	1.76	.42	0	2
Verbally encourages child's efforts	24	1.20	.67	0	2
Verbally encourages child's efforts	36	1.08	.69	0	2
Offers suggestions to help child	24	1.41	.51	0	2
Offers suggestions to help child	36	1.33	.59	0	2
Shows enthusiasm about what child is doing	24	1.60	.52	0	2
Shows enthusiasm about what child is doing	36	1.53	.55	0	2
Shows child how to do something	24	1.14	.64	0	2
Shows child how to do something	36	1.19	.63	0	2
Explains reasons for something to child	24	.66	.60	0	2
Explains reasons for something to child	36	.63	.62	0	2
Suggests activities to extend what child is doing	24	1.13	.63	0	2
Suggests activities to extend what child is doing	36	1.07	.64	0	2
Repeats or expands child's words or sounds	24	1.25	.63	0	2
Repeats or expands child's words or sounds	36	1.21	.65	0	2
Labels objects or actions for child	24	1.69	.47	0	2
Labels objects or actions for child	36	1.56	.51	0	2
Engages in pretend play with child	24	1.20	.66	0	2
Engages in pretend play with child	36	1.19	.68	0	2
Does activities in a sequence of steps	24	.82	.67	0	2
Does activities in a sequence of steps	36	.83	.73	0	2
Talks to child about characteristics of objects	24	.81	.60	0	2
Talks to child about characteristics of objects	36	.68	.63	0	2

(*table continues*)

Parent behavior	Age in months	Mean	*SD*	Min	Max
Asks child for information	24	1.68	.45	0	2
Asks child for information	36	1.75	.40	0	2
Domain 1	24	1.49	.30	.31	2
Domain 1	36	1.41	.31	.13	2
Domain 2	24	1.70	.26	.70	2
Domain 2	36	1.68	.25	.75	2
Domain 3	24	1.51	.32	.38	2
Domain 3	36	1.47	.35	0	2
Domain 4	24	1.16	.37	.22	2
Domain 4	36	1.14	.37	0	2

N = 129-318 (domain)
N = 129-292 (24 months)
N = 166-318 (36 months)

VITA

KATIE CHRISTIANSEN

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EDUCATION

Ph.D., 2008, Utah State University (Family, Consumer, and Human Development)
M.S., 2003, Utah State University (Family, Consumer, and Human Development)
B.S., 2000, Utah State University (Family and Human Development)
A.A., 1998, Ricks College (Family Science)

HONORS

2006 Dissertation Fellowship Recipient, Utah State University
2004 Eliza R. Snow Scholarship Recipient, Utah State University
2003 Presidential Fellowship Recipient, Utah State University
2002 College of Family Life Outstanding Research Assistant, Utah State University
2000 Presidential Fellowship Recipient, Utah State University
2000 A – Pin Award Recipient, Utah State University
2000 Summa Cum Laude Graduate, Utah State University
1999 Gregory C. Trevers Scholarship Recipient, Utah State University
1998 Cum Laude Graduate, Ricks College
1997 Presidential Scholarship Recipient, Ricks College

RESEARCH EXPERIENCE

2004 – present – Piccolo Measure Development Project, Utah State University

Duties: Manage data collection, assist in program partners training, prepare semi-annual reports.

2001 – 2006 - Early Head Start Research Project, Utah State University

Duties: Supervise data collection, assist in preparing and writing reports of data, develop and update observational coding schemes, archive data and data management, prepare quarterly reports.

2001 – 2005 - BELLS Project Consultant, Utah State University

Duties: Conduct pre-school evaluations to be used in staff training sessions, code videotapes of home visits, and conduct developmental assessments of children.

2001 – Early Head Start Research Newborn B Project, Utah State University

Duties: Oversaw final wave of data collection, helped locate missing participants, updated and maintained database, provided information for quarterly reports.

2000 – 2001 - VISIT-1 Research Project, Utah State University

Duties: Project manager, developed and adapted coding schemes, conducted training sessions for home visitors, oversaw two waves of data collection, coded videotapes and trained another person to help with this task, entered data and conducted initial analyses.

TEACHING EXPERIENCE

2005 – 2006 – FCHD 1500 Lecturer, Utah State University

2002 – 2003 - FHD 3510 Teaching Assistant, Utah State University

CONFERENCE PRESENTATIONS

Christiansen, K. Roggman, L., Innocenti, M., Cook, G., Jump, V. & Price, C. (2008, April). *Contributions of parenting behavior and family difference for Latino children's language development.* Society for Research in Human Development, Little Rock, AR.

Roggman, L. A. Cook, G. A., Jump, V. K., Innocenti, M. S. , Christiansen, K., Price, C. (2008, March). *Parenting across cultures: Different patterns but similar pathways*. International Conference on Infant Studies, Vancouver, BC.

Roggman, L. A., Innocenti, M. S., Jump, V. K., Cook, G. A., & Christiansen, K. (2008, June). *PICCOLO (Parenting Interactions with Children: Checklist of Observations Linked to Outcomes): A new measure for assessing parenting, guiding parenting interventions, and tracking program outcomes.* In symposium: *Home Visit Assessments linked to Interventions* at the Head Start Research Conference, Washington, DC.

Roggman, L. A., Innocenti, M. S., Jump, V. K., Cook, G. A., Christiansen, K., Price, C., & Gardner, L. (2008, June). *PICCOLO—A new measure of positive parenting behaviors*. In Poster Symposium: Head Start University Partnerships: Measurement Development. Head Start Research Conference, Washington, DC.

Roggman, L. A., Innocenti, M. S., Jump, V. K., Cook, G. A., & Christiansen, K. (2008, June). *PICCOLO – a new measure of positive parenting behaviors*. Poster submitted to the Head Start Research Conference, Washington, DC.

Christiansen, K., Cook, G. A., Roggman, L. A., & Price, C. (2006, March). *Children's attachment security and psychosocial aspects of school readiness*. Society for Research in Human Development, Fort Worth, TX.

Christiansen, K., Roggman, L. A., & Boyce, L. K. (2006, July). *When daddy is sad: Relations between father depression and child behavior*. World Association of Infant Mental Health Congress, Paris, FRANCE.

Cook, G. A., Roggman, L. A., Price, C., & Christiansen, K. (2006, March). *How does early self-regulation influence 2nd grade reading comprehension?* Society for Research in Human Development, Fort Worth, TX.

Jump, V. K., Cook, G. A., Roggman, L. A., Innocenti, M. S., & Christiansen, K. (2006, March). *Parenting behaviors: Do they affect child outcomes?* Society for Research in Human Development, Fort Worth, TX.

Roggman, L. A., Boyce, L. K., Cook , G.A., Christiansen, K., & Jones, D. (2006, June). *Early Head Start impacts on father involvement and child development: Direct, indirect, and moderating.* Head Start Conference, Washington, DC.

Roggman, L. A., & Boyce, L. K., Cook, G. A., Christiansen, K., & Jones, D. (2006, July). *Father depression & involvement in play: Direct and indirect effects.* In Symposium: An ecological perspective on father-child interactions: Implications for research and practice. World Association for Infant Mental Health, Paris, FRANCE.

Roggman, L. A., Christiansen, K., Cook, G. A., Jump, V. K., & Boyce, L. K., & Peterson, C. A. (2006, May). *Home visits: Measuring how they work.* Early Intervention Research Institute Mini-Conference, Logan, UT.

Roggman, L. A., Cook, G. A., Christiansen, K., & Price, C. (2006, March). *How soon can we help? Attachment, aggression, maternal well-being, and intervention?* Society for Research in Human Development, Fort Worth, TX.

Roggman, L. A., Cook, G. A., Christiansen, K., Price, C., Jones, D. (2006, July). *Tracking the path to kindergarten: How infants at risk grow up prepared to succeed in school*. Logan, UT: Utah State University. (Submitted to Head Start Bureau, Administration for Children, Youth, & Families, US Department of Health and Human Services, Washington, DC).

Roggman, L. A., Innocenti, M. S., Cook, G. A., Jump, V. K., Christiansen, K., & Akers, J. (2006, June). *PICCOLO: Measuring the high notes of parenting interactions* (pp. 6-7). In Symposium, New Measures Coming soon: Head Start/Early Head Start-University Partnership Measurement Projects. Head Start Research Conference, Washington, DC. Available from http://www.acf.hhs.gov/programs/opre/hsrc/proceedings/symposia/hhs_309.pdf

Roggman, L. A., Jump, V. K., Innocenti, M. S., Cook, G. A., Akers, J., & Christiansen, K. (2006, June). *Developing PICCOLO: A measure of parenting interactions with children in a checklist of observations linked to outcomes* (pp 1-2). Head Start Research Conference Proceedings, Washington, DC. Available from http://www.acf.hhs.gov/programs/opre/hsrc/proceedings/symposia/measures_203.pdf

Christiansen, K., Austin, A., & Roggman, L. A. (2005, April). *Math interactions in the context of play: Relations to child math ability.* Society for Research in Child Development, Atlanta, GA.

Roggman, L., Boyce, L., Cook, G., Christiansen, K., & Jones, D. (2005, July). *Do fathers contribute to children's early language in low socioeconomic status families?* International Congress for the Study of Child Language, Berlin, GERMANY.

Asher, C., Roggman, L., Boyce, L., Cook, G., & Christiansen, K. (2004, April). *Parent-toddler book reading: Fostering a love of reading.* Society for Research in Human Development, Park City, UT.

Brooks, C., Roggman, L., Christiansen, K., & Boyce, L. (2004, April). *Child temperament characteristics and their effect on paternal book reading behavior*. Society for Research in Human Development, Park City, UT.

Christiansen, K., & Roggman, L. A. (2004, April). *Enriching home language environments: Talk is not enough*. Society for Research in Human Development, Park City, UT.

Christiansen, K., & Roggman, L. A. (2004, June). *The role of home visitors in the development of child language*. Head Start Research Conference, Washington, D. C.

Cook, G. A., Roggman, L. A., Boyce, L. K., Christiansen, K., & Callow-Heusser, C. (2004, April). *Three generations of attachment*. Society for Research in Human Development, Park City, UT.

Kraus, D., Roggman, L., Jones, D., & Christiansen, K. (2004, April). *Family size in relation to a mother's supportive presence*. Society for Research in Human Development, Park City, UT.

Roggman, L. A., Boyce, L. K., Cook , G. A., Christiansen, K., & Jones, D. (2004, May). *Playing with daddy: Social toy play, Early Head Start, and developmental outcomes.* International Conference on Infant Studies, Chicago, IL.

Smith-Steinfeldt, M., Roggman, L., & Christiansen, K. (2004, April). *Early intervention programs: Can music activities reduce parenting stress*. Society for Research in Human Development, Park City, UT.

Callow-Heusser, C., Roggman, L. A., Christiansen, K., Cox, J., & Sharp, O. R. (2003, November). *Hot on the trail: minimizing participant attrition over time*. American Evaluation Association, Reno, NV.

Austin, A., Barker, K., Christiansen, K., DeBoer, B., Hansen, K., Lance, J., Lundahl, J., Pratt, M., Stoker, S. (2002, March). *Components of school readiness*. 9th Annual Conference of the Early Intervention Research Institute, Logan, UT.

PUBLIC SERVICE ANNOUNCEMENTS

Roggman, L. A., & Boyce, L. K., Cook, G. A., Christiansen, K., & Jones, D. (2003, Fall). Playing with Daddy: A Positive Impact of Early Head Start. *Research UpDate*, College of Education and Human Services, Utah State University, Logan, UT.