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Comparing Early Father-Daughter, Father-Son, Mother-Daughter, and Mother-Son Verbal Interactions in Low-SES Families

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COMPARING EARLY FATHER-DAUGHTER, FATHER-SON, MOTHER-DAUGHTER,
AND MOTHER-SON VERBAL INTERACTIONS IN LOW-SES FAMILIES

By
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*It is with deepest love and affection
that I dedicate this dissertation
to my PARENTS,
my daughter DIKSHA, and
my husband ANIKET INGROLE*

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ABSTRACT

SES related differences in children's early language skills influence their later language development. Parent-child verbal interactions during the initial years of children's life play an important role in children's early language development. Although both mothers' and fathers' early language input contributes to children's language skills, until recently mothers were considered as the only primary caregivers of children and thus have been the focus of majority of the research in this area. The father's role in a family has evolved in the past three decades meaning that fathers are increasingly spending more time with their children and contributing to their overall development. The evidence from limited research comparing mothers' and fathers' early speech with their preschool aged children is mixed. Also, some findings, mainly derived from research on mothers, suggest that parents socialize their sons and daughters differently, which reflects in early parent-child verbal interactions. In contrast, some research suggests that children, by the function of their own gender, elicit speech differently from their parents. Furthermore, there is an indication of differences in mother-son, mother-daughter, father-son, and father-daughter early talk. Considering the important role of parent and child gender in early parent-child verbal interactions, the current study aimed to compare parental quantity/quality and children's quantity of language among the four independent groups of father-daughter, father-son, mother-daughter, and mother-son.

A total of 112, mainly African-American, parent-child dyads were recruited for this study. Specifically, the sample included 32 father-daughter, 28 father-son, 26 mother-daughter, and 25 mother-son dyads. The convenience sample of children (37-60 months of age) and their respective mother or father were recruited from preschools known to serve a socio-economically disadvantaged population in the southeastern US. Semi-structured parent-child play sessions

were videotaped at the child's child-care facility for approximately 15-minutes. The videotapes were coded for parents' quantity and quality of language and children's quantity of language. The results indicated no differences among father-daughter, father-son, mother-daughter, and mother-son groups in terms of parental quantity/quality of language and children's quantity of language. Suggesting the bi-directional nature of early parent-child interaction process, the exploratory analysis revealed significant differences in correlations among parental quantity/quality and child quantity of language across the four groups of this study.

CHAPTER 1

INTRODUCTION

The National Assessment of Educational Progress (NAEP, 2016) indicated in a recent report that 31% of fourth-grade students in the United States do not have a basic level of proficiency in reading. The levels of proficiency in reading are even lower for children who are English-language learners (Abedi & Dietel, 2004), from low-income families (Dickinson & McCabe, 2001; Hoff, 2003), and ethnic minority groups (Fryer Jr. & Levitt, 2004). Notably, a disproportionate percentage of African American (AA) families in the United States belong to the low-income group, placing children in these families at particular risk for early literacy development (Duncan & Brooks-Gunn, 1997). Children from disadvantaged families can have challenges in education, starting with early language development (Vernon-Feagans, Hammer, Miccio, & Manlove, 2001) and continuing through high school graduation rates (Heckman & LaFontaine, 2010) and post-secondary educational attainment (Kao & Thompson, 2003). Consistent with this developmental perspective, the learning experiences that children receive in their early childhood years play an important role in their language and cognitive development as these experiences are related to children's success in school (National Institute of Child Health & Human Development [NICHD], 2005). However, the school readiness of children differs considerably when they enter kindergarten or first-grade, and these differences influence their later literacy development (Hart & Risley, 1995; McWayne, Cheung, Wright, & Hahs-Vaughn, 2012; Wagner, Torgesen, & Rashotte, 1994).

The variability in early language and literacy skills of children associated with families' socio-economic status (SES) has been well documented in the literature, suggesting that lower SES children are often far behind as compared to their higher SES counterparts (Duncan &

Brooks-Gunn, 2000; Pungello, Iruka, Dotterer, Mills-Koonce, & Reznick, 2009; Raviv, Kessenich, & Morrison, 2004). In addition, research indicates that these SES-related differences are mediated by parental language input (Hoff, 2003; Huttenlocher, Waterfall, Vasilyeva, Vevea, & Hedges, 2010). However, a particular focus on low-SES families has revealed enormous differences in home language and literacy behaviors within this group of families (Bracken & Fischel, 2008; Ingrole, Phillips, & Melcher, 2016), warranting more research investigating the sources of these variations.

According to the National Education Goals Panel (NEGP, 1995), the ability of children to use language during their interactions with adults and peers is one of the five important factors that reflect children's school readiness. Moreover, these early language experiences of children are positively related to their later reading skills (Dickinson & Porche, 2011). In the preschool years, children receive opportunities for language use mainly during their interactions with their parents/primary caregivers, thus making these early parent-child verbal interactions crucial for children's early language development. In particular, parental early language input is considered to be an important factor (Hart & Risley, 1995) influencing these verbal interactions and ultimately children's early language development. Research indicates that both mothers and fathers contribute to children's early language learning experiences (Rowe, Coker, & Pan, 2004). Moreover, some research has shown that the child's own gender plays an important role during the early parent-child verbal interactions (e.g., Huttenlocher, Haight, Bryk, Seltzer, & Lyons, 1991). Therefore, the purpose of this study was to investigate the role of both parent and child gender in early parent-child verbal interactions in relatively low-income families.

Home has always been considered children's first school as the majority of their initial learning experiences take place there. During the preschool years, most of children's interactions

take place at home with their parents, making day-to-day parent-child interactions important for early literacy development. Vygotsky (1978) emphasized that social interactions are key to human development as the meaningful interactions among individuals or between individuals and their environment promote learning. The transmission of cultural tools (e.g., language and symbols) aids learners' cognitive development. Language is considered as one of the most important cultural tools in social interactions. Another critical aspect of Vygotsky's sociocultural theory is the zone of proximal development (ZPD), which essentially is the gap between the learner's ability to perform on his/her own and his/her ability to perform with others' support. The adult-child verbal interactions that take place in a child's ZPD assist in the child's language development (Schunk, 2012).

According to Bronfenbrenner's ecological model (1979), which is also referred to as the person-process-context-time (PPCT) model, parent-child early interactions provide proximal processes that influence child's development. Bronfenbrenner emphasized the bi-directional nature of the interactions between children and people in their environment. The PPCT model helps explain how characteristics of the person, process, context, and time together play a role in parent-child interactions. Both sociocultural theory (Vygotsky, 1986) and the ecological model (Bronfenbrenner, 1979; Bronfenbrenner & Morris, 1998) address the developmental outcomes of parenting for children; therefore, together they provide a strong theoretical foundation for this study. From the perspective of sociocultural theory, parent-child early verbal interactions are important for young children's language development. Likewise, in this study, parents and children, parent-child interaction, low SES, and early childhood, represent person, process, context, and time properties of the PPCT model, respectively.

Given the importance of early language learning experiences that children receive through their verbal interactions with their parents, researchers have shown exceptional interest in investigating the influence of early parent-child interactions on children's language development. However, for years, research studies in this area focused mainly on mothers when it came to parents' contributions to children's early literacy skills (e.g., Huttenlocher et al., 1991; Pan, Rowe, Singer, & Snow, 2005; Pungello et al., 2009; Raikes et al., 2006). This was because mothers were looked upon as the primary caregiver of their children. However, as Pancsofar and Vernon-Feagans (2006) remarked, family structures have undergone several changes during the last three decades. Women are increasingly becoming wage-earning members of their families (United States Bureau of Labor Statistics, 2013). As a result, they spend relatively less time with their children. At the same time, instead of just being a resource provider, fathers are now becoming more involved in their children's development (Cabrera, Hofferth, & Chae, 2011). These changes in family structures indicate that both parents have the opportunity to contribute to a child's language development.

Recognizing the importance of both mothers' and fathers' role in language growth of children in recent decades, researchers have started including both parents in their parenting-related investigations (e.g., Majorano, Rainieri, & Corsano, 2013; Pancsofar & Vernon-Feagans, 2006; Tamis-LeMonda, Baumwell, & Cristofaro, 2012). A particular focus of these studies was to discern the unique ways in which mothers and fathers influence their children's early language development (e.g., Tamis-LeMonda, Shannon, Cabrera, & Lamb, 2004). The results derived from the various research studies that examined the differences and similarities between mothers' and fathers' language input during early verbal interactions with their children (Cherry & Lewis, 1976; Golinkoff & Ames, 1979; Leaper et al., 1998; Pancsofar & Vernon-Feagans,

2006; Stoneman & Brody, 1981) indicate mixed findings. In addition, there is some evidence suggesting that children behave differently with mothers and fathers, thus influencing the parent-child interaction process (e.g., Bornstein, Haynes, Painter, & Genevero, 2000; Rowe et al., 2004), which is in accordance with Bronfenbrenner's ecological model (1979) that stressed the bi-directionality of parent-child verbal interactions.

As highlighted by Bronfenbrenner's (1999) PPCT model, both parent's and child's biological characteristics influence the proximal process of parent-child interaction. More recently, Bronfenbrenner and Morris (2006) revisited the earlier ecological model in the light of the evolution in theoretical research that had taken place since the ecological model was first proposed. They termed the newer, evolved version of the ecological model as "the bioecological model" and suggested that the 'gender' trait of the person in the *person, process, context, and time* model plays an important role in influencing the proximal processes. Considering this aspect in the current study, both parents' and children's gender may either together or separately influence the early parent-child verbal interaction process. However, there is a dearth of research investigations on early parent-child interactions that takes both parental and child gender into consideration. Furthermore, most of the related studies in the past three decades examined the role of child's gender only in early mother-child verbal interactions.

In the limited existing literature, some studies indicated that the boys and girls differ in their innate capacities to learn from incoming speech (Huttenlocher et al., 1991) and language use (Leaper & Smith, 2004) due to their differential brain functioning. At the same time, Miller and Halpern's (2013) biopsychosocial model stresses that the experiences of an individual can increase or decrease the effects of gender-related differences. On the basis of Halpern's theoretical perspective, it can be assumed that both biological and social factors (e.g., early

language experiences) contribute to the gender-related differences in boys' and girls' early language learning capacities and language use (Gleason & Ely, 2002; Huttenlocher et al., 1991; Leaper & Smith, 2004).

Prior evidence suggests the existence of child gender-related differences in parental early speech/behavior during early parent-child interactions (e.g., Cherry & Lewis, 1976; Clearfield & Nelson, 2006). Although this literature mainly comprises research studies including mothers, a few studies that included fathers also reported differences in father-son versus father-daughter early interactions. For example, Leavell et al. (2012) reported that fathers engage their sons more in physical play and their daughters more in literacy activities. As well, there is some evidence indicating that boys and girls, due to their innate biological differences, elicit speech differently from their parents (Gleason & Ely, 2002; Lanvers, 2004). Additionally, Lindsey and Mize (1997; 2001) found influence of both parental and child gender on differences in early parent-child interactions. Together, both theoretical and research evidence indicate that the influence of parent and child gender on early parent-child interaction process is bi-directional in nature; therefore, the goal of this study was to examine the role of both parental and child gender in early parent-child verbal interactions.

In addition to the biological trait of parents (i.e., gender), the characteristics of their early language input can also influence the proximal process of the early parent-child verbal interaction in the current study. Prior research studies have examined various different measures of early parental speech. However, as Menashe and Atzaba-Poria (2016) noted, it is difficult to assess the unique contributions of parental language (e.g., questions, directions, etc.) to early parent-child interactions because they are often coded as a part of broader indices of parental behaviors (e.g., sensitivity, intrusiveness, etc.) in research studies. Furthermore, whereas both

quantity and quality of early parental language input has been investigated in various studies, the majority of these studies have mainly focused on the complexity of parents' language (such as, diverse vocabulary, mean length of utterances, etc.; e.g., Pancsofar & Vernon-Feagans, 2006; Rowe et al., 2004). As much as these features of parents' early talk are important, it is also important to study whether young children are receiving enough opportunities to learn to use language during early parent-child verbal interactions. Evidence suggests that early adult-child verbal interactions that provide more opportunities for children to talk and to receive feedback are beneficial for children's language development (Wasik, Bond, & Hindman, 2006).

Certain features of parental early speech (e.g., questioning; Leech, Salo, Rowe, & Cabrera, 2013) during early parent-child verbal interactions are believed to elicit more language from young children. For example, children of parents who ask more open-ended questions during early parent-child interactions produce more complex narratives (Peterson, Jesso, & McCabe, 1999). Parental questioning is mainly considered as the 'conversation-eliciting speech' (Leech et al., 2013); however, other aspects of parental language can repress children's language use during parent-child verbal interactions. For instance, Rowe (2008) reported that parents who used more directives in their language provided fewer opportunities for their children to talk. Therefore, the primary measure of quality of parental early talk in this study is parental speech that is likely to elicit language from children, thus engaging them in conversation.

Additionally, evidence suggests that parental speech eliciting language with their young children differs by SES. For example, some studies have reported that parents in mid/high-SES families use less directives while talking with their toddlers than parents in low-SES families (e.g., Hoff-Ginsberg, 1991; Rowe, 2008). Consequently, it can be assumed that in comparison to mid/high-SES, children in low-SES families receive fewer opportunities for language use during

early parent-child verbal interactions (Rowe, 2008). Additionally, recent investigations have revealed variations in parental speech within the confined group of low-SES families (e.g., Ingrole et al., 2016; Leech et al., 2013; Rowe et al., 2016).

Given that the existing research on early parent-child interactions that includes both parental and child gender in the same study is highly limited, the specific research questions along with the sub questions that were addressed in the current study included:

1. Does the quantity and quality of parental early speech with their preschool aged child in low-income families differ among father-daughter, father-son, mother-daughter, and mother-son groups during independent dyadic interactions?
 - 1.1. Do parental total verbal utterances (total count and per minute) with their preschool aged child in low-income families differ significantly among father-daughter, father-son, mother-daughter, and mother-son groups during their independent dyadic interactions?
 - 1.2. Does parental use of closed-ended and open-ended questions (total count and proportional) with their preschool aged child in low-income families differ significantly among father-daughter, father-son, mother-daughter, and mother-son groups during their independent dyadic interactions?
 - 1.3. Does parental use of directives (total count and proportional) with their preschool aged child in low-income families differ significantly among father-daughter, father-son, mother-daughter, and mother-son groups during their independent dyadic interactions?
 - 1.4. Does parental use of declaratives (total count and proportional) with their preschool aged child in low-income families differ significantly among father-daughter, father-son, mother-daughter, and mother-son groups during their independent dyadic interactions?

2. Does the quantity of preschool aged children's early speech in low-SES families differ among father-daughter, father-son, mother-daughter, and mother-son groups during their independent dyadic interactions?
 - 2.1. Is there any significant difference in the total verbal utterances (total count and per minute) of preschool aged sons and daughters from low-income among the four groups of father-daughter, father-son, mother-daughter, and mother-son during their independent dyadic interactions?
3. Exploratory research question: Are there any statistically significant differences in bivariate correlations among the four groups of father-daughter, father-son, mother-daughter, and mother-son in this study?

CHAPTER 2

LITERATURE REVIEW

The early learning experiences of children take place at home, primarily with their parents (Connell & Prinz, 2002; Pianta, Nimetz, & Bennett, 1997), making preschool-age parent-involvement important to children's school readiness (Arnold, Zeljo, Doctoroff, & Ortiz, 2008; Cristofaro & Tamis-LeMonda, 2011). It has consistently been demonstrated that there is a positive relation between early parent-child verbal interactions and children's early (e.g., Chazan-Cohen et al., 2009; Dodici, Draper, & Peterson, 2003) and later language development (Hart & Risley, 1995; Hoff, 2006). In addition, the existing literature provides evidence for SES-related variations in parental early speech, which mediate the association between SES and children's early linguistic development (Hoff, 2003). Children from low-SES backgrounds are in a particularly vulnerable position as they are much less prepared than their mid- and high-SES counterparts upon school entry (Duncan & Brooks-Gunn, 2000; Pungello et al., 2009; Raviv et al., 2004).

Researchers have for many years shown an exceptional interest in studying the associations between early parent-child interactions and linguistic development of children. Parental early language input has been reported to have associations with children's concurrent and later language skills (e.g., Cristofaro & Tamis-LeMonda, 2011; Dodici; et al., 2003; Hart & Risley, 1995; Huttenlocher et al., 2010); however, the majority of the research conducted in this area has focused on mothers' early talk with their 0-3 year-old children because of mother's typical role as primary caregiver in a child's life. Fathers' roles in their family have evolved over the recent decades meaning that fathers' contributions to their children's overall development have increased (Rowe, Coker, & Pan, 2004). However, research investigating fathers' unique

contributions to children's linguistic and overall development is still scant. Therefore, the inclusion of both mothers and fathers in investigations related to early parent-child verbal interactions in low SES families is one of the purposes of this study. The existing literature also highlights the role of child gender in influencing the process of early parent-child verbal interactions (e.g., Clearfield & Nelson, 2006; Lanvers, 2004; Lindsey & Mize, 2001). The majority of the research investigating influences of child gender in early parent-child verbal interactions mainly involved mothers and/or was conducted quite some time ago (Leaper & Smith, 2004). Therefore, this study aims to examine mother-daughter, mother-son, father-daughter, and father-son early verbal interactions.

This chapter provides a detailed and structured literature review of the constructs related to this study beginning with the theoretical underpinnings. Second, it presents a review of literature pertaining to early parent-child interactions and their importance. Third, it provides insight into the evolving nature of fathers' role in children's development. Fourth, it reviews the prior literature pertaining to the differences and similarities in early father-child and mother-child verbal interactions. Fifth, it lays out a review on differences/similarities in early parent-son and parent-daughter verbal interactions. Sixth, it discusses the existing literature on parent-child interactions in low-SES families. Finally, it delineates all of the variables in the context of this study followed by the specific research questions and hypotheses.

Theoretical Foundations

Assuming that both maturational and experiential factors influence the developmental process, Vygotsky (1978; 1981) proposed the sociocultural perspective on child development. A child grows naturally as a result of biological and genetic mechanisms. However, in addition to these natural factors, children's interaction with their environment also influences their

development. Referring to the stages of child development as the “social situations of development” (see Figure 1; inspired by Vygotsky, 1998, p. 198), Vygotsky suggested that each stage of development in a child’s life is marked by the interaction between maturational and environmental factors, which is mediated by the sociocultural aspects (Kozulin, 2002). Social interactions have been considered imperative for constructing knowledge. During social interactions, the more knowledgeable partner transmits the knowledge to the learner through cultural tools, such as language.

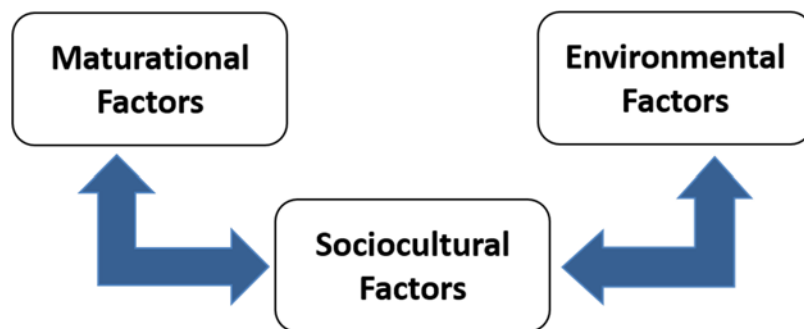


Figure 1. Social situation of development: How sociocultural factors interact with maturational and environmental factors inform each stage of child-development.

Vygotsky’s model of the social situation of development can be translated directly to the early parent-child verbal interaction process. Parents, being more knowledgeable conversational partners, transfer the information to their young children using the tools of language. Huit, Howard, and Fahey (2011) provided an excellent example of mother-toddler verbal interaction in a zoo during which the child learned new words and sentence structures while the mother used questions, prompts, and other scaffolding techniques to keep the child engaged in the conversation:

Child (pointing to a monkey): Mommy, what's that?

Mother: That's a monkey. Can you say *monkey*?

Child: Monkey!

Mother: Yes, *monkey*. What's the monkey doing?

Child: Him eating.

Mother: What's he eating?

Child: Him eating banana.

Mother: Do you eat bananas?

Child: I like bananas!

Mother: The monkey likes bananas, too.... What's he doing now?

Child: Him swinging by his tail.

Mother: Can you swing by your tail?

Child: No, I don't got a tail.

Mother: No, you don't have a tail like the monkey. (p. 53)

During the preschool years, children spend most of their time with their primary caregivers (usually parents) and at their child-care center. Although both of these settings play a significant and influential role in children's early development and school readiness, evidence indicates that early parent-child verbal interactions have significant contributions to children's school readiness even after accounting for the influence of children's exposure to child-care centers (Connell & Prinz, 2002; Pianta, Nimetz, & Bennett, 1997). Parents transmit knowledge to their children through the cultural tool of language during early parent-child verbal interactions. Children construct knowledge through these social interactions at two levels. At first, they externalize the knowledge by receiving it at the social level. In the next level, children

assimilate the received knowledge and internalize it. According to Vygotsky (1978), the effectiveness of the learning process depends on the nature of the social interaction between two or more people with differential knowledge and skills. During the early parent-child interactions, the parent is assumed to be the more knowledgeable partner; therefore, parental language input has been central to various research studies investigating children's early and later cognitive growth (e.g., Cristofaro & Tamis-LeMonda, 2011; Dodici et al., 2003).

The importance of early communication between parents and children has also been embedded in Bronfenbrenner's (1998) ecological model: Person-Process-Context-Time (PPCT). This child-centered model emphasizes a child's experiences in various environmental settings and the interrelations between these settings. It acknowledges that human development does not occur in a vacuum and is instead influenced directly and indirectly by various proximal (e.g., parents, siblings, child-care) and distal (e.g., socio-economic background, culture) environmental settings (e.g., Rodriguez et al., 2009; Rowe, 2008). Children's experiences with people and objects in their immediate environmental settings are considered as *proximal processes*. During the initial years of life, family, preschool, healthcare, or other community learning centers are children's proximal settings as they spend most of their time in these environments (see Figure 2). Other distal factors (represented through the outer circles in Figure 2), such as family socio-economic status, indirectly affect the child's development.

According to Bronfenbrenner (1998), various factors that are important for child development in these settings include people, process, context, and time. Children engage in the interactional process with the people in their immediate settings. Young children receive the majority of their initial experiences at home with their primary caregivers; mothers are typically, although no longer exclusively, these caregivers. Furthermore, it has been stressed that the

interactional behaviors are bidirectional; therefore, both parents and children are active participants in the reciprocal process of influencing each other.

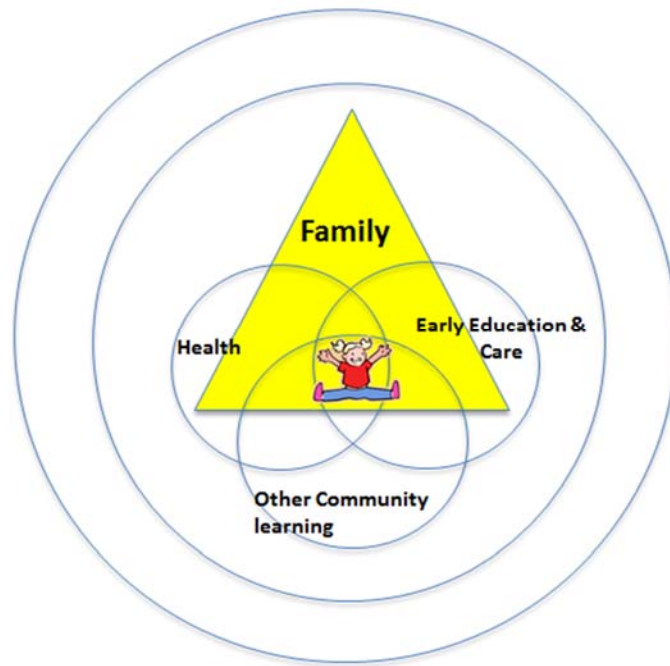


Figure 2. The Complete Ecological Model for a Young Child. The figure is inspired by Morris (1998).

Parental and child characteristics, such as parental language with their children, children's own linguistic skills, and parental and child gender together inform the process of interaction. In addition, parents' SES, as well as their other contextual characteristics, affects the quality of parental language input during the early interaction process, which may impose an indirect influence on children's development (Hoff, 2006; Topping, Dekhinet, & Zeedyk, 2013).

Early Parent-child Verbal Interactions

It is now established that children differ in terms of their linguistic abilities upon entry in school, which sets the foundation for their later language growth (Cartmill et al., 2013; Huttenlocher et al., 1991, 2010; Rodriguez et al., 2009). One potential key source of the observed variability in children's language skills may be variability in exposure to language through the primary caregiver's speech during the initial years of children's lives (Cartmill et al., 2013; Huttenlocher et al., 2010). Early parent-child verbal interaction can be defined as parental talk with their young children while playing or doing daily routine activities (e.g., bathing, eating, driving, and reading). Although both parents and children are active participants in these early conversations (Huttenlocher et al., 1991), parents serve as speech models and pass on linguistic skills to their children (Kenney, 2012; Rowe, 2008; Zimmerman et al., 2009).

Recognizing the importance of parental language input during the first few years of children's lives, researchers have shown an exceptional interest in investigating the relation between early parent-child verbal interactions and children's early and later linguistic abilities. Consequently, both cross-sectional and longitudinal studies have indicated positive associations between the two (e.g., Cristofaro & Tamis-LeMonda, 2011; Hart & Risley, 1995; Huttenlocher et al., 2010). For example, Cristofaro and Tamis-LeMonda (2011) found that mothers' speech with their 36-month-old children was predictive of children's own language skills at that age. Similarly, Huttenlocher et al. (2010) examined parental-child verbal interactions longitudinally (i.e., nine observations when children were between 14 – 46 months of age) and reported that diversity in early parental speech is predictive of diversity in children's speech later. Moreover, Dodici et al. (2003) suggested that as compared to parental early home literacy practices reports,

observations of early parent-child interactions are better predictors of children's early language abilities.

Zimmerman et al. (2009) suggested two different ways of looking at the role of parental speech in children's language development. According to the first view, young children see their parents as language models and tend to intuitively imitate them; thus, many researchers and pediatricians advise parents to talk to their children as much as possible. Drawing on this perspective, parents might talk a lot to their child; however, the child might remain a passive listener most of the time. In the second view, the main purpose of parental child-directed speech is to encourage children's language experiences by eliciting speech from children. Specifically, as important it is for parents to talk to or read to their children, it is even more important to encourage children to talk during their early verbal interactions with their parents. Therefore, the aspects of early parental speech that prompt children to use language constitute to the quality of parental early language input. Emphasizing the importance of both quantity and quality of parent-child verbal interactions, Zimmerman et al. stated that instead of talking to their children, parents should talk with them. Furthermore, various research studies in the existing literature provide evidence for associations between both quantity and quality of early parental language input and children's concurrent as well as later language skills (Cartmill et al., 2013; Pancsofar & Vernon-Feagans, 2006; Rodriguez et al., 2009; Topping et al., 2013).

In a recent literature review, Topping et al. (2013) noted that the existing literature on parent-child early interactions and children's language development is limited in some important ways. The researchers were able to find only 60 high-quality extant studies that provided comparatively strong sampling and methodological evidence. The studies that were selected for the review were also not completely free from methodological flaws. Many studies employed

small sample sizes, self-selected participants, or unbalanced gender for both parents and children. Another major limitation of the current literature on parent-child early interactions is its dependence on mother-child data. Acknowledging the transformations in family functioning during the past three decades, the researchers highlighted the significance of fathers' inclusion in these studies. The next section provides a comprehensive review of fathers' changed role in children's lives.

Fathers' Changed Role

The role of fathers in caregiving, as observed primarily in Western countries, has evolved dramatically in the past three decades (Cabrera et al., 2000; Dubeau, Coutu, & Lavigueur, 2012). One aspect of this evolution is that fathers are becoming more and more involved in their children's everyday lives. This shift in the paternal role has primarily occurred due to social and economic changes that have been taking place simultaneously. Beaupré, Dryburgh, and Wendt (2010) suggested three social and economic factors that have contributed to the transformation of paternal role in the recent decades: (1) increase in women in the work force, (2) more people going back to school for higher education, and (3) marriages becoming a weaker social institution due to divorces and the popularity of common-law unions. Couples are increasingly sharing their household financial responsibilities, implying that fathers are no longer the only breadwinners of the family (Crompton, Brockmann, & Lyonette, 2005). In fact, according to the United States Bureau of Labor Statistics (2013), women's participation rate in the labor market has been going in an upward direction over the last four decades. This holds true for mothers of young children under three years of age as well. Along with mothers' increased participation in the work force, fathers have also started becoming more involved in daily childcare activities (Cabrera et al., 2011). For example, Cabrera et al. (2004) reported that in their sample of fathers

from Early Head Start, between 70% - 80% of fathers said that they feed and baby sit their children on regular basis. The increase in number of leaves that fathers take from their work places due to family issues from the 1990's to the 2000's also demonstrates the shift in paternal need and desire to be involved in child caregiving activities (Marshall, 2008).

The cumulative evidence related to fathers' parental role indicates a movement towards a multidimensional conceptualization of fathering in which fathers play a number of significant roles, such as, spouses, protectors, caregivers, teachers, and breadwinners (Lamb, 2004). These trends in father's parenting role are equally true for families from low socio-economic backgrounds as demonstrated by various research studies (e.g., Cabrera et al., 2004; Vogel et al., 2003). Of central relevance to the current study, the increasing participation of fathers in children's caregiving activities has brought a commensurate rise in amount of time that fathers spend with their children and consequently engage in verbal interactions with them (Hall, 2005; Sayer, Bianchi, & Robinson, 2004).

Dubeau et al. (2012) suggested that the scope of research on parenting should be broadened by integrating fathers into the research models. Before the transformations in fathers' parenting role, mothers were considered as children's primary caregivers; therefore, the earliest research studies on parenting focused mainly on mothers. However, researchers have adapted to the latest changes in Western society, as the number of investigations on fathers has increased (Hernandez & Coley, 2007). Whereas initial research on influences of early parental speech on child development focused mainly on mothers, the shift in family functioning highlighted the importance of both mothers' and fathers' contributions to their children's early cognitive and social development (e.g., Bingham, Kwon, & Jeon, 2012; Pancsofar & Vernon-Feagans, 2006;

Rowe et al., 2004; Tamis-LeMonda, Baumwell, & Cabrera, 2012; 2013). In addition, the conceptual understanding of fathers' role in children's lives has evolved over time (Coley, 2001).

During the initial years of research on fathers (1970s and early 1980s), psychologists primarily focused on father involvement in terms of breadwinning and paternal involvement in household activities that are associated with childcare. Later, Lamb et al. (1985) emphasized the need for a comprehensive model of fathering as in comparison to earlier decades, fathers were then spending more time with their children in shared activities. Therefore, Lamb et al. suggested three main factors of father involvement: *interaction, availability, and responsibility*. In their research, interaction referred to fathers' direct involvement with children during various joint activities as well as caretaking. The dimension of availability was related to fathers' presence and accessibility for interaction in children's daily life. Responsibility referred to the father's role in providing resources and making sure that the child's needs are met. More recently, researchers have started focusing on the multidimensional aspect of father involvement as it occurs within complex sociocultural contexts. That is, instead of just concentrating on fathers' roles, the qualitative and quantitative aspects of mothers' and fathers' parenting have been studied together. For example, in a 16-year longitudinal study, Grossmann et al. (2002) compared father-child interactions and mother-child interactions in relation to children's later attachment security. The results indicated that fathers and mothers play a complementary role in children's lives with the early involvement of both parents making unique and influential contributions.

Although the studies on fathers have risen in number, only a handful of these studies are of high methodological quality inclusive of, for example, appropriate sampling and sufficient data for measurement (Topping et al., 2013). Together, the extant literature on fathers' increased involvement in children's lives suggests that fathers' influence on children's development is not

limited to financial investments. Considering the proliferation in the amount of direct contact fathers have with their children, it can be assumed that children receive meaningful early linguistic experiences from their fathers (Cabrera & Tamis-LeMonda, 2013; Fagan, Iglesias, & Kaufman, 2015; Varghese & Wachen, 2016). Therefore, it is imperative to understand fathers' contributions to children's early language development, especially in low-income families as children from these backgrounds often have below average scores on language measures in preschool and upon school entry (Gershoff, 2003).

Mother-child vs. Father-child Early Verbal Interactions

In their "bioecological model of human development" Bronfenbrenner and Morris (2006) discussed the influences of characteristics of person, place, and time on proximal processes, such as parent-child verbal interactions. They recognized gender to be an important trait of the 'person' aspect of the model that influences proximal processes. Similarly, Bussey and Bandura (1999) proposed the social cognitive theory of gender development and differentiation in which they also emphasized that mothers and fathers, perhaps because of their innate differences and socially acquired gender roles, talk differently with their children and "create highly gendered learning environments in the home" (p. 698). Specifically, they suggested that mothers and fathers engage in gendered behavior and conversations with their young children. Prompted by various such theories (e.g., Bronfenbrenner's ecological model [1998], Bussey and Bandura's social cognitive theory of gender development and differentiation, and Johnson's [1963, 1975] reciprocal role theory), researchers have investigated differences in mother-child and father-child verbal interactions. A review of findings from these studies is presented next in this section.

The existing research comparing maternal and paternal early language input indicates that mothers and fathers talk differently to their children (Leaper et al., 1998; Pancsofar & Vernon-

Feagans, 2006; Stoneman & Brody, 1981). However, there are some inconsistent findings regarding these patterns (e.g., Golinkoff & Ames, 1979; Rowe et al., 2004). For example, in a meta-analysis, Leaper et al. (1998) included studies that compared maternal and paternal talk on measures of amount of talk (17 studies), supportive talk (10 studies), negative talk (9 studies), directive talk (12 studies), informing talk (12 studies), and questions and requests (16 studies). The studies in this meta-analysis included children from five different age ranges: 0-12 months (5 studies), 12-24 months (10 studies), 24-48 months (9 studies), 48-120 months (8 studies), and older than 120 months (2 studies). Mothers' and fathers' verbal interactions in these studies were measured in three different ways: dyadic (21 studies), triadic (6 studies), or both (7 studies). Furthermore, the verbal interaction sessions were measured in home (16 studies), lab (17 studies), or other (1 study) settings. The result of this analysis indicated that, overall, fathers talk less, use less supportive language, less negative language, more directive language and more informing language than mothers. It is worth noting, however that the studies included in this meta-analysis were conducted between 1972 and 1993. Therefore, it raises a concern related to the applicability of the findings from this meta-analysis after almost two decades.

One of the studies included in the Leaper et al. (1998) meta-analysis (Golinkoff & Ames, 1979) investigated the quantity and quality of maternal and paternal language input in 12 families in both dyadic and triadic contexts. Their results indicated that mothers talked more and took more conversational turns than fathers in the triadic situation. However, there were no differences in the quantity and quality of mothers' and fathers' speech measured by total words, conversational turns, directives, questions, and repetitions in the dyadic situations where mothers and fathers were separately observed with their 19-month-old child. These findings related to the differences and similarities in mothers' and fathers' early speech were later supported by

Pancsofar and Vernon-Feagans (2006) for the triadic context. However, more recent studies conducted in the dyadic contexts (Rowe et al., 2004; Tamis-LeMonda et al., 2012) do not completely support these findings.

Pancsofar and Vernon-Feagans (2006) compared the language contributions of 92 mothers and fathers when their children were 24-months of age. The triadic sessions video-taped in home settings revealed that mothers had more verbal output, conversational turns, diverse vocabulary, and wh-questions (e.g., what, why, and which). In addition to the differences, this study indicated some similarities in maternal and paternal languages. Mothers' and fathers' language addressed to their children when they were 24-months-old did not differ in complexity when measured by mean length of utterances (MLUs), type-token ratio (ratio of the number of different word roots to the total words), and proportion of questions.

In the dyadic context, Rowe et al. (2004) examined differences and similarities between mothers' and fathers' talk in 33 families. The results of their investigation suggested no differences in mothers' and fathers' language with their 24- to 27-month-old children in terms of amount of talk, diverse vocabulary, and MLUs. However, fathers produced more clarification requests and asked more wh-questions. More recently, Tamis-LeMonda et al. (2012) reported findings that were consistent with those from Rowe et al. (2004) in a comparatively larger sample of 50 low-income families. At about the same time, Bingham, Kwon, and Jeon (2012) investigated maternal and paternal language use in dyadic and triadic settings. The conclusions derived from an even larger sample ($n = 63$) in this study suggested that the quantity and quality of mothers' and fathers' speech, measured by MLU, language complexity (type-token ratio), diverse vocabulary, and total words, differs in both dyadic and triadic contexts.

Bingham et al. (2012) suggested two possible reasons behind the incongruent findings of the research studies comparing mothers' and fathers' early language contributions: (1) sample characteristics and (2) publication year of the study. Most of the existing studies have employed comparatively smaller sample sizes that differ from each other greatly in terms of population characteristics. For example, the sample of low-income families in Rowe et al. (2004) was drawn from a rural area, in Tamis-LeMonda et al. (2012) from urban low-income backgrounds, in Pancsofar and Vernon-Feagans (2006) from middle-class and upper-class families, and Bingham et al. (2012) from middle-class families. Leaper et al. (1998) indicated a negative relation between maternal and paternal language differences and the publication year of the study, which implied that the differences in mothers' and fathers' early talk are decreasing with time. Despite these indications, the existing research is very limited for discerning any such patterns. Therefore, one goal of the current study was to further examine the differences/similarities in mothers' versus fathers' verbal interactions with their preschool aged children.

Parent-child Interactions and Child Gender

Individual differences in linguistic abilities of children exist at almost every age (Bornstein et al., 2004; Bornstein, Hahn, & Haynes, 2004; Huttenlocher et al., 1991). For example, Bornstein et al. (2004) examined the vocabulary of 269 20-month-old children from seven different countries and found a substantial range of vocabulary size among them. Similarly, Bornstein and Putnick (2012) investigated the variations in 20- to 48-month-old children's linguistic abilities on various language measures and reported significant individual differences. Huttenlocher et al. (1991) suggested that the individual differences in children's abilities are due to their innate variations in learning capacities. Furthermore, the variability in learning capacities of children is broadly attributable to three factors: heredity, gender, and

environment. Lending support to this proposition, Petrill et al. (2006) reported that both genetics and environment can lead to the variances in children's early linguistic abilities. Complementing these findings are studies finding gender-specific variability children's early language skills (e.g., Andersson et al., 2011; Leaper & Smith, 2004).

The three broadly considered factors, heredity, gender, and environment, which contribute to variability in children's early language development, also find a place in the theoretical framework of Bronfenbrenner's (1998) person, process, context, and time (PPCT) model. Stressing the bidirectional nature of child development, the PPCT model assumes that at any given moment the four aspects of person, process, context, and time interact with each other to support the child development. During the initial years of life (time), children (boys/girls) experience most of the language interaction (process) with their parents (mothers/fathers) while performing routine activities (context). In this process of early verbal interaction, both parents and children reciprocally influence each other in a variety of ways. For example, some of the parental factors that can influence parent-child early verbal interaction are genes, parental gender, and parental language skills. Similarly, children's characteristics, such as gender, also inform the early parent-child language interactions.

In a longitudinal study, Bornstein et al. (2004) examined the gender differences and stability of these differences in 1- to 6-year-old children's language abilities. According to their results, girls consistently performed higher than boys on various language measures between 2 to 5 years of age but not before or after that. Furthermore, the authors reported that the indicated gender differences had moderate to strong stability and that girls and boys were equally stable. In line with these results, Andersson et al. (2011) found significant differences in the vocabularies of boys and girls with girls' mean scores being higher at 21 and 24 months but no such

differences before that. Similarly, in terms of stability, the results of Määttä et al. (2012) supported Bornstein et al. (2004) and suggested that the language stability of girls and boys indicated no differences at the age of 12, 15, 18, and 21 months. However, the parental reports in this study suggested that as compared to girls, boys faced more language-related difficulties. Many other studies have indicated that the growth in language development is favorable towards girls (e.g., Bornstein et al., 2004; Eriksson et al., 2012; Lovas, 2011).

The biological differences between girls' and boys' early language development also are supported by a few other research studies, which indicated delays in language acquisition for boys as compared to girls (e.g., Bornstein & Haynes, 1998). Galsworthy et al. (2000) examined genetic and environmental influences on gender differences in 3,000 pairs of 2-year-old twins. According to their results, the associations of heredity and environment with children's language development differed with gender. As well, genetic effects on early language development were stronger for boys than girls.

Researchers have employed a variety of measures to investigate the gender differences in linguistic abilities and growth. For example, Bornstein et al. (2004) reported their results from four longitudinal studies for which they collected language data from 1-to-6-year-old children ($n = 329$) using different measures: mothers' reports on their child's language skills through questionnaires or interviews, various standardized assessments of receptive and expressive language, teachers' reports on child's language skills, and videotaped mother-child verbal interactions. The findings from separate and cumulative analyses across age indicated gender-related variations favoring girls in 2- to 5-year-old children on multiple language skills, such as, vocabulary production and expressive language. Along with the stability in language abilities of girls and boys, the gender-linked individual differences remained strongly stable at each age.

Later, in Lovas (2011), both mothers and fathers from 113 families reported the number of different words and MLUs of their children at the age of 19 months followed by another report at the age of 2 years ($n = 57$). In addition, the researcher collected data from mother-daughter, mother-son, father-daughter, and father-son dyadic verbal interactions at both times. The parental reports and the dyadic data revealed gender differences on words and MLUs favoring girls that increased over time.

More recently, Bornstein and Putnick (2012) utilized three sources to gather data on children's language at 20 and 48 months ($n = 192$): children's language transcriptions from observations, mothers' reports, and children's language assessment. In addition to the multiple sources, researchers included several language domains in this study: MLUs, different word roots, sentence structure, word associations, receptive communication, adaptive communication, and written communication. Similar to the prior studies mentioned here, the findings of this study suggested inter-individual variations among children at 20 and 48 months. Researchers reported strong stability in the individual language variability in general and by gender as, within a multiple-sample statistical model, the test of metric equivalence between the two groups of girls and boys revealed that the basic construct for measuring language stability in girls and boys are alike.

A plethora of extant literature suggests gender differences in children's language abilities between 2 to 5 years of age. Moreover, the existing literature provides support for various possible sources of these observed gender-related differences in children's linguistic skills. The results of some research studies lend support to the gender socialization theory, which assumes that parents socialize with their sons and daughters differently from birth because of the distinct social norms for girls and boys (Bornstein, et al. 2004; Fagot, Rodgers, & Leinbach, 2000). For

example, Leaper and Smith (2004) conducted three meta-analyses to investigate the influence of gender on linguistic variables of talkativeness (61 studies), affiliative speech (35 studies), and assertive speech (59 studies). All of the studies included in this meta-analysis were published between 1958 and 2000. Cumulatively, these studies suggested that parents talk differently with their sons and daughters by providing differential exposure (e.g., using stereotypical toys to play with sons and daughters) to girls and boys, which subsequently reflects in children's gendered language abilities. Extending this finding, some researchers reported differences among mother-son, mother-daughter, father-son, and father-daughter early verbal interactions (Leaper et al., 1998; Leaper, 2000).

In addition to parental influence on early parent-child talk, some researchers provide support for child gender influence on parent-child verbal interactions (e.g., Lanvers, 2004). Girls and boys are said to elicit language differently from their parents due to their innate biological differences (Gleason & Ely, 2002; Lanvers, 2004), which then is hypothesized to lead to the variations in parental treatment of their sons and daughters. The evidence from a longitudinal study (Lovas, 2011) suggested that at as early as two years of age children begin to influence the parent-child verbal interaction by the way they stimulate language from their parents. As compared to boys, girls showed more interest in language, which might be due to the increasing gendered variation in linguistic abilities. Furthermore, results indicated that girls were active participants in eliciting complex language from fathers. Consequently, the results of this study indicated that the Gleason's (1975) bridge hypothesis, which states that fathers are more challenging communicative partners than mothers, was more applicable for daughters than for sons. The conclusions from Lovas (2011) highlighted the importance of child-driven

communication and the bidirectional nature of parent-child verbal interactions even when children are as young as 2 years old.

The findings from the existing literature highlight the importance of both parental and child characteristics in children's language development (Leaper, 2013). Given that studies on fathers are scarce, most of the existing research comparing parents' talk with their sons and daughters has focused on mothers only and/or is more than two decades old. However, the limited extant research does suggest that the early verbal interaction of mothers and fathers differs with their sons and daughters. For example, Leaper et al. (1998) compared mothers' talk with their sons and daughters in a meta-analysis and reported that mothers' total amount of talk and supportive talk was higher for daughters than sons.

Given the bidirectional nature of parent-child interactions, researchers ideally need to investigate the influence of both parental and child gender on early language development of children together in one study; however, such studies are quite rare. One of these rare investigations is a recent study in which Lovas (2011) examined parental and child gender effects in parent-child verbal interactions through parental reports when the children were 19 months old and then followed up for stability when the children were 2 years old. The results of this study suggested differences between mother-daughter, mother-son, father-daughter, and father-son early verbal interactions consistent with the bidirectional nature of parent-child dyads. The vocabulary production and MLUs of mothers and fathers were greater for daughters than sons. Although this study is quite recent, it has some limitations. The sample size ($n = 113$) for this study was mainly White and middle-class. In addition, the results of this study were derived from parental reports and not direct observations of parent-child dyads.

Parent-child Interactions and Socio-economic Status (SES)

The available research evidence supports a substantial role for environmental influences on children's language development (Hoff, 2006; Rodriguez & Tamis-LeMonda, 2011). Although all environments provide opportunities for children to gain language experiences, there is variability in the quantity and quality of exposure that children receive in different environments (Hoff, 2006). The variation in language experiences leads to the group and individual differences in children's language development (Hoff, 2006). The system that is most remote from the child in Bronfenbrenner's ecological model (i.e., *the macrosystem*) includes the social contexts of children's lives, such as SES, ethnicity, and culture (Bronfenbrenner, 1994). Instead of directly influencing the developmental processes of children, these social contexts play a major role in shaping children's more proximal systems (e.g., children's immediate home environment), thus indirectly contributing to children's development (Bronfenbrenner & Morris, 1998).

As an example of macrosystem influence, many researchers have considered the influence of SES on child development (Bradley & Corwyn, 2002; Hoff, Laursen, & Tardiff, 2002; Hoffman, 2003). Conger and Donnellan (2007) defined SES as "an individual's location in multiple environmental hierarchies, usually involving economic resources, educational achievement, and occupational status" (p. 178). According to Coleman (1988; 2000), within a family there are three types of capital: financial, human, and social, that influence children's cognitive development. Coleman proposed that financial capital refers to the family's material resources and is measured by family's assets or income. He stated that parental education constitutes the human capital and bolsters children's academic achievement. The third type of capital in a family is social capital, which refers to the child-parent relationship and parents'

relationships with other people in the society. Coleman emphasized the complementary role of the human capital and the social capital in a family for child development. He stressed that strong human capital is of no use if it is not accompanied by social capital. Coleman's idea of capital has been frequently linked with the concept of SES (Bradley & Corwyn, 2002). Taking this perspective in the current study, the quantity and quality of early parent-child verbal interactions signify the social capital and parental income level signifies the financial capital that parents provide to their children.

Income, education, and occupation are the most widely employed indicators of SES (Bradley & Corwyn, 2002; Hoff et al., 2002). Some researchers have used a single indicator (e.g., occupation or income) to measure SES. In contrast, others have utilized more than one indicator for the same purpose (e.g., income and education; Pungello et al., 2009). It is widely accepted that it is better to use more than one indicator of SES; however, the issue is still open on how to use these indicators to investigate associations between SES and child development (i.e., as composites or separately within the same statistical analysis; Sirin, 2005). Broadly utilized composite measures of SES (e.g., Hoff et al., 2002) are Hollingshead's Two Factor and Four Factor indices of SES that are based on fathers' education and occupation and mothers' and fathers' education and occupation, respectively (Hollingshead, 1957, 1975). More recently, Entwisle and Astone (1994) argued that composite measures of SES obscure the source of effect in a study; therefore, they recommended measuring the different indicators of SES separately. Supporting this view of SES measurement, Conger and Donnellan (2007) emphasized that the three indicators of SES (i.e., income, education, and occupational status) are not interchangeable as they all have unique associations with parenting and child development. Overall, the evidence suggests that the different indicators of SES should not be combined into a single scale. Instead

these indices should be measured separately and the distinct relations between these indicators and other variables should also be analyzed separately (Conger, Conger, & Martin, 2010; Ensminger & Fothergill, 2003). In the current study, participants' SES level was measured through their education level and household income.

A large body of research indicates SES-related variations in early linguistic skills of children (Topping et al., 2013). Children from high-SES families have richer vocabularies and a more rapid pace of vocabulary development during early years of life than do their lower-SES counterparts (Hart & Risley, 1995; Hoff, 2003). The variability in children's linguistic abilities and growth associated with SES are in part mediated by the language exposure that children receive at home from their parents (Hoff, 2003; Huttenlocher et al., 2010; Topping et al., 2013). In addition, the available literature provides ample evidence indicative of SES-related differences in the quantity and quality of parental verbal interaction with their young children (e.g., Hart & Risley, 1995; Hoff, 2006; Hoff-Ginsberg, 1991; Rowe, 2008; Topping et al., 2013). Hart and Risley reported that the children in high-SES families heard three times more words at home than the children in low-SES families. Moreover, differences were observed in the quality of parental early language input in high-, mid-, and low-SES families. For example, high-SES parents used more diverse vocabulary, used more declaratives, and asked more questions to their children. Several other research studies have replicated these results (e.g., Hoff, 2003; Huttenlocher et al., 2010).

SES is a significant predictor of children's early vocabulary development even when parental input is controlled. For example, Rowe, Raudenbush, and Goldin-Meadow (2012) investigated the predictors of variations in children's early vocabulary growth trajectories and whether these trajectories were predictive of children's vocabulary skills upon school entry. The

early vocabulary growth of children predicted their later vocabulary skills with this relation being stronger for the children from low-SES backgrounds. However, unlike in Hoff (2003), parental input did not mediate the relation between SES and children's early vocabulary growth in this study. The fact that the measure of parental input in Rowe et al. did not include the quality of parental early talk and was measured only by the amount of different words might have been the reason behind this finding. This is particularly important given that Pan et al. (2005) had suggested that mere quantity of parental verbal input is not the best predictor of children's early vocabulary growth.

Although differences between high- and low-SES parent groups in their early language input have been observed, there is also an indication of within-group variation for children from low-SES backgrounds (Leech et al., 2013; Pan & Rowe, 1999; Pan et al., 2005). In the United States, 47 percent of young children below 6 years of age are living in low-income families and more than 50 percent of children in low-income families have parents who also have just high school or less education (Jiang, Ekono, & Skinner, 2016). From these numbers, it can be assumed that the other 50 percent of children from low-income families have parents with higher education levels, thus possibly causing the variation in early parental language input within the low-SES families.

In a sample drawn entirely from low-income families ($n = 80$), Malin et al. (2012) investigated the association between fathers' education level and their early language input with 24 month old children. The results of this study suggested direct associations of fathers' education level on children's language skills that were partially mediated by fathers' language input. Furthermore, the authors reported variations in the quantity and quality of fathers' early language input as measured by amount of talk, diverse vocabulary, and MLUs. Likewise,

Abraham et al. (2013) examined the child-directed language of mothers ($n = 82$) from low-income rural families with their children at 6 months and 15 months and reported significant variability in mothers' speech even when all of the participating mothers were from a low-income population and 93% of the mothers did not have a 4-year college degree. Comparable to the limitations in research for the full SES range, the majority of the extant studies on early parent-child verbal interaction in low-SES backgrounds included only mothers. The limited studies that focused on fathers suggested that early father-child verbal interactions contribute to children's language development even in low-SES families, especially considering the changes in fathers' role in the last two-three decades (e.g., Black et al. 1999; Malin et al., 2012; Pancsofar & Vernon-Feagans, 2010). Recently, Rowe, Leech, and Cabrera (2016) and Ingrole and Phillips (2016) reported variability in fathers' early language input with their children within a low-SES homogeneous sample, suggesting that fathers cannot be assumed to behave or talk in a certain way depending on their economic status in society.

Although the recent research has revealed certain patterns of fathers' early verbal interactions within low-SES families, on the basis of the existing literature, it is difficult to draw any definite conclusions regarding the differences or similarities between mothers' and fathers' early speech with their children in low-SES families. Tamis-LeMonda et al. (2004) investigated mothers' and fathers' early verbal interaction in a low-income sample and found no differences in the ways mothers and fathers engage with their young children. At the same time, Rowe et al. (2004) reported differences along with some similarities in low-income mother-child and father-child early verbal interactions. According to the results of Rowe et al., mothers' and fathers' language input had no differences in terms of verbal output, use of different words, and MLU, but fathers asked more questions and made more clarifications than mothers. Given the

inconsistency in the findings of these studies, further investigation is warranted. Furthermore, I could not find a single recent study that examined the early verbal interactions of mother-daughter, mother-son, father-daughter, father-son in low-income and low-education families.

Measures of Early Parental Language Input

In order to assess the quantity and quality of the early parental language input, researchers have employed a variety of measures, for example, verbal output (Bingham et al., 2012; Pancsofar & Vernon-Feagans, 2006; Rowe et al., 2004), number of questions (Pancsofar & Vernon-Feagans, 2006; Rowe et al., 2004; Tamis-LeMonda, Baumwell, Cristofaro, 2012), number of directives (Rowe et al., 2004; Tamis-LeMonda et al., 2012), number of declaratives (Rowe et al., 2004; Tamis-LeMonda et al., 2012), and number of different words (Bingham et al., 2012; Pancsofar & Vernon-Feagans, 2006; Tamis-LeMonda et al., 2012). Some aspects of parental language input, such as asking more open-ended questions (Peterson et al., 1999) and using fewer directives (Rowe, 2008), during early verbal interactions with their child are believed to elicit more language from young children. Therefore, parental total verbal utterances, and the frequency of questions, directives, and declaratives are the focal variables in this study and are discussed next.

Total Verbal Utterances

The amount of speech exposure children receive during their early years is directly related to children's concurrent and later language development (Hoff, 2003; Huttenlocher et al., 1991). Among other variables, Rowe (2008) investigated the association between parental amount of language use with young children and children's vocabulary skills and found a significant positive relation. Prior research that indicated an association between parental speech quantity and children's linguistic abilities had mainly derived its conclusions from mothers'

language data. However, in the more recent investigations, researchers have included both mothers and fathers and suggested that the verbal output of both mothers and fathers is related to children's language development (Bingham et al., 2012; Pancsofar & Vernon-Feagans, 2006).

Although several researchers have measured the quantity of speech while investigating differences between mothers' and fathers' early language input, there is an inconsistency in the findings. For example, Rowe et al. (2004) found in their research that the mothers' and fathers' early talk did not differ in terms of quantity in the dyadic context. In contrast, the results of Pancsofar and Vernon-Feagans (2006) suggested differences in the verbal output of mothers and fathers during early verbal interactions with their children in the triadic context. Rowe et al. and Pancsofar and Vernon-Feagans differed in terms of their sample characteristics as the sample of Rowe et al. was drawn from low-income rural families ($n = 33$ families), whereas Pancsofar and Vernon-Feagans included the sample of middle-class and upper-middle-class families ($n = 92$ families). Although the difference in sample populations might have contributed to the observed discrepancy in the findings, the contextual dissimilarity of dyads and triads can also be seen as the reason behind the disagreement between the findings of these two studies, which lends support to the previous findings of Golinkoff and Ames (1979). In a comparatively smaller sample of mothers and fathers ($n = 12$ families), Golinkoff and Ames found differences in early speech of fathers versus mothers in triadic situations (i.e., fathers' quantity of speech was less than that of mothers); whereas, no such differences in quantity and/or quality of fathers' versus mothers' early speech were observed in dyadic situations. However, more recently, Bingham et al. (2012) found contradicting results from a sample of middle-class families ($n = 63$) and stated that mothers' and fathers' amount of talk differed in both dyadic and triadic contexts. The age range of children in Rowe et al., Pancsofar and Vernon-Feagans, and Bingham et al., was 23- 28

months, 24 months, and 16-37 months, respectively. In light of inconsistent prior findings, it is difficult to pose any claim in terms of patterns of mothers' and fathers' early language input.

Questions

Parents who ask more questions to their young children typically elicit more language from them, thus providing them more opportunities for language use (Peterson et al., 1999). Considering the importance of questions in encouraging children to talk, several research studies have examined the use of questions in their investigations of early parent-child verbal interactions (e.g., Pancsofar & Vernon-Feagans, 2006; Rowe et al., 2004; Tamis-LeMonda et al., 2012). In a recent study, Rowe, et al., (2016) reported that fathers' use of wh-questions, which are considered to be open-ended and challenging for children as compared to closed-ended or yes/no questions, had a significant association with their 2-year-old children's vocabulary and reasoning skills. However, similar to the measure of total verbal utterances, there is a lack of consensus among the findings of the existing research studies examining differences between mothers' and fathers' early verbal interaction with their children. According to the results from Rowe et al. (2004), fathers asked more wh-questions and demanded more clarifications from their children than did mothers in a sample drawn from low-income rural families. Tamis-LeMonda et al. (2012) supported the results of Rowe et al. in their study utilizing a low-income sample. However, Pancsofar and Vernon-Feagans (2006) reported entirely conflicting results from their investigation on a middle and upper class sample and stated that mothers asked more wh-questions than fathers. In addition, their findings suggested that mothers and fathers did not differ in terms of proportions of questions. The observed inconsistent findings of these studies might be a function of the social class differences of the sample populations. However, because

there is paucity of recent studies and the existing studies have relatively small sample sizes, it is difficult to make any such claim.

Directives

Rowe (2008) studied the relation between parental early talk with their children and children's later linguistic skills. The "child-directed speech composite" in their evaluation comprised directives among other measures. According to their results, all of the measures included in the composite variable were related to children's later language development. There is a disagreement regarding the use of directives in the studies evaluating maternal and paternal early language contributions. In a low-income sample from a rural setting ($n = 33$), Rowe et al. (2004) found no significant differences in the use of directives between mothers and fathers of 2-year-old children. On the contrary, Tamis-LeMonda et al. (2012) reported that low-income fathers ($n = 50$) use more action directives than mothers with their 2-year-old children, which conformed to the results from the earlier Leaper et al. (1998) meta-analysis. It is noteworthy that both Rowe et al. (2004) and Tamis-LeMonda et al. (2012) were conducted in a dyadic context with similar sample populations; however, Leaper et al. (1998) was a meta-analysis that included various study formats.

Declaratives

Declaratives have been defined and named differently in different research studies. For example, the variables of supportive speech (e.g., positive language in form of praise, acknowledgement, etc.), negative speech (e.g., criticism, non-agreement, etc.), and giving information (e.g., explanation statements, opinions, etc.) in the Leaper et al. (1998) are synonymous with declaratives in the current study. In another study, Tamis-LeMonda et al. (2012) utilized the variables of affirmations, repetitions, labels, and description, which are

closely related to declaratives. Despite the different definitions and names, both of these studies indicated difference between maternal and paternal language input on these measures.

Research Questions and Hypotheses

Based on the above literature review, it appears that the existing research provides a very limited understanding of the nature of early parent-child verbal interactions. In particular, the role of fathers' early speech in the early language development of their sons and daughters and how it is similar or different from that of mothers needs to be explored. Therefore, the goal of the current study was to conduct a comprehensive investigation that will provide further insight into the role of parent and child gender in children's early language development. For the purpose of this study, I compared the early verbal interactions among four groups of mother-son, mother-daughter, father-son, and father-daughter. The specific questions that were addressed along with associated hypotheses are listed below:

1. Does parental early speech with their preschool aged child in low-income families differ among father-daughter, father-son, mother-daughter, and mother-son groups during independent dyadic interactions?

Both Bronfenbrenner (1998) and Bronfenbrenner and Morris (2006) stressed in their Ecological and Bioecological models, respectively, that gender is an important aspect related to the 'person' in the PPCT feature of their models. Among the four aspects of the PPCT model, the traits related to the 'person' have the most influence on the 'proximal processes'. In the current study, parental and child gender were referred to as the traits of the 'person' and the mother-son, mother-daughter, father-son, and father-daughter early verbal interactions were seen as the 'proximal processes'. In addition, these models emphasized the bi-directional nature of parent child verbal interaction processes, meaning that both parental and child characteristics can

inform the proximal process of early parent-child verbal interaction. Together the Ecological and Bioecological models provided a strong theoretical base for the hypotheses associated with the research questions of this study, as per which parental language use in mother-son, mother-daughter, father-son, and father-daughter early verbal interactions were expected to differ from each other. The hypotheses related to specific sub-questions on the basis of empirical evidence are discussed next:

1.1. Do parental total verbal utterances (total count and per minute) with their preschool aged child in low-income families differ significantly among father-daughter, father-son, mother-daughter, and mother-son groups during their independent dyadic interactions?

H₁: Many previous research studies have indicated that mothers are more verbal than fathers (e.g., Leaper et al., 1998; Pancsofar & Vernon-Feagans, 2006) as they typically spend more time with children as compared to fathers. In contrast, another study conducted by Rowe et al., (2004) examined mother-child and father-child dyads and found that there was no difference in terms of amount of verbal output of both. In keeping with the majority of findings in this area, it was predicted that mothers' total verbal utterances and utterances per minute would be greater than fathers' during their dyadic conversations with their children in this study.

Various research studies have reported that mothers talk more with their daughters than with their sons (Cherry & Lewis, 1976; Leaper et al., 1998); however, one recent study reported that although mothers talk more than fathers and more with their daughters, fathers talk more with their sons (Gilkerson & Richards, 2009). I could not find any other study that compared father's amount of talk with sons versus daughters. Therefore, on the basis of these prior findings, the mother-daughter group was expected to have the highest parental total verbal utterances and utterances per minute as compared to the other three groups in this study.

1.2. Does parental use of closed-ended and open-ended questions (total count and proportional) with their preschool aged child in low-income families differ significantly among father-daughter, father-son, mother-daughter, and mother-son groups during their independent dyadic interactions?

H₁: Earlier findings have suggested that fathers make more clarification requests and thus ask more open-ended questions than mothers (Leaper et al., 1998; McLaughlin et al., 1983; O'Brien & Nagle, 1987; Rowe et al., 2004). Conversely, Tamis-LeMonda et al. (2012) reported that mothers ask more closed-ended questions than fathers. Based on these prior findings, mothers were expected to ask a greater number/proportion of closed-ended questions than fathers whereas fathers' number and proportion of open-ended questions during the one-on-one interactions with their preschool aged children were expected to be greater than that of mothers in this study.

There is a dearth of research studies looking at fathers' gender-typed interaction with their children. In addition, I could not find any recent study investigating father-son and father-daughter interactions in terms of the kind of questions fathers ask. However, the existing literature suggests that fathers use more challenging language with their sons than daughters (Lanvers, 2004). On the other hand, previous studies have indicated that mothers ask more explanatory questions to their daughters than to their sons (Cherry & Lewis, 1976; Clearfield & Nelson, 2006). Based on the existing evidence, fathers were expected to use a greater number or proportion of open-ended questions with their sons versus daughters. In contrast, mothers were expected to use a greater total number and proportion of open-ended questions with daughters than with sons but no child-gender-related difference in mothers' closed-ended questions was expected.

1.3. Does parental use of directives (total count and proportional) with their preschool aged child in low-income families differ significantly among father-daughter, father-son, mother-daughter, and mother-son groups during their independent dyadic interactions?

H₁: On the basis of previous findings comparing mothers' and fathers' verbal behavior during the dyadic interactions with their children, fathers' use of both number and proportion of directives with their preschool aged children were expected to be greater than that of mothers' in this study (Kornhaber & Marcos, 2000; Leaper et al., 1998; Tamis- LeMonda et al., 2012).

From their meta-analysis, Leaper et al. (1998) reported that on average mothers used slightly more directives with their daughters than sons. However, as mentioned in the hypothesis for research question 1.2, studies related to fathers' verbal interactions with sons versus daughters are virtually nonexistent. Therefore, in this study, mothers were expected to use a greater number/proportion of directives with their daughters than sons. However, no directional hypothesis related to fathers' number/proportion of directives with sons versus daughters was generated.

1.4. Does parental use of declaratives (total count and proportional) with their preschool aged child in low-income families differ significantly among father-daughter, father-son, mother-daughter, and mother-son groups during their independent dyadic interactions?

H₁: Golinkoff and Ames (1979) suggested that mothers' and fathers' language does not differ in terms of statement (defined as declaratives in the current study) use during free-play sessions with their children. At the same time, Leaper et al. (1998) and Tamis-LeMonda et al. (2012) indicated differences between mothers' versus fathers' in certain aspects of declarative use with their children. In keeping with the recent findings, mothers and fathers were expected to differ in

their number/proportions of declaratives during the play session with their children in this study. However, the direction of this hypothesis was not determined.

Clearfield and Nelson (2006) found that mothers of sons use more statements as compared to mothers of daughters. On the basis of this finding, mothers' number and proportional usage of declaratives were hypothesized to be greater with sons than with daughters. However, with respect to fathers, similar to the hypotheses for question 1.3, no directional hypothesis related to fathers' number/proportion of declaratives with sons versus daughters was generated.

2. Does the quantity of preschool aged children's early speech in low-SES families differ among mother-son, mother-daughter, father-son, and father-daughter groups during independent early dyadic interactions?

2.1. Is there any significant difference in the total verbal utterances (total count and per minute) of preschool aged sons and daughters from low-income among father-daughter, father-son, mother-daughter, and mother-son groups during their independent early dyadic interactions?

H₁: Prior research suggests that daughters are more talkative than sons (e.g., Leaper & Smith, 2004). As well, there are indications that mothers are more verbal than fathers (e.g., Leaper et al., 1998; Pancsofar & Vernon-Feagans, 2006). Therefore, in this study, total child utterances (both count based and per minute) were expected to be comparatively greater in the mother-daughter group than in other groups.

3. Exploratory research question: Are there any statistically significant differences in bivariate correlations among the four groups of father-daughter, father-son, mother-daughter, and mother-son in this study?

H₁: Although the extant literature suggests significant association between parental early speech and children's early language (e.g., Cristofaro & Tamis-LeMonda, 2011), differences in these significant associations among father-daughter, father-son, mother-daughter, and mother-son groups have not been investigated. Hence, this research question was exploratory in nature and had no directional hypothesis associated with it.

CHAPTER 3

METHOD

Study Design

The current study included a descriptive study design (see Figure 3) with four grouping variables: mother-daughter, father-daughter, mother-son, and father-son groups; and five response variables: parental verbal utterances, child verbal utterances, parental questions, parental declaratives, and parental directives.

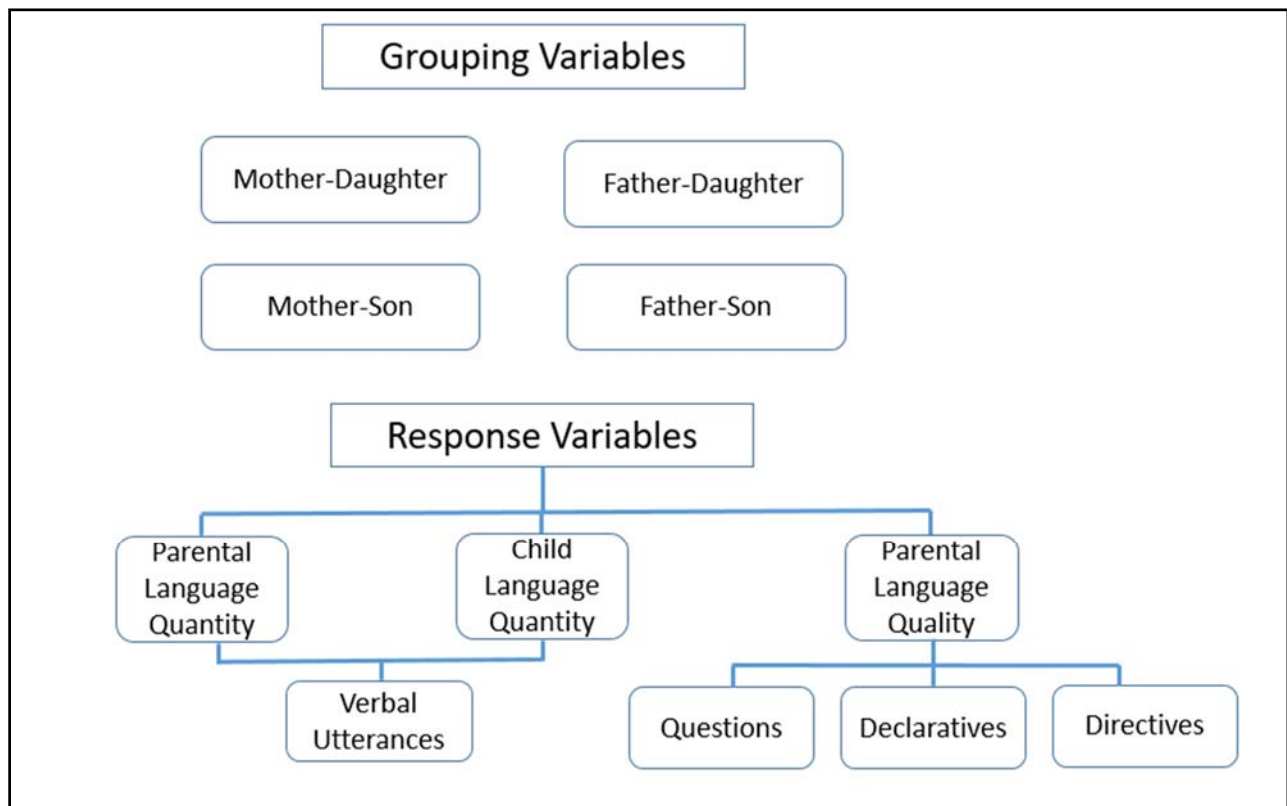


Figure 3. This figure presents a visual representation of the study design including grouping and response variables.

Power Analysis

Cohen (1992) defined power as “the probability that the H_0 [null hypothesis] will be rejected when it is false, that is, the probability of obtaining a statistically significant result” (p. 98). Statistical power analysis is very useful in planning a research study as it helps in determining the appropriate sample size (Murphy, Myors, & Wolach, 2009). Cohen (1988) proposed that a priori power analysis can be computed using the pre-specified level of significance (α), the desired power ($1 - \beta$), and the expected population effect size. In social and behavioral sciences, a desired power of .80 has been recommended (Cohen, 1988; 1992), which implies that there is an 80% chance of rejecting a null hypothesis correctly when the results are statistically significant. The level of significance, i.e., α , is the chance of incorrectly rejecting the null hypothesis and is usually set at 0.05 (Cohen, 1992). Another parameter required to compute power for an analysis is effect size. Effect size is defined as the “discrepancy between the null hypothesis, H_0 , and the alternate hypothesis of interest, H_1 ” (Cohen, 1992, p. 98).

A review of prior studies provided the basis for the expected effect sizes in the current study. Specifically, Pancsofar and Vernon-Feagans (2006) indicated an effect size of $f^2 = 0.19$ for difference between mothers and fathers total verbal output during early parent-child verbal interactions, $f^2 = 0.10$ for total wh-questions. In regards to differences in parent-to-sons versus daughters early verbal interactions, effect sizes of $f^2 = 0.08$ (Tenenbaum, Snow, Roach, & Kurland, 2005) to $f^2 = 0.14$ (Leaper et al., 1998) have been reported. Additionally, Leaper and Smith (2004) reported an effect size of $f^2 = 0.12$ for differences between boys’ and girls’ quantity of language during adult-child verbal interactions. At the same time, existing literature suggests a correlation of 0.32, $p < 0.05$, between mothers’ and fathers’ early language input

(Pancsofar & Vernon-Feagans, 2010). In Analysis of Variance (ANOVA), $f^2 = .10$, $.25$, and $.40$ represent small, medium, and large effect sizes, respectively.

I conducted various a priori power analyses using G*Power 3.1 software (Faul, Erdfelder, Buchner, & Lang, 2009) to determine the minimum sample size for this study. Specifically, I computed the needed sample size for “MANOVA Global Effects” with four groups (i.e., mother-son, mother-daughter, father-son, and father-daughter) and four response variables (i.e., total verbal utterances, questions, directives, and declaratives) as represented in the study design in Figure 3. Based on the statistics from prior studies, I used various values for effect size and power before settling on a final sample size that would be appropriate for the current study (see Table 1. For example, the suggested minimum sample size with a desired effect size (f^2) of 0.14, an alpha level (α) of 0.05, and an 80% (0.80) power rating was a total of 52 parent-child dyads (i.e., including mother-son, mother-daughter, father-son, and father-daughter).

Table 1

Power Analyses to Determine the Sample Size for the Current Study

f^2	α	$1-\beta$	n
0.14	0.05	0.80	52
0.10	0.05	0.80	68
0.06	0.05	0.80	112

Note. f^2 = effect size; α = level of significance; $(1 - \beta)$ = desired power; n = sample size.

The minimum sample size requirement increased to a total of 68 parent-child dyads or 112 parent-child dyads when the effect size (f^2) was lowered to 0.10 or 0.06, respectively. As a result, the target sample size for this study was set at approximately 101 parent-child dyads with 61 father-child dyads (32 daughters; 29 sons) that were recruited, videotaped, and coded during phase I of this study (Ingrole, Phillips, & Melcher, 2016) and at least 40 mother-child dyads (20

daughters; 20 sons) to be recruited, videotaped, and coded in phase II to meet the requirements of the current study.

Participants

This study included a convenience sample of 112 English speaking parents (61 fathers; 51 mothers) and their preschool aged child (36-60 months of age) recruited from child-care facilities in and around Tallahassee, Florida. Over the two phases of data collection, data from 61 father-child dyads (32 father-daughter and 29 father-son) and 51 mother-child dyads (26 mother-son and 25 mother-daughter) were collected during phase I and phase II respectively. The eligibility criteria for the participants included: (1) low-income background of the participant child, (2) participant child between 36-60 months of age, (3) participant child with no hearing or visual impairments, and (4) participant parent and participant child in contact on a regular basis (at least monthly). The participants were recruited through child-care centers that were known to serve low-income populations. It is important to note here that the father-child and mother-child dyads were from different families meaning that the child participants from a family were videotaped either with the mother figure or father figure as per recruiting priorities at each phase of data collection (i.e., fathers were given priority during phase I and mothers were given priority in phase II).

Flyers (Appendix A) containing brief description of the study and a form to provide parental contact information, if interested in participating, were distributed in the child-care centers. Interested parents who returned the completed form to their child's class teacher, who further passed on the forms to the primary researcher, were contacted to schedule an approximately 30-minute session to complete the informed consent form (Appendix B), demographic survey (Appendix C), and 15-minute play session at their child's child-care facility.

Demographics

Table 2

Parental Demographic Information

Variables	Frequency/Percentage				
	F-D (n=32)	F-S (n=29)	M-D (n=26)	M-S (n=25)	Overall (n=112)
Parental Ethnicity					
Black/African American	24/75	25/86.2	24/92.3	22/88.0	95/84.8
White	5/15.6	3/10.3	1/3.8	1/4.0	10/8.9
Hispanic	1/3.1	0/0.0	0/0.0	0/0.0	1/0.9
Other	2/6.2	1/3.4	1/3.8	2/8.0	6/5.4
Parental Education					
Some High School	2/6.3	1/3.4	3/11.5	2/8.0	8/7.1
GED	0/0.0	4/13.8	3/11.5	1/4.0	8/7.1
High School	14/43.8	12/41.4	9/34.6	7/28.0	42/37.5
Some College	4/12.5	5/17.2	5/19.2	9/36.0	22/19.6
AA/AS Degree	2/6.3	2/6.9	1/3.8	3/12.0	8/7.1
Bachelor Degree	9/28.1	3/10.3	2/7.7	3/12.0	18/16.1
Master's Degree or above	1/3.1	2/6.8	3/11.5	0/0.0	6/5.4
Annual Household Income (in dollars)					
10,000 or less	7/21.9	10/34.5	11/42.3	11/44.0	39/34.8
11,000-20,000	4/12.5	11/37.9	5/19.2	12/48.0	32/28.6
21,000- 30,000	7/21.9	2/6.9	3/11.5	1/4.0	13/11.6
31,000-40,000	4/12.5	2/6.9	3/11.5	1/4.0	10/8.9
41,000-50,000	5/15.6	1/3.4	2/7.7	0/0.0	8/7.1
51,000-75,000	1/3.1	1/3.4	2/7.7	0/0.0	4/3.6
76,000-100,000	2/6.3	2/6.9	0/0.0	0/0.0	4/3.6
101,000-125,000	1/3.1	0/0.0	0/0.0	0/0.0	1/0.9
126,000-150,000	1/3.1	0/0.0	0/0.0	0/0.0	1/0.9
Frequency of contact with the recorded parent					
Daily, lives in same home	26/81.3	25/86.2	26/100	25/100	102/91.1
Once a week or more	6/18.8	2/6.9	0/0.0	0/0.0	8/7.1
Once or more per month	0/0.0	2/6.9	0/0.0	0/0.0	2/1.8
Less than once a month	0/0.0	0/0.0	0/0.0	0/0.0	0/0.0
Frequency of contact with the other parent					
Daily, lives in same home	29/90.6	26/89.7	13/50.0	10/40.0	78/69.6
Once a week or more	3/9.4	0/0.0	8/30.7	10/40.0	21/18.8
Once or more per month	0/0.0	0/0.0	1/3.8	1/4.0	2/1.8
Less than once a month	0/0.0	3/10.3	4/15.4	4/16.0	11/9.8

Note. F-D=Father-Daughter group; F-S=Father-Son group; M-D=Mother-Daughter group; M-S=Mother-Son group.

As presented in Table 2, most of the participants in all four groups of the current study belonged to the African-American ethnic group. Additionally, most of the parents in all groups did not have a college degree. As compared to mother-daughter and mother-son groups, most of the fathers in the father-daughter and father-son groups cohabitated with the mother of the child. The spread for parental income (see Table 3) was the least in the mother-son group followed by mother-daughter, father-son, and father-daughter groups, respectively. A wide disparity between father-child groups and mother-child groups is indicated. Specifically, the highest self-reported annual household income of parents in mother-child groups did not exceed \$75,000 whereas the some of the fathers in father-child groups reported their annual household income as between \$126,000-\$150,000

The four groups of father-daughter, father-son, mother-daughter, and mother-son were compared to see if they matched on various demographic aspects. The results revealed no difference in the four groups in terms of ethnicity ($\chi^2 (9) = 6.9, p = .65$), age ($F (3,108) = 1.16, p = .33$), and parental education ($F (3,108) = 0.45, p = .72$). However, the mother-son group significantly differed from other groups in terms of parental household income ($F [3,108] = 4.79, p < 0.05$). Considering the income-related differences between groups, further analyses including the group comparisons in the current study were conducted both with and without controlling for parental income.

Measures

This study involved two modes of data collection: (1) the background and demographic information form, and (2) video recording of the mother-son, mother-daughter, father-son, and father-daughter interactions during a semi-structured play session. This section provides a description of the modes of data collection and coding measures.

Table 3

Descriptive Statistics for Parental and Child Demographic Information

Variables	Mean	SD	Range
Overall (n=112)			
Child Age (in months)	47.7	6.2	37-60
Parental Education (in years)	13.1	2.1	10-20
Household Income (in dollars)	23,571.4	23,434.6	2,500-137,500
Residents in Household	4.1	1.4	2-9
Father-Daughter (n=32)			
Child Age (in months)	46.4	6.5	37-60
Parental Education (in years)	13.4	2.1	10-18
Household Income (in dollars)	35,078.1	31,822.9	7,500-137,500
Residents in Household	4.0	1.3	2-7
Father-Son (n=29)			
Child Age (in months)	48.2	5.8	37-58
Parental Education (in years)	13	2.2	10-20
Household Income (in dollars)	22,069.0	22,170.9	7,500-87,500
Residents in Household	4.5	1.3	2-8
Mother-Daughter (n=26)			
Child Age (in months)	47.2	6.8	38-60
Parental Education (in years)	12.9	2.4	10-18
Household Income (in dollars)	21,057.7	17,409.4	2,500-62,500
Residents in Household	4.0	1.7	2-9
Mother-Son (n=25)			
Child Age (in months)	49.3	5.3	42-60
Parental Education (in years)	12.9	1.6	10-16
Household Income (in dollars)	13,200.0	6,674.0	7,500-35,000
Residents in Household	3.8	1.2	2-6

Note. SD=Standard Deviation.

Demographic Survey

A 16-item parent demographic survey (Appendix C) that provided information related to parental figures in the child's life, parental ethnicity, education, and household income was used in this study. The education- and income-related items in the demographic survey were adopted from the Home Language and Literacy Environment (HLLE) survey (Phillips & Lonigan, 2009), a survey that has been used in numerous large-scale studies with families from comparable

demographic backgrounds. Other items in the demographic survey related to each parent's ethnicity and their specific relationship with the child.

Video Recordings of Parent-child Dyadic Interactions

Parent-child dyads have been videotaped for collecting data related to parental language input in several research studies (e.g., Dodici, Draper, & Peterson, 2003; Huttenlocher et al., 2010; Pancsofar & Vernon-Feagans, 2006; Tamis-LeMonda, Bornstein, & Baumwell, 2001) providing credibility for this kind of data collection method. In this study, the 15-minute videotaped mother-child and father-child dyadic play sessions were used to gather information related to parental and child verbal behavior during early parent-child verbal interactions.

The videotaped parent-child sessions conducted in prior research studies have included typical daily activities (e.g., Huttenlocher et al., 2010), highly structured (Rowe et al., 2004), semi-structured (Tamis-LeMonda et al., 2001; Cristofaro & Tamis-LeMonda, 2011), or free-play (Pancsofar & Vernon-Feagans, 2006) activities. In order to standardize the nature of the videotaped sessions, this study employed a semi-structured free-play activity during all parent-child interactions. All parent-child pairs received standard instructions to play with each other using the provided toy (i.e., play dough) for 15-minutes. Further details related to specific procedures followed are presented below in the procedures section of this chapter. The language measures for coding the quantity and quality of language are explained in the next section.

Coding Measures

Fathers' and mothers' language during the dyadic sessions was coded for its quantity and quality and child's language was coded for its quantity. To provide parent-child pairs with some time to settle in and start playing, the first minute of each videotape for both father-child and

mother-child dyads was excluded from coding. Similarly, the last minute of each videotape was excluded from coding in order to provide wrap up time to parent-child pairs before leaving.

Quantity

Total Verbal Utterances. Parental total verbal utterances accounted for all the utterances made by mothers and fathers during their respective play sessions with their child. Similarly, child total verbal utterances accounted for all the utterances made by sons or daughters during their respective dyadic play sessions with their parent. Sentences/phrases that were clearly audible and understandable were considered as the unit of utterance (Pancsofar & Vernon-Feagans, 2006; e.g., ‘What are you making?’, ‘Let’s make a car’, ‘Good job’, etc.).

The calculation of total verbal utterances also included Unorthodox Oral Expressions (UOE). UOE are described as non-verbal meaningful sounds people use naturally while communicating to send a message to the listener; however, traditionally these sounds are not a part of written language (Chittaladakorn, 2011). For example, ‘yuck!’ can be used to express disgust whereas ‘huh?’ can be used to ask a follow-up question; ‘whoops!’, ‘ouch!’, and ‘brrr’ are other expressions that convey strong emotions during verbal interactions. Because these utterances carry certain meaning and are used while communicating to respond or to elicit responses from the other person, they were coded as a part of total verbal utterances in the current study.

Quality

All parental verbal utterances (i.e., clearly audible sentences/phrases) were coded for the quality of parental language during the parent-child play session. Because it is sometimes difficult to interpret the exact meaning of a UOE, they were not coded for the quality of parental

language. Furthermore, parents' language was not assessed in terms of its grammaticality, nor its effectiveness in shaping child verbal or nonverbal behavior.

Questions (Open-ended/Closed-ended). All utterances that would be punctuated with a question mark (Pancsofar & Vernon-Feagans, 2006) if written were considered as questions. The questions that required the child to respond using a multi-word phrase or more were considered open-ended questions; however, the questions that could be answered with a yes/no or one-word response (e.g., "OK") were considered closed-ended questions. Examples of open ended questions would include: 'What did you do today?', 'How did you make that strawberry?'. In contrast, the examples of closed-ended questions would include: 'Do you want green color play dough?', 'What is the color of this bottle?'. Any questions that parents repeated back to back to get the attention of the child were counted once only. However, if the parent asked the same question in a different context or instance, then it was counted as another utterance. Even if the child gave no response or made nonsensical noises, the question asked by the parents was counted. Requests for repetition were coded as closed or open-ended questions depending on the length of children's original utterances. Specifically, if a child's original utterance was more than one word long then it was coded as an open-ended question whereas if it was coded as closed-ended question if it contained only one word. For example, if the child had said, 'the bananas are yellow' and the parent had asked the child to repeat this utterance by saying 'what?' or 'can you repeat?' then this parental utterance was coded as an open-ended question. On the other hand, if the child had said, 'car' and the parent had asked the child to repeat then this parental utterance was coded as a closed-ended question. The proportions of open-ended questions and yes/no questions were calculated once all the videotapes were coded for parental language.

Directives. Kronhaber and Marcos (2000) proposed two kinds of directives: (1) action directives and (2) requests for information and confirmation. Action directives were defined as the utterances that provide instructions to the child for doing a task, prohibitions, or commands. The requests for information and confirmation referred to the questions that were asked to the child by the parent. Because questions were coded separately, the directives in this study were similar to the action directives. Some examples of directives would include: ‘Hold this play dough for me’, ‘Move your hand’, etc.

Declaratives. The utterances that were neither questions nor directives (e.g., comments, descriptions) were considered as declaratives (Clearfield & Nelson, 2006). Parental utterances explaining their child’s actions (e.g., “you are taking that”), explaining something to the child (e.g., “yes this is a dog, it barks”), praising the child (e.g., “good job”), and others (the ones that did not fit in any other category) were considered under the category of declaratives.

Procedures

An initial list of child-care centers that were known to serve low-SES populations was created. The private child-care centers were listed as serving low-SES children on the basis of prior projects conducted in those schools. The Head Start Centers were included in the list because they primarily enroll children who are from low-income families and who provide documentation to prove this status (see Appendix D). As a first step in the recruitment process, I approached the directors of the child-care centers that were shortlisted to obtain their consent for collecting data. After receiving the director’s consent from a child-care facility, I delivered the study flyers to the classroom teachers so that they could distribute them to the parents of age-eligible children. Alternatively, I distributed the flyers directly to the parents (if permitted by the center authorities) during the pickup/drop off time. The flyers included a brief description of my

research study and a form for parents to provide their contact information and return to their child's class teacher who further passed the form to the primary researcher. Interested fathers and mothers were then approached during phase I and phase II, respectively to schedule a date and time when they could come to their child's childcare center for an approximately 30-minute session that included completion of the consent form, demographic survey, and a 15-minute play session. The sessions were scheduled according to parents' convenience and feasibility. All of the dyadic sessions were videotaped in a separate quiet area at children's respective childcare facilities.

Play dough has been used in several research studies for preschool classroom and parent-child dyadic activities (e.g., Cabell, McGinty, DeCoster, Forston, & Justice, 2013; Girolametto & Weitzman, 2002; Rodriguez & Tamis-LeMonda, 2011) as it appears to be successful in evoking children to talk. In addition, given that play dough is a gender-neutral toy, it was deemed appropriate to use during the free-play sessions in the current study. Each parent-child pair received a free meal coupon (approximately \$7) to a local restaurant after the play session as a gift.

I collected pilot data myself and video recorded the procedures to make master tapes. Treated as containing the gold standard procedures, these master tapes were then used to train other research assistants for data collection. In addition, I observed at least one live session conducted by each research assistant to make sure they followed the appropriate protocol. Two assistants were trained to collect data (one in phase I and one in phase II). Phase I data were collected during spring 2015, summer 2015, and fall 2015 sessions and phase II data were collected during spring 2016, summer 2016, and fall 2016 sessions.

Sequence of Data Collection

Once the parent-child pair arrived at the child-care center for their scheduled appointment, they were directed to a quiet area in the child's child-care facility that had appropriate furniture (chairs and tables) for adults and children. Once seated, parents were provided a consent form with instructions to read it carefully and to give or not give their consent to participate in the study as they deemed appropriate. At the same time, a verbal assent (Appendix E) for participating in the study was obtained from each child. Parents who gave their consent to participate in the study were then asked to complete a demographic survey (Appendix C).

Distinct scripted task-related descriptions (see Appendix F) were provided to the parents twice during the session: the first set of instructions was related to the completion of the consent form and the demographic survey; the second set of instructions was related to the play session, which parents received along with the play dough and common accessories (e.g., cutters, blocks) once the parent's consent, the child's assent, and completed demographic survey were obtained. In the second set of instructions, parents were told to play with their child for approximately 15 minutes, as they would normally do at home. Parents were also told that the researcher would leave the room and come back in 15 minutes when it was time to wrap up. I examined each tape for its viability (i.e., if standard procedures were followed), usability (i.e., if there were any technical issues), and audibility (if the utterances were audible and understandable). The screening for global quality was completed within two days of recording. The first one minute and the last one minute of each video was excluded from coding so that the parent and child received some time to settle in and to leave the session.

Data Coding Protocols

This section provides detailed description of the training process for coders followed by the coding process itself.

Training. Two research assistants were trained to code the quantity and quality of parental language and the quantity of child language during the father-child and mother-child videotaped sessions. Out of the two, one research assistant coded data from both phases (i.e., phase I & phase II) whereas the other coded data from only phase I. For the purpose of training, a 15-minute videotape was divided into three equal sections of 5-minute each. At first, a codebook including the operational definitions of all of the language measures was provided to the trainees. At this time, the trainees also familiarized themselves with the three parts of the coding packet (Appendix G), which is described below. After receiving the coding instructions, the trainee coders received a 5-minute videotape of parent-child play session and the coding packet to code and record the coding respectively. Once the trainee coders finished their coding on the 5-minute videotape, their codes were compared with that of the primary researcher to check for reliability. The trainee coders who achieved a reliability score of 90% or above were considered trained and were allowed to code actual videotapes. However, if they did not achieve the desired reliability score of 90% then they received another 5-minute videotape to code and the process was repeated until the trainee coder achieved reliability. The trainee coders received a maximum number of six attempts to attain reliability and be able to code actual videotapes. For the two coders who achieved 90% of reliability with the primary researcher, a drift check was performed after every 15 videotapes to make sure they remained consistent throughout.

Coding. The trainers were provided with a coding packet (see Appendix G) that included three separate sections (i.e., videotape information, coding sheets, and the coding summary) to

code the videotapes. The first section of the coding packet was ‘videotape information’ that required the coder to complete participant details and coder identification information (so that any confusions related to the coding could be traced back to the coder). The actual coding details were completed in the second section of the coding packet (i.e., coding sheets), which contained three columns labeled as number of utterance, time, and code. All the clearly audible and understandable utterances were coded for parental use of closed-ended questions (QC), open-ended questions (QO), directives (DI), declaratives (DE), repetition of self (RS), repetition of child (RC), unorthodox oral expression (UOE), and true sounds (TS). The final section of the coding packet was the ‘coding summary’ on which coders computed and recorded the total number of quantity and quality measures of parental language. Specifically, they counted the separate number of parental QC, QO, DI, DE, RS, RC, UOE, and TS and then computed the sum of all these measures for the quantity of parental language (i.e., total number of utterances). The quantity of child’s language (i.e., total verbal utterances) during the videotaped session was coded on a separate coding sheet (see Appendix H). In instances where a coder was not sure about a particular code, she discussed it with the second coder. I intervened to make final decisions in cases where the two coders were unable to reach a consensus. Also, during phase II, there was only one coder; as such the coder and I discussed all the confusions. .

CHAPTER 4

RESULTS

Data collected from 61 father-child dyads (32 father-daughter; 29 father-son) and 51 mother-child dyads (26 mother-daughter; 24 mother-son) were used to address the two research questions of this study. First, the raw measures of quantity and quality language variables were computed to derive the measures of parental utterances per minute (i.e., total number of parental utterances/total duration in minutes), child utterances per minute (total number of child utterances/total duration in minutes), parental proportions of closed-ended questions (total number of closed-ended questions/ total number of parental utterances), proportions of open-ended questions (total number of open-ended questions/ total number of parental utterances), proportions of directives (total number of directives/ total number of parental utterances), and proportions of declaratives (total number of declaratives/ total number of parental utterances). Second, underlying assumptions for conducting parametric statistical analyses, i.e., multivariate analyses of variance (MANOVAs), were evaluated. Third, separate MANOVAs were conducted to compare the four groups of this study on all parental and child language variables. Finally, exploratory analyses were conducted to examine the differences/similarities in significant bivariate correlations among the four groups of this study.

Descriptive Statistics

The descriptive statistics including means, standard deviations, and ranges for the duration of videotaped sessions, parental quantity and quality of count-based language are presented in Table 4. As well, Table 5 presents the descriptive statistics for children's quantity of language (both count and proportion based) and parental proportion-based quantity and quality of language.

All father-child and mother-child pairs received the same instructions to play with each other for approximately 15 minutes while the researcher was keeping track of time outside of the room; however, there were variations in the total time that parent-child pairs spent with each other. This was because some parent-child pairs took more time to wrap-up and ended up spending more time with each other, whereas others stopped playing and walked out of the room before 15 minutes were over.

Table 4

Means, Standard Deviations, and Range for Videotaped Sessions and Parental Count-based Language Variables

Variables	Mean (<i>SD</i>)				
	Range				
	F-D (<i>n</i> =32)	F-S (<i>n</i> =29)	M-D (<i>n</i> =26)	M-S (<i>n</i> =25)	Overall (<i>n</i> =112)
Session time (in minutes)	15.5(1.3) 14.0-19.4	15.7 (1.4) 13.0-19.2	14.9 (1.5) 11.2-17.3	14.5 (1.9) 8.0-17.6	15.2 (1.5) 8.0-19.4
Quantity of Parental Language					
Total verbal utterances	266.5(94.8) 80.0-478.0	258.1(114.0) 65.0-484.0	238.2(81.6) 108.0-397.0	253.1(111.1) 77.0-549.0	254.8(100.3) 65.0-549.0
Quality of Parental Language					
# closed-ended Qs	45.1(25.4) 13.0-100.0	42.8 (21.4) 10.0- 86.0	40.7(22.6) 8.0-103.0	43.0(22.8) 3.0-100.0	43.0(22.9) 3.0- 103.0
# open-ended Qs	13.7 (8.7) 1.0-34.0	10.0 (7.1) 0.0-22.0	14.1(10.5) 2.0-37.0	15.56(12.0) 0.0-48.0	13.2(9.7) 0.0-48.0
# directives	42.3 (23.5) 5.0-103.0	50.7 (28.0) 4.0-104.0	36.0(24.5) 2.0-121.0	44.8(29.6) 5.0-126.0	43.6(26.5) 2.0-126.0
# of declaratives	111.8(42.3) 22.0-204.0	113.5 (56.0) 24.0-239.0	110.3(36.1) 64.0-210.0	107.4(64.5) 5.0-298.0	110.9(50.0) 5.0-298.0

Note. F-D = Father-Daughter group; F-S= Father-Son group; M-D= Mother-Daughter group; M-S= Mother-Son group. SD= Standard Deviation. Shaded rows represent range.

As presented in Table 4, on average mothers' play sessions with their children were descriptively a little shorter than that of fathers' with the shortest videotaped play session being

in the mother-son group (8 minutes). In terms of parental quantity of language, the father-daughter group had the highest mean for total verbal utterances followed by father-son, mother-son, and mother-daughter groups. However, unlike total verbal utterances, the mother-son group had a higher mean than the father-son group on the utterances per minute measure of parental quantity of language.

Table 5

Means, standard deviations, and range for quantity of child language and parental proportion-based language variables

Variables	Mean (SD)				
	Range				
	F-D (<i>n</i> =32)	F-S (<i>n</i> =29)	M-D (<i>n</i> =26)	M-S (<i>n</i> =25)	Overall (<i>n</i> =112)
Quantity of Child Language					
Total verbal utterances	154.8(60.4) 18.0-246.0	135.7(55.1) 18.0-239.0	156.2(57.0) 53.0-283.0	135.4(52.1) 45.0-228.0	145.8(56.6) 18.0-283.0
Utterances per minute	9.9(3.7) 1.2-16.0	8.7 (3.6) 1.2-15.7	10.5(3.8) 4.2-19.3	9.3 (3.3) 3.3-16.1	9.6(3.6) 1.2-19.3
Quantity of Parental Language					
Utterances per minute	17.3(6.4) 5.2-33.2	16.3 (6.8) 4.2-29.6	16.1(5.5) 7.4-28.0	17.4(7.0) 5.4-36.9	16.8(6.4) 4.2-36.9
Quality of Parental Language					
% closed-ended Qs	17.0 (6.4) 3.8-29.6	16.9 (6.0) 9.1-32.7	16.5(5.5) 6.9-28.0	16.8(6.2) 2.9-30.5	16.8(6.0) 2.9-32.7
% open-ended Qs	5.3 (2.9) 1.0-34.0	4.2 (2.6) 0.0-22.0	5.6(3.3) 2.0-37.0	6.7(5.9) 0.0-48.0	5.4(3.9) 0.0-48.0
% directives	16.2 (7.6) 2.3-32.7	19.1 (6.7) 6.2-31.3	14.4 (6.7) 1.9-30.5	18.1(9.5) 4.1-49.6	17.0(7.8) 1.9-49.7
% declaratives	42.4 (8.9) 14.6-60.3	43.3 (7.5) 29.6-15.7	47.7 (8.5) 31.8-67.4	41.9(14.1) 2.0-64.3	43.8(10.0) 2.0-67.4

Note. F-D = Father-Daughter group; F-S= Father-Son group; M-D= Mother-Daughter group; M-S= Mother-Son group; SD= Standard Deviation. Shaded rows represent range.

On average, children's quantity of language (both total verbal utterances and utterances per minute) was descriptively highest in the mother-daughter group followed by the father-daughter group. Children's means for total verbal utterances seemed similar in both mother-son and father-son groups but the father-son group had a higher mean than the mother-son group on the measure of utterances per minute.

In terms of parental quality of language, the father-daughter group had the highest mean on number/proportion of closed-ended questions whereas the mother-son group had the highest raw mean on number/proportion of open-ended questions. The average was highest for directives in the father-son group both count wise and proportionately. At the same time, the mean for number of declaratives was highest in the father-son group but the mean for proportion of declaratives was highest in the mother-daughter group.

Although means and standard deviations present a useful understanding of the data, they do tend to be influenced by other aspects of data, (e.g., outliers). Therefore, interpretations based only on means and standard deviations can sometimes be misleading. For example, the mean for parental number of declaratives was lowest in the mother-son group; however, the highest and lowest number of declaratives as suggested by the range also belonged to this group. In order to gain deeper understanding of the data and to evaluate the underlying assumptions of various parametric statistical tests, it is important to closely assess the distributions of all target variables.

In order to gain further understanding of associations among parent and child language variables in the four groups of this study, I conducted correlational analyses before proceeding to MANOVAs. Two sets of bivariate correlations: among parental and child count-based language variables and among parental and child proportion-based language variables, are presented in the next section.

Bivariate Correlations

Overall bivariate correlations among count-based parental quantity/quality and children's quantity of language variables are presented in Table 6. Bivariate correlations for father-child groups and mother child groups are presented in Table 7 and Table 8 respectively. Considering the significant differences in parental income among the four groups of this study, I included this variable in the bivariate correlations to see how it associated with the parental and child language measures. As depicted in Table 6, parental annual household income was significantly associated with parental number of closed-ended questions in the overall bivariate correlations. Moreover, it had one significant association with parental number of declaratives in father-daughter group (see Table 7). Although parental income did not have any additional significant correlations with any other parental/child language measure, some interesting patterns across groups emerged in the observed associations among various parental and child language variables of this study. In particular, unlike the other three groups, child total verbal utterances was not associated with any of the parental language variables in the mother-son group.

Table 6

Overall: Bivariate Correlations Among Parental Annual Household Income and Count-based Parent and Child Language Variables

Variables	1	2	3	4	5	6	7
1. Parental income	--						
	Quantity of Parental Language						
2. Total verbal utterances	.12	--					
	Quantity of Parental Language						
3. No. of closed-ended Qs	.20*	.72**	--				
4. No. of open-ended Qs	.10	.31**	.35**	--			
5. No. of directives	-.02	.64**	.36**	.09	--		
6. No. of declaratives	.12	.84	.61**	.22*	.33	--	
	Quantity of Children's Language						
7. Total verbal utterances	.14	.18	.15	.28*	.00	.27*	--

Note. ** $p \leq .001$, * $p \leq .05$.

Table 7

Father-daughter and Father-son Groups: Bivariate Correlations Among Parental Annual Household Income and Count-based Parent and Child Language Variables

Variables	1	2	3	4	5	6	7
1. Parental income	--	-.13	-.08	.02	-.11	-.10	.16
			Quantity of Parental Language				
2. Total verbal utterances	.28	--	.77*	.38*	.84**	.95**	.33
			Quantity of Parental Language				
3. No. of closed-ended Qs	.34	.60**	--	.42*	.63**	.61**	.20
4. No. of open-ended Qs	.22	.29	.28	--	.06	.36	.00
5. No. of directives	-.08	.51*	.28	-.16	--	.71**	.21
6. No. of declaratives	.39*	.73**	.64**	.55**	.22	--	.42*
			Quantity of Children's Language				
7. Total verbal utterances	.21	.13	.12	.36	-.07	.34	--

Note. Bivariate correlations for the father-daughter group ($n = 32$) are presented below the diagonal, and bivariate correlations for the father-son group ($n = 28$) are presented above the diagonal.

** $p \leq .001$, * $p \leq .05$.

Table 8

Mother-daughter and Mother-son Groups: Bivariate Correlations Among Parental Annual Household Income and Count-based Parent and Child Language Variables

Variables	1	2	3	4	5	6	7
1. Parental income	--	-.14	-.07	.31	.11	-.25	-.12
			Quantity of Parental Language				
2. Total verbal utterances	.31	--	.80**	.17	.51*	.83**	-.10
			Quantity of Parental Language				
3. No. of closed-ended Qs	.35	.78**	--	.16	.20	.69**	-.18
4. No. of open-ended Qs	.11	.57*	.65**	--	.33	-.07	.13
5. No. of directives	.20	.67**	.35	.17	--	.04	-.03
6. No. of declaratives	.26	.85**	.58*	.32	.37	--	.03
			Quantity of Children's Language				
7. Total verbal utterances	-.04	.41*	.46*	.56*	.02	.34	--

Note. Bivariate correlations for the mother-daughter group ($n = 26$) are presented below the diagonal, and bivariate correlations for the mother-son group ($n = 25$) are presented above the diagonal.

** $p \leq .001$, * $p \leq .05$.

Notably, some significant correlations differed by the gender-matched group membership (i.e., where parent and child had the same gender). Specifically, both the father-son and mother-

daughter groups had significant positive associations between parental number of closed-ended questions and parental number of directives. Similarly, child total verbal utterances was significantly and positively associated with parental number of declaratives in the gender-matched groups. No such patterns were observed in the gender-mismatched groups.

Table 9

Overall: Bivariate Correlations Among Parental Annual Household Income and Proportion-based Parent and Child Language Variables

Variables	1	2	3	4	5	6	7
1. Parental income	--						
Quantity of Parental Language							
2. Utterances per minute	.08	--					
Quantity of Parental Language							
3. % of closed-ended Qs	.11	.00	--				
4. % of open-ended Qs	.05	-.15	.20*	--			
5. % of directives	-.09	.09	-.19*	-.11	--		
6. % of declaratives	.02	-.10	-.18	-.31**	-.56**	--	
Quantity of Children's Language							
7. Utterances per minute	.09	.11	-.07	.15	-.14	.23*	--

Note. ** $p \leq .001$, * $p \leq .05$.

The patterns of significant bivariate correlations among proportion-based parent and child language variables differed from that of count-based variables (see Table 9, Table 10, and Table 11). Parental household income had no significant associations with any parental/child language variables in the overall and the father-daughter, father-son, and mother-daughter groups. At the same time, in mother-son group, parental household income was significantly correlated with parental proportion of open-ended questions and declaratives.

Table 10

Father-daughter and Father-son Groups: Bivariate Correlations Among Parental Annual Household Income and Proportion-based Parent and Child Language Variables

Variables	1	2	3	4	5	6	7
1. Parental income	--	-.14	-.03	.00	.03	.10	.13
Quantity of Parental Language							
2. Utterances per minute	.22	--	-.06	-.28	.22	.11	.32
Quantity of Parental Language							
3. % of closed-ended Qs	.15	-.05	--	-.01	.00	-.49*	-.05
4. % of open-ended Qs	.09	-.23	.15	--	-.64**	.07	-.33
5. % of directives	-.30	-.13	-.19	-.45*	--	-.42*	.04
6. % of declaratives	.20	-.16	.01	.39*	-.37*	--	.42*
Quantity of Children's Language							
7. Utterances per minute	.18	.07	-.09	.33	-.36*	-.46*	--

Note. Bivariate correlations for the father-daughter group ($n = 32$) are presented below the diagonal, and bivariate correlations for the father-son group ($n = 28$) are presented above the diagonal.

** $p \leq .001$, * $p \leq .05$.

Table 11

Mother-daughter and Mother-son Groups: Bivariate Correlations Among Parental Annual Household Income and Proportion-based Parent and Child Language Variables

Variables	1	2	3	4	5	6	7
1. Parental Income	--	-.17	.25	.61**	.26	-.48*	-.14
Quantity of Parental Language							
2. Utterances per minute	.22	--	-.04	-.29	.00	.06	-.32
Quantity of Parental Language							
3. % of closed-ended Qs	.23	.21	--	.25	-.35	-.07	-.41*
4. % of open-ended Qs	.03	.29	.49*	--	.30	-.64**	.06
5. % of directives	.09	.41*	-.23	-.18	--	-.77**	.16
6. % of declaratives	-.12	.49*	-.35	-.53*	-.49*	--	.16
Quantity of Children's Language							
7. Utterances per minute	-.11	.38	.28	.51*	-.22	-.19	--

Note. Bivariate correlations for the mother-daughter group ($n = 26$) are presented below the diagonal, and bivariate correlations for the mother-son group ($n = 25$) are presented above the diagonal.

** $p \leq .001$, * $p \leq .05$.

As well, child quantity of language as measured through child utterances per minute was significantly associated with at least one parental language variable in all four groups. Unlike with the bivariate correlations among count-based language variables, no patterns specific to gender-matched groups were observed. Similarly, no significant correlation patterns were observed for the count-based variables in the gender-mismatched groups.

Evaluation of Assumptions

Normality

The data should meet the underlying assumptions of independence, normality and homogeneity of variances before it can be used to conduct ANOVAs (Field, 2009). The participants in the four groups of father-daughter, father-son, mother-daughter, and mother-son belonged to separate families and were independent of each other; therefore, the data in this study met the assumption of independence. The Shapiro-Wilk test of normality is a highly recommended normality test for relatively small sample sizes (i.e., less than 50; Razali & Wah, 2011); therefore, it was used to evaluate the second assumption of normality in the current study. In addition, all parental and child language variables were examined for outliers. As depicted in Table 12 the Shapiro-Wilk test revealed that the measures of quantity of parental and child language were distributed normally across the four groups of father-daughter, father-son, mother-daughter, and mother-son. However, all the parental quality of language variables were not distributed normally in at least one group.

In order to further examine the degree of non-normality, I assessed the Fisher's measure of skewness and kurtosis (i.e., skewness/S.E. and kurtosis/S.E.; Blanca et al., 2013). As presented in Table 13, the skewness and kurtosis values for parental language measures were somewhat skewed/kurtotic; however, none of the values were very high.

Table 12

Shapiro-Wilk Test of Normality

Variables	Statistic/p-value				
	F-D (<i>n</i> = 32)	F-S (<i>n</i> = 28)	M-D (<i>n</i> = 26)	M-S (<i>n</i> = 25)	Overall (<i>n</i> = 112)
Quantity of Parental Language					
Total verbal utterances	.98	.96	.96	.94	.98
Utterances per minute	.98	.96	.97	.94	.98
Quantity of Child Language					
Total verbal minute	.96	.98	.97	.96	.99
Utterances per minute	.95	.98	.97	.96	.99
Quality of Parental Language					
Number of closed-ended questions	.88**	.95	.93	.97	.95*
% of closed-ended questions	.97	.92*	.97	.99	.98
Number of open-ended questions	.95	.90*	.88*	.92*	.94**
% of open-ended questions	.98	.97	.91*	.86**	.90**
Number of directives	.94	.96	.87**	.88*	.94**
% of directives	.96	.98	.97	.90*	.98
Number of declaratives	.99	.96	.94	.89*	.95**
% of declaratives	.94	.97	.99	.90*	.97*

Note. F-D= Father-Daughter group; F-S= Father-Son group; M-D= Mother-Daughter group; M-S= Mother-Son group.

** $p \leq .001$, * $p \leq .05$

In initial analytic explorations, I conducted the analyses both with and without transforming these variables for normality; however, the results were comparable. Given that the results were similar and that it is easier to interpret the results with the non-transformed variables, I present here the analyses/results with the non-transformed variables.

Outliers

The presence of outliers in data can affect the normality of distributions and the power of statistical analyses (Osborne & Overbay, 2004); therefore, I examined all quantity and quality of parental language variables for significant outliers with absolute values higher than 2.7 standard

deviations (Glass & Hopkins, 1995). As a result, one outlier in the father-daughter group, two outliers in the mother-daughter group, and three outliers in the mother-son group were detected.

Table 13

Skewness and Kurtosis Statistics for Parent and Child Language Variables

Variables	Skewness/S.E.				Kurtosis/S.E.			
	F-D	F-S	M-D	M-S	F-D	F-S	M-D	M-S
Quantity of Parental Language								
Total Verbal Utterances	0.45	1.01	0.23	1.66	-0.30	-0.52	-0.86	1.02
Utterances Per Min	1.08	0.63	0.26	1.53	0.52	-0.86	-0.84	1.57
Quantity of Child Language								
Total Verbal Utterances	-1.45	-0.35	0.54	-0.09	-0.27	-0.78	-0.14	-0.55
Utterances Per Min	-1.70	-0.05	0.88	0.43	0.06	-0.68	-0.14	-0.03
Quality of Parental Language								
No. of Close-Ended Qs	2.27	0.75	2.19	1.26	-0.15	-1.09	1.10	0.57
% of Close-Ended Qs	0.69	2.36	0.44	0.15	-0.25	0.91	-0.08	0.29
No. of Open-Ended Qs	1.46	1.16	2.07	2.29	-0.04	-1.36	-0.08	1.29
% of Open-Ended Qs	0.58	0.91	2.04	3.08	-0.58	-0.15	0.20	1.94
No. of Directives	2.15	0.74	3.69	2.82	-1.11	-0.94	5.25	1.58
% of Directives	0.87	0.07	0.86	3.25	-0.69	-0.56	-0.13	4.36
No. of Declaratives	0.35	1.28	1.98	2.81	-0.43	-0.36	0.97	2.86
% of Declaratives	-2.38	0.56	0.45	-2.79	2.91	-0.03	-0.05	2.41

Note: F-D= Father-Daughter group; F-S= Father-Son group; M-D= Mother-Daughter group; M-S= Mother-Son group.

Two out of six cases were outliers in more than one variable. In the first case, a mother's use of number/proportional directives was relatively high in the mother-son group; however, she also used a relatively lower proportion of declaratives during her verbal interaction with her son. At the same time, a mother in the mother-daughter group exhibited use of both a number of closed-ended questions and a number of declaratives that were relatively high. In contrast, the other four cases were outliers in only one category (i.e., one in proportion of declaratives in the

father-daughter group, one in number of directives in mother-daughter group, one in proportion of open-ended questions in mother-son group, and one in number of declaratives in mother-son group). When dealing with outliers, it is suggested to remove an outlier case only if there is a good reason to believe that it does not belong to the target population (Field, 2009). Upon examination, it appeared that the detected six outliers were very similar to the rest of the population demographically; therefore, I decided not to remove these cases from the dataset.

Before conducting a MANOVA, the assumption of homogeneity of variance should be tested (Field, 2009). Homogeneity of variances in the current study would imply that the four groups have equal variances across all measured response variables.

Table 14
Results of Levene's Test of Homogeneity of Variance

Variable	Statistic F (3, 108)	<i>p</i> -value
Quantity of Parental Language		
Total verbal utterances	0.83	0.48
Utterances per minute	0.41	0.75
Quantity of Child Language		
Total verbal output	0.30	0.82
Utterances per minute	0.35	0.79
Quality of Parental Language		
Number of closed-ended questions	0.04	0.81
% of closed-ended questions	0.16	0.90
Number of open-ended questions	0.59	0.33
% of open-ended questions	1.98	0.01
Number of directives	0.24	0.56
% of directives	0.47	0.70
Number of declaratives	1.54	0.22
% of declaratives	1.98	0.10

The Levene's test of homogeneity of variance presented in Table 14 indicated that the four groups in the current study had equal variances for all the measures of quantity and quality of language except parental proportion of open-ended questions.

Partial Correlations

Given that the mother-son group differed from other three groups of this study on the demographic variable of parental household income, I decided to conduct two sets of partial correlations among parental and child language variables controlling for parental household income.

As presented in Table 15 the first set of partial correlations included overall correlations for count-based parental quantity/quality and child quality of language variables. The second set (see Table 16) and third set (see Table 17) of partial correlations depicts correlations for count-based language variables for father-child groups and mother-child groups respectively.

Table 15

Overall: Partial Correlations Among Count-based Parental and Child Language Variables

Variables	1	2	3	4	5	6
Quantity of parental language						
1. Total verbal utterances	--					
Quantity of parental language						
2. No. of closed-ended Qs	.71**	--				
3. No. of open-ended Qs	.30*	.34**	--			
4. No. of directives	.64**	.37**	.09	--		
5. No. of declaratives	.84**	.60**	.21*	.33**	--	
Quantity of children's language						
6. Total verbal utterances	.17	.13	.27*	.01	.25*	--

Note. ** $p \leq .001$, * $p \leq .05$.

A comparison between bivariate correlations and partial correlations among count-based parental quantity and quality and child quantity language variables revealed differences in

significant associations in the father-daughter and mother-daughter groups. In particular, the association between parental number of declaratives and child total verbal utterances was no longer significant after controlling for parental household income. Another significant bivariate correlation that was no longer significant after controlling for parental household income in the father-daughter group was the association between parental closed-ended questions and open-ended questions.

Table 16

Father-daughter and Father-son Groups: Partial Correlations Among Count-based Parent and Child Language Variables

Variables	1	2	3	4	5	6
		Quantity of fathers' language				
1. Total verbal utterances	--	.76**	.39*	.84**	.95**	.36
		Quantity of parental language				
2. No. of closed-ended Qs	.56**	--	.43*	.63**	.61**	.22
3. No. of open-ended Qs	.24	.22	--	.06	.37	.00
4. No. of directives	.56**	.32	-.14	--	.71**	.23
5. No. of declaratives	.70**	.55*	.51*	.27	--	.45*
		Quantity of children's language				
6. Total verbal utterances	.08	.05	.33	-.06	.28	--

Note. Partial correlations for the father-daughter group ($n = 32$) are presented below the diagonal, and bivariate correlations for the father-son group ($n = 28$) are presented above the diagonal.

** $p \leq .001$, * $p \leq .05$.

Similarly, in the mother-daughter group, the associations between parental number of closed-ended questions and parental number of directives, and parental number of open-ended questions and parental number of declaratives were no longer significant after controlling for parental household income. All other significant correlations among parental quantity and quality

and child quantity count-based language variables remained similar even after controlling for parental household income.

The partial correlations for proportion-based parent and child language variables are presented in (Table 18, Table 19, and Table 20). All significant correlations among proportion-based parental quantity/quality and child quantity language variables but one in the father-daughter group and one in the mother-son group remained similar even after controlling for parental household income. Specifically, the negative correlation between child utterances per minute and parental proportion of directives was no longer significant in the partial correlations. At the same time, a negative association between parental proportion of closed-ended questions and parental proportion of directives became significant after controlling for parental household income.

Table 17

Mother-daughter and Mother-son Groups: Partial Correlations Among Count-based Parent and Child Language Variables

Variables	1	2	3	4	5	6
		Quantity of parental language				
1. Total verbal utterances	--	.80**	.22	.53*	.83*	-.12
		Quantity of parental language				
2. No. of closed-ended Qs	.75**	--	.19	.20	.70**	-.19
3. No. of open-ended Qs	.57*	.66**	--	.31	.01	.18
4. No. of directives	.66**	.31	.15	--	.07	-.01
5. No. of declaratives	.84**	.54*	.31	.34	--	.00
		Quantity of children's language				
6. Total verbal utterances	.44*	.50*	.57*	.03	.36	--

Note. Partial correlations for the mother-daughter group ($n = 26$) are presented below the diagonal, and bivariate correlations for the mother-son group ($n = 25$) are presented above the diagonal.

** $p \leq .001$, * $p \leq .05$.

Table 18

Overall: Partial Correlations Among Proportion-based Parental and Child Language Variables

Variables	1	2	3	4	5	6
Quantity of parental language						
1. Utterances per minute	--					
Quantity of parental language						
2. % of closed-ended Qs	-.01	--				
3. % of open-ended Qs	-.15	.20*	--			
4. % of directives	.09	-.18	-.11	--		
5. % of declaratives	-.10	-.18	-.31**	-.56**	--	
Quantity of children's language						
6. Utterances per minute	.10	-.08	.15	-.14	.23*	--

Note. ** $p \leq .001$, * $p \leq .05$.

Table 19

Father-daughter and Father-son Groups: Partial Correlations Among Count-based Parent and Child Language Variables

Variables	1	2	3	4	5	6
Quantity of parental language						
1. Utterances per minute	--	-.07	-.28	.22	.12	.34
Quantity of parental language						
2. % of closed-ended Qs	-.09	--	-.01	.00	-.48*	-.05
3. % of open-ended Qs	-.26	.14	--	-.64**	.07	.03
4. % of directives	-.07	-.16	-.45*	--	-.42	.080
5. % of declaratives	-.22	-.02	.38*	-.33	--	.41*
Quantity of children's language						
6. Utterances per minute	.03	-.12	.32	-.33	.44*	--

Note. Partial correlations for the father-daughter group ($n = 32$) are presented below the diagonal, and bivariate correlations for the father-son group ($n = 28$) are presented above the diagonal.

** $p \leq .001$, * $p \leq .05$.

Table 20

Mother-daughter and Mother-son Groups: Partial Correlations Among Count-based Parent and Child Language Variables

Variables	1	2	3	4	5	6
		Quantity of parental language				
1. Utterances per minute	--	.00	-.23	.05	-.03	-.35
		Quantity of fathers' language				
2. % of closed-ended Qs	.17	--	.13	-.45*	.06	-.39
3. % of open-ended Qs	.29	.50*	--	.18	-.50*	.18
4. % of directives	.40*	-.26	-.19	--	-.76**	.20
5. % of declaratives	-.48*	-.34	-.53*	-.48*	--	.11
		Quantity of children's language				
6. Utterances per minute	.42*	.32	.52*	-.21	-.21	--

Note. Partial correlations for the mother-daughter group ($n = 26$) are presented below the diagonal, and bivariate correlations for the mother-son group ($n = 25$) are presented above the diagonal.

** $p \leq .001$, * $p \leq .05$.

Research Question 1

The first research question aimed to investigate if quantity (total verbal utterances/utterances per minute) and quality (number/proportion of open-ended questions, number/proportion of closed-ended questions, number/proportion of directives, number/proportion of declaratives) of parental early speech differed with their preschool aged child among the four groups of father-daughter, father-son, mother-daughter, and mother-son. In order to address this research question, two separate MANOVAs were conducted: first, to compare the four groups of father-daughter, father-son, mother-daughter, and mother-son on count-based quantity and quality of parental language; second, to compare the same four groups on proportion-based quantity and quality of parental language.

Group Comparison on Parental Quantity and Quality of Language

The research questions related to parental use of declaratives were exploratory in nature; therefore, no directional hypothesis related to these questions were generated. Compared to

fathers, mothers were expected to use more count/proportion of total utterances and closed-ended questions but to use a relatively lower count/proportion of directives with their daughters and sons; however, the results did not support these hypotheses. Also, the highest count/proportion of open-ended questions were anticipated in the father-son group, which were not in line with the results. The results for count and proportion- based variables are presented separately in the next sections.

Count-based Parental Language Comparison. The results of the MANOVA (see Table 21) comparing parental quantity and quality of language among the four groups of father-daughter, father-son, mother-daughter, and mother-son revealed no significant differences. In other words, parental quantity of language (i.e., total verbal utterances) and quality of language (i.e., number of closed-ended questions, open-ended questions, directives, and declaratives) did not differ by parental or child gender in this study. However, unlike statistical significance tests, effect sizes are not influenced by the sample size of a study and should be considered for their practical importance (Ellis & Steyn, 2003).

Table 21

MANOVA: Comparing Father-daughter, Father-son, Mother-daughter, Mother-son Groups on Parental Count-based Language Variables

	<i>F</i>	<i>df</i>	<i>p</i> - value	<i>d</i>	(1-β)
MANOVA (Wilks' Lambda)	1.05	15,287.5	0.41	0.45	0.63
		Quantity of parental language			
Total Verbal Utterances	0.39	3,108	0.76	0.21	0.13
		Quality of parental language			
No. of Closed-Ended Qs	0.17	3,108	0.91	0.14	0.08
No. of Open-Ended Qs	1.69	3,108	0.17	0.43	0.43
No. of Directives	1.46	3,108	0.23	0.40	0.38
No. of Declaratives	0.07	3,108	0.98	0.09	0.06

The Cohen's d reported as the measure of effect size was between small and medium as per the suggested benchmarks of .20, .50, and .80 for small, medium, and large effect size respectively (Cohen, 1992) for all parental language measures. In particular, parental number of open-ended questions and parental number of directives were close to medium effect sizes (i.e., $d = 0.43$ and 0.40 respectively) for differences among groups indicating the possibility of a significant p -value with an increase in sample size for these variables.

Proportion-based Parental Language Comparison. Similar to group comparisons on parental count-based variables, the MANOVA comparing father-daughter, father-son, mother-daughter, and mother-son groups on parental proportion-based quantity (i.e., utterances per minute) and quality (i.e., proportion of closed-ended questions, open-ended questions, directives, and declaratives) was not significant (see Table 22), implying that parental proportional quantity and quality of language did not differ significantly among the four groups of this study.

Table 22

MANOVA: Comparing Father-daughter, Father-son, Mother-daughter, Mother-son Groups on Parental Proportion-based Language Variables

	F	df	p - value	d	(1- β)
MANOVA (Pillai's Trace)	1.22	15,318	0.26	0.48	0.77
		Quantity of parental language			
Utterances per Minute	0.30	3,108	0.82	0.18	0.11
		Quality of parental language			
% of Closed-Ended Qs	0.03	3,108	0.99	0.06	0.05
% of Open-Ended Qs	2.05	3,108	0.11	0.48	0.51
% of Directives	1.85	3,108	0.11	0.48	0.51
% of Declaratives	0.07	3,108	0.14	0.45	0.47

Note: Robust Pillai's Trace Test was used to interpret MANCOVA values as the assumption of homogeneity of variances was violated for % of Open-ended Qs variable.

Given that the assumption of homogeneity of variance was violated for the proportion of parental open-ended questions, the statistics from the robust Pillai's Trace test were used to interpret the results of the MANOVA. Although the overall test for mean differences was not significant, the close to medium and medium effect sizes for differences among groups on parental proportion of open-ended questions (i.e., $d=0.48$), proportion of directives (i.e., $d=0.48$), and parental proportion of declaratives (i.e., $d = 0.45$) cannot be ignored as they might carry some practical significance. Furthermore, as the mother-son group was significantly different from the other three groups on parental household income, I replicated the above analyses with parental household income as a covariate (see Table 23 and Table 24). The results indicated that the four groups of father-daughter, father-son, mother-daughter, and mother-son had no significant differences on parental count-based/proportion-based quantity and quality of language variables.

Table 23

MANCOVA: Comparing Father-daughter, Father-son, Mother-daughter, Mother-son Groups on Parental Count-based Language Variables after Controlling for Parental Household Income

	<i>F</i>	<i>df</i>	<i>p</i> - value	<i>d</i>	(1- β)
MANCOVA (Wilks' Lambda)	1.05	15,284.74	0.41	0.45	0.63
Quantity of parental language					
Total Verbal Utterances	0.26	3,107	0.85	0.17	0.10
Quality of parental language					
No. of Closed-Ended Qs	0.12	3,107	0.95	0.11	0.07
No. of Open-Ended Qs	1.95	3,107	0.13	0.47	0.49
No. of Directives	1.45	3,107	0.23	0.40	0.37
No. of Declaratives	0.04	3,107	0.99	0.06	0.06

Table 24

MANCOVA: Comparing Father-daughter, Father-son, Mother-daughter, Mother-son Groups on Parental Proportion-based Language Variables After Controlling for Parental Household Income

	<i>F</i>	<i>df</i>	<i>p</i> - value	<i>d</i>	(1- β)
MANCOVA (Pillai's Trace)	1.27	15,315	0.22	0.49	0.79
Quantity of parental language					
Utterances per Minute	12.32	3,107	0.82	0.18	0.11
Quality of parental language					
% of Closed-Ended Qs	1.58	3,107	0.99	0.06	0.06
% of Open-Ended Qs	33.41	3,107	0.08	0.51	0.56
% of Directives	114.50	3,107	0.13	0.46	0.49
% of Declaratives	182.94	3,107	0.14	0.45	0.47

Note: Robust Pillai's Trace Test was used to interpret MANCOVA values as the assumption of homogeneity of variances was violated for % of Open-ended Qs variable.

Research Question 2

The purpose of the second research question of this study was to compare the four groups of father-daughter, father-son, mother-daughter, and mother-son on the two measures of child quantity of language (i.e., total verbal utterances and utterances per minute). The quantity of children's language was expected to be highest in the mother-daughter group; however, the MANOVA (see Table 25), used to answer this research question, did not provide evidence to support this hypothesis. Instead, the results indicated no significant differences in children's quantity of language among the four groups of this study. The effect sizes (*d*) for both child total verbal utterances and utterances per minute were between small and medium. These results remained the same even after controlling for parental household income (see Table 26).

Table 25

MANOVA: Comparing Father-daughter, Father-son, Mother-daughter, Mother-son Groups on Child Language Quantity

	<i>F</i>	<i>df</i>	<i>p</i> - value	<i>d</i>	(1-β)
MANOVA (Wilks' Lambda)	2.04	6,214	0.06	0.48	0.74
Total Verbal Utterances	1.15	3,108	0.33	0.36	0.30
Utterances per Minute	1.34	3,108	0.27	0.39	0.35

Table 26

MANCOVA: Comparing Father-daughter, Father-son, Mother-daughter, Mother-son Groups on Child Language Quantity After Controlling for Parental Household Income

	<i>F</i>	<i>df</i>	<i>p</i> - value	<i>d</i>	(1-β)
MANCOVA (Wilks' Lambda)	1.53	6,212	0.17	0.41	0.58
Total Verbal Utterances	0.88	3,107	0.45	0.31	0.24
Utterances per Minute	1.26	3,107	0.29	0.38	0.33

Exploratory Analysis

The patterns of significant bivariate correlations among count-based and proportion-based parental quantity and quality of language and child quantity of language appeared to differ by group. Therefore, I conducted Fisher's Z-transformations to statistically compare correlation coefficients (Olkin & Finn, 1995) among parental and child language variables among the four groups of this study. Figure 4, Figure 5, and Figure 6 present the results of Fisher's Z-test for correlation comparisons among count-based parental and child language variables. Specifically, the comparisons presented in Figure 4 include the two sets of mother/father with daughters versus sons; the two sets of daughter/son with father versus mother are presented in Figure 5; and the results depicted in Figure 6 include father-daughter versus mother-son and father-son versus

mother-daughter comparisons. It is important to note here that because the Fisher's Z-test comparisons of bivariate correlations were exploratory in this study, I did not control for type-I error; therefore, the results should be interpreted carefully. Most of the significant differences (i.e., six) in the correlation coefficients were observed in father-son versus mother-son and mother-daughter versus mother son groups. At the same time, the bivariate correlations among count-based parent and child language variables were most similar in the father-daughter and mother-son groups. Similarly, the correlation comparisons on parent and child proportion-based language variables among the four groups are presented in Figure 7, Figure 8, and Figure 9. Comparisons with most and least significant differences were father-son versus mother-daughter groups and father-daughter versus father-son groups, respectively. Overall, these results confirmed that the nature of associations among the measures of parental quantity and quality and child quantity of language differs by group.

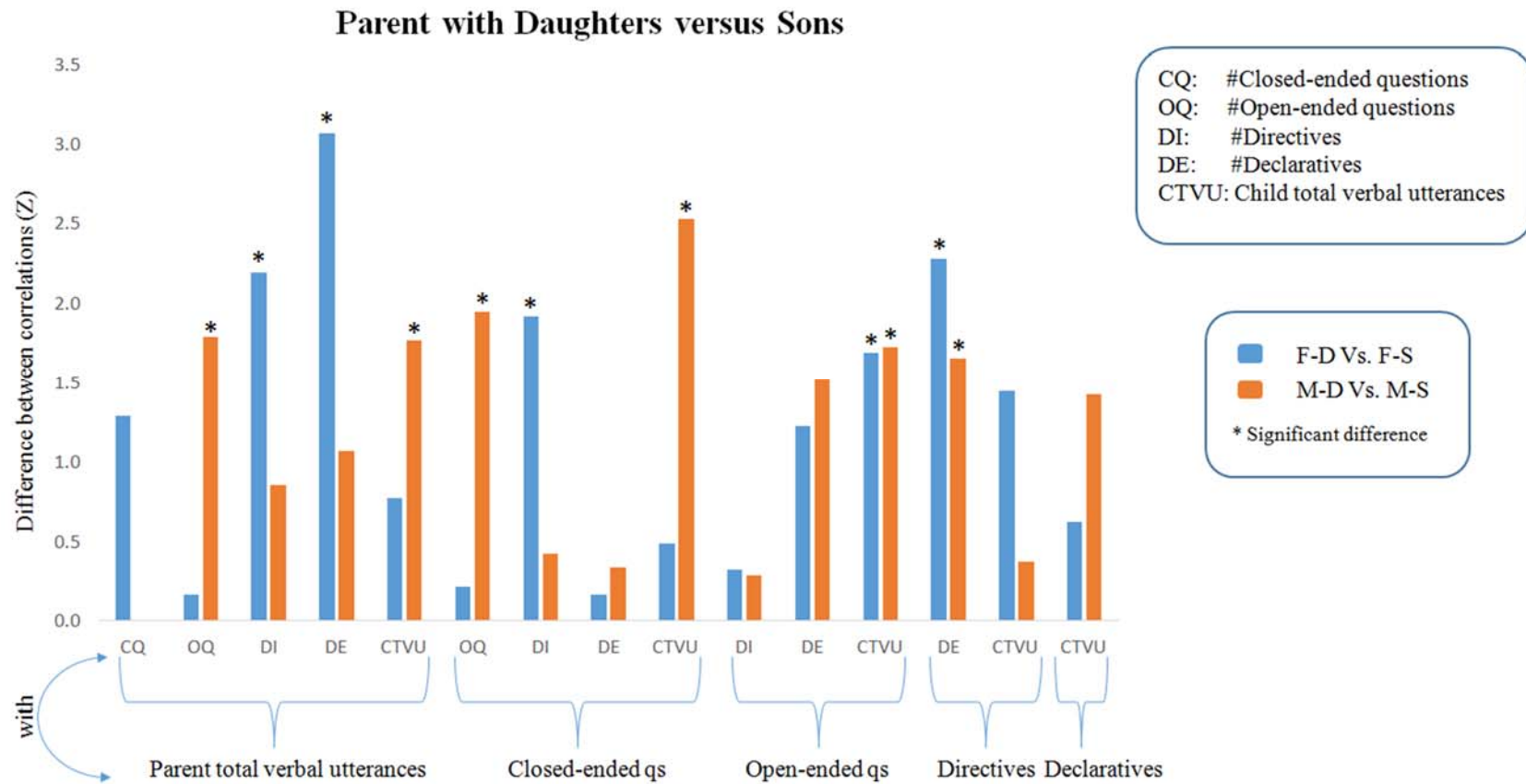


Figure 4. Count-based language: Fisher's Z-test for father-daughter versus father-son and mother-daughter versus mother-son comparisons.

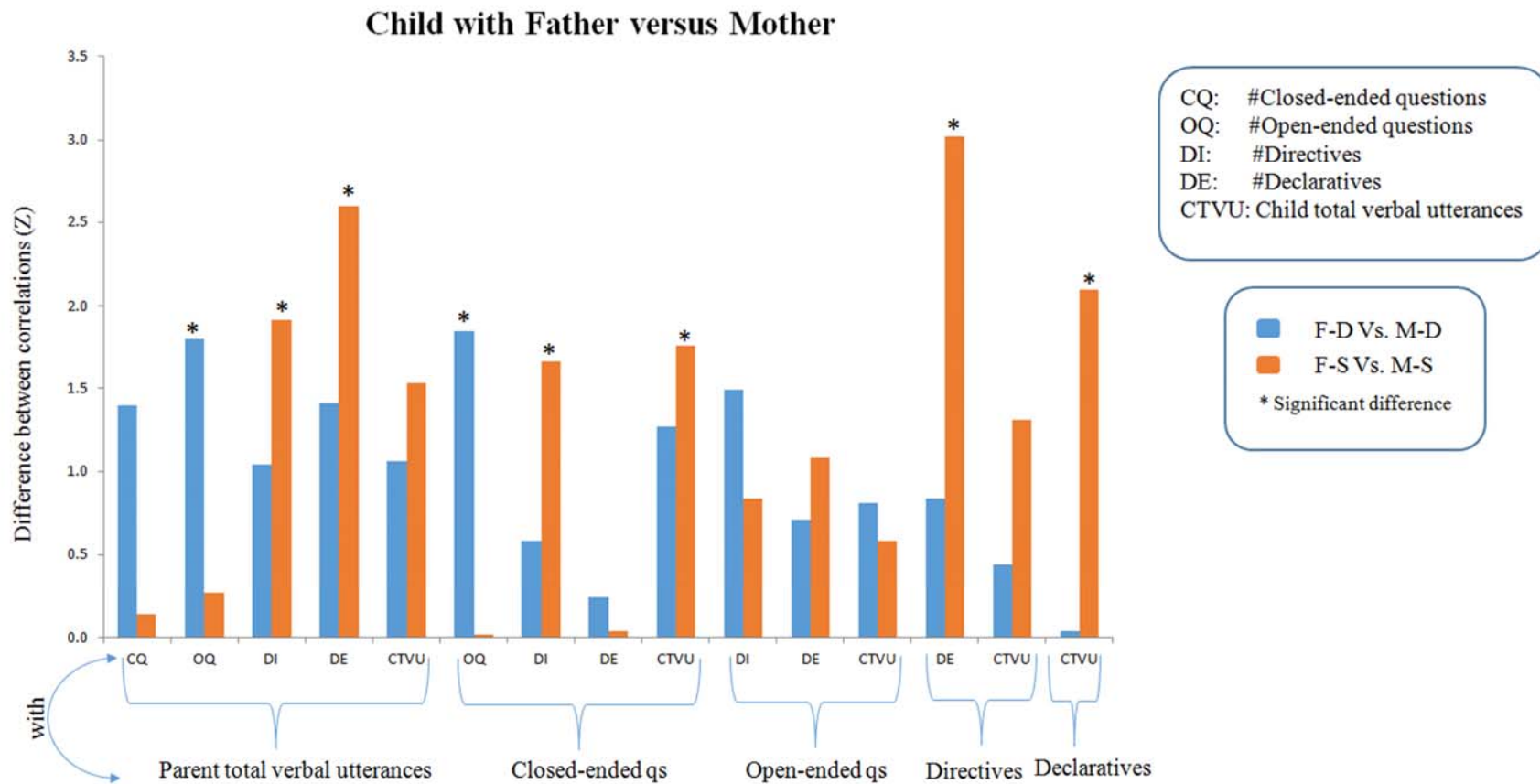


Figure 5. Count-based language: Fisher's Z-test for father-daughter versus mother-daughter and father-son versus mother-son comparisons.

Child Gender versus Parent Gender

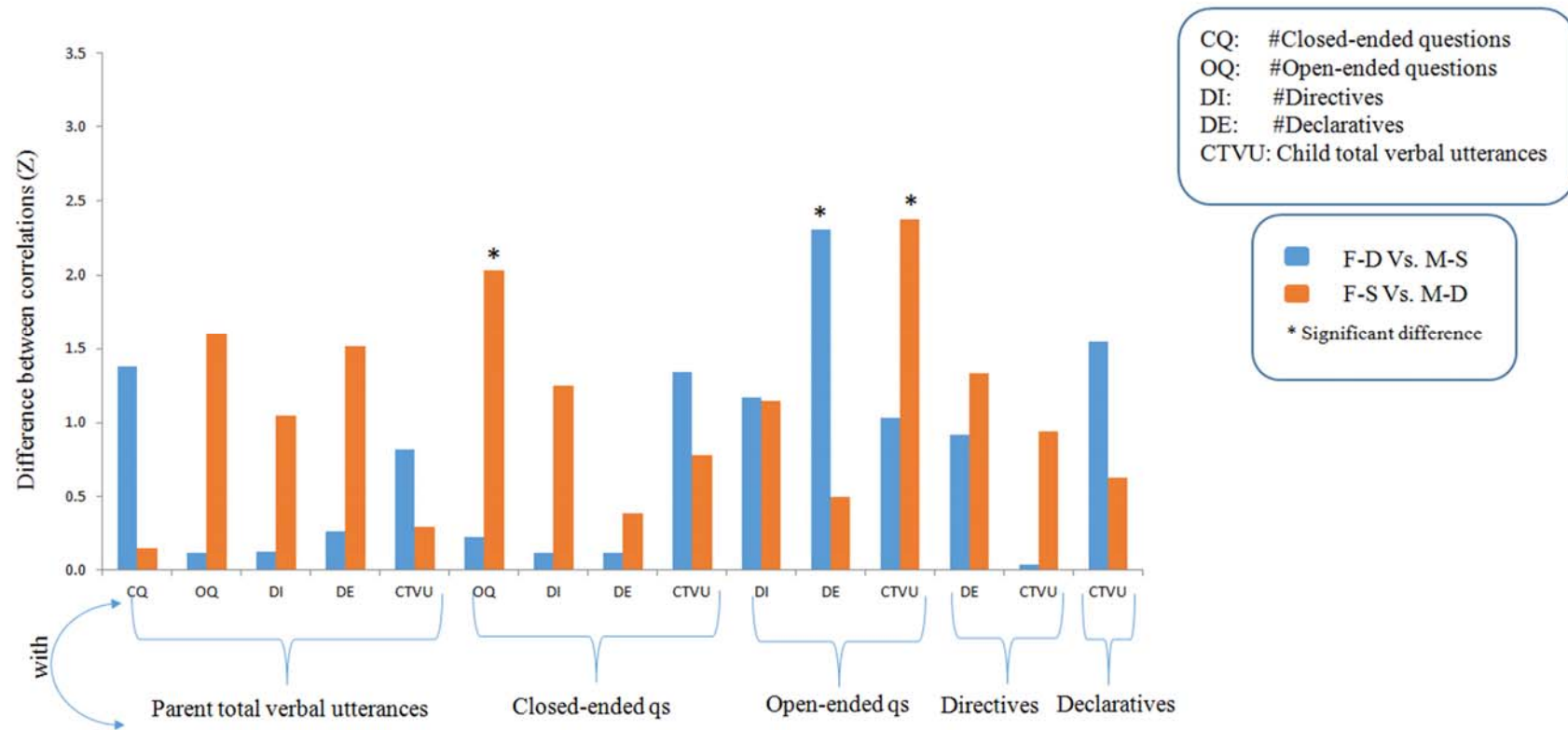


Figure 6. Count-based language: Fisher's Z-test for father-daughter versus mother-son and father-son versus mother-daughter comparisons.

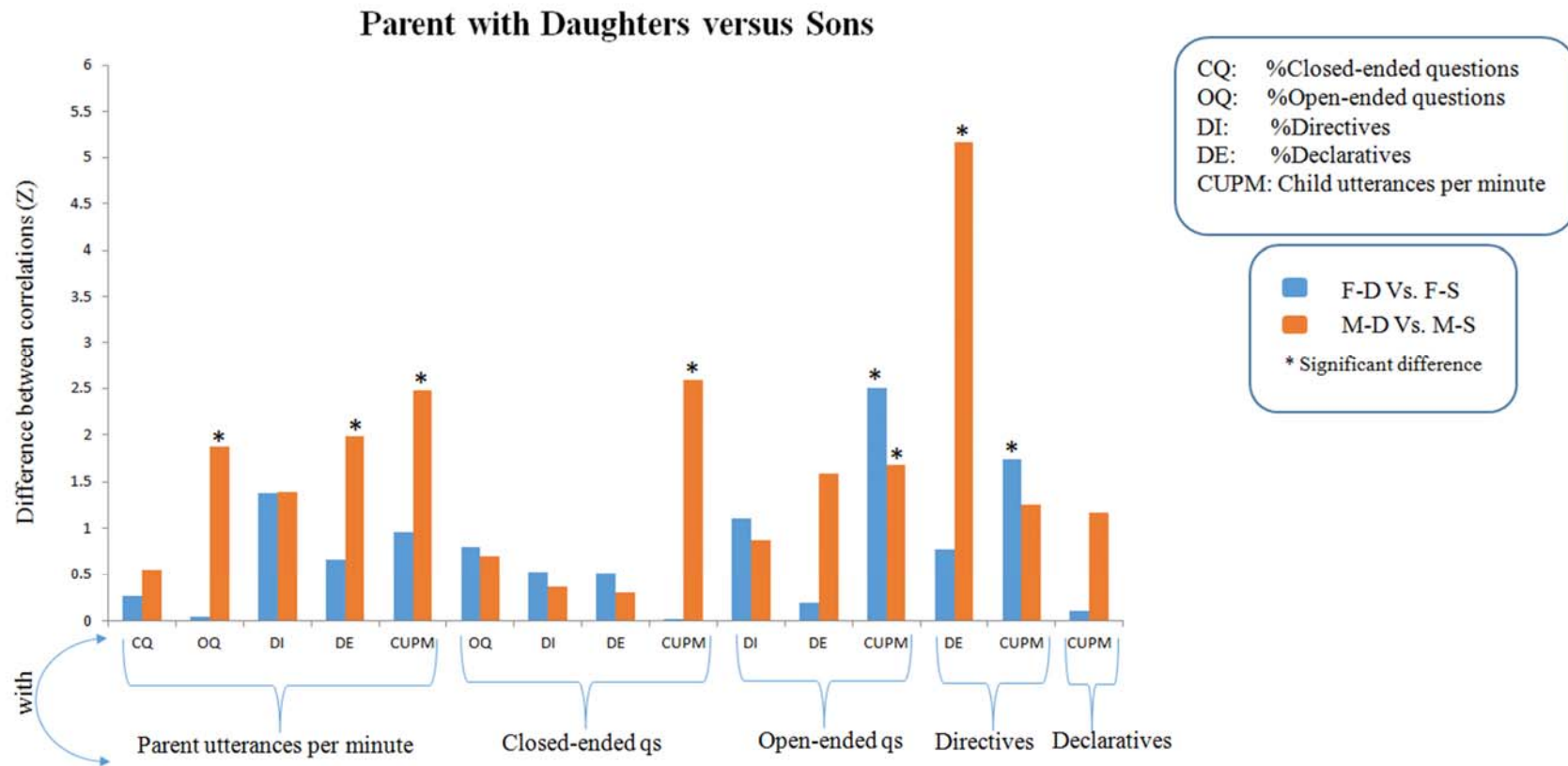


Figure 7. Proportion-based language: Fisher's Z-test for father-daughter versus father-son and mother-daughter versus mother-son comparisons.

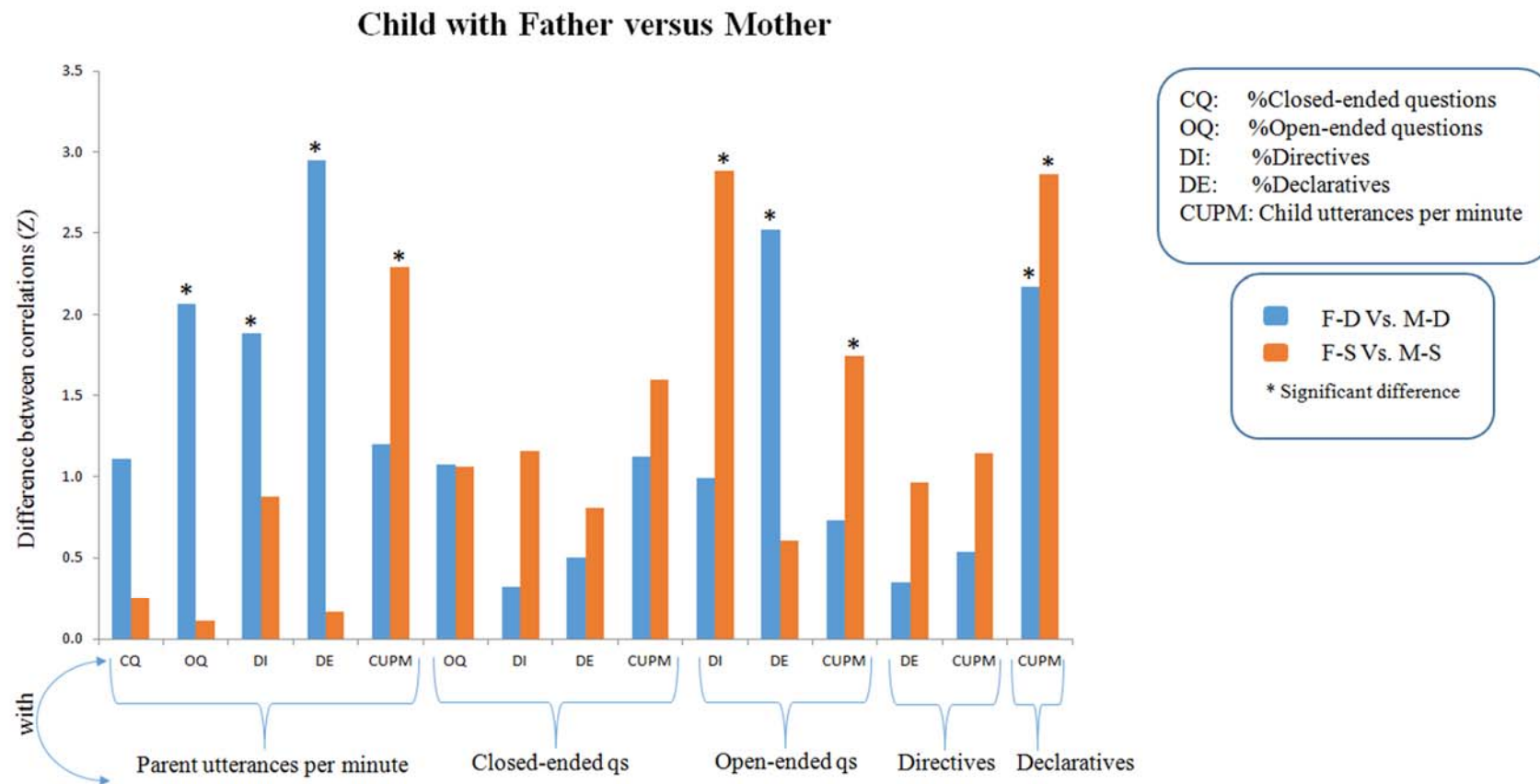


Figure 8. Proportion-based language: Fisher's Z-test for father-daughter versus mother-daughter and father-son versus mother-son comparisons.

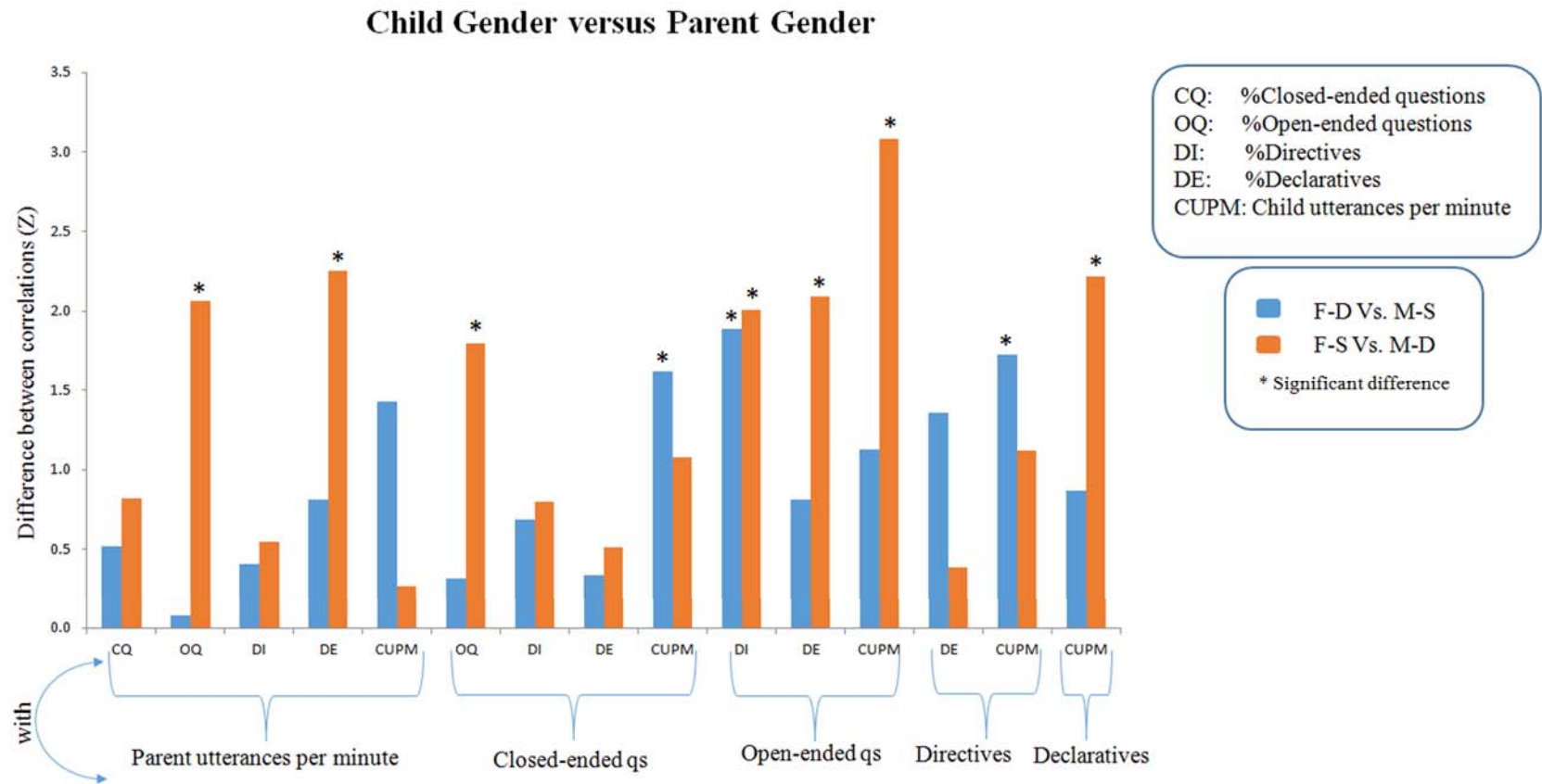


Figure 9. Proportion-based language: Fisher's Z-test for father-daughter versus mother-son and father-son versus mother-daughter comparisons.

CHAPTER 5

DISCUSSION

The current study was designed to compare the groups of father-daughter, father-son, mother-daughter, and mother-son on parental quantity and quality of language and child quantity of language during early parent-child verbal interactions. Overall, the results suggested no statistically significant differences in quantity and quality of parental language among the four groups of this study. Furthermore, no statistically significant difference was found among the four groups in terms of children's quantity of language. At the same time, the exploratory analyses indicated some statistically significant differences in bivariate correlations among parental quantity and quality and children's quantity of language. This chapter presents the discussion including implications, limitations, areas of future research, and conclusions pertaining to the findings of the current study.

Early Parent-child Verbal Interactions

The purpose of the first research question was to compare the four groups of this study on parental quantity and quality of language. On the basis of prior literature, separate hypotheses were generated for the four sub-questions with two hypotheses for each sub-question: one parent gender related and other child gender related. Considering the scarcity of research on fathers, some research questions were exploratory in nature and had no directional hypothesis. Findings related to the differences/similarities in parental language (quantity and quality) by parent gender and child gender are discussed separately below.

Mothers versus Fathers

In comparison with fathers, mothers in this study were expected to talk more with their preschool aged children. In terms of parental quality of language, mothers were expected to ask

more closed-ended question and fathers were expected to ask more open-ended questions and to use more directives during their respective dyadic verbal interactions with their children.

Although mothers and fathers were expected to differ in their use of declaratives with their children, no hypothesis related to the direction of the difference was generated. Contrary to the abovementioned hypotheses, the results of the current study indicated no parent-gender related differences in parental quantity and quality of language.

Prior studies that had found differences in mothers' and fathers' quantity and/or quality of language differed from the current study in various aspects, which might have contributed to the differential findings of this study. One of the foremost differences between this and prior studies is that most of the research comparing mothers' and fathers' early talk with their preschool aged children is more than two decades old (e.g., Bellinger & Gleason, 1982; Reese & Fivush, 1993; Roopnarine & Adams, 1987; Stuckey, McGhee, & Bell, 1982). Since then several studies have suggested a decrease in parent-gender related differences in parental early language with their children (e.g., Bingham et al., 2012; Leaper et al., 1998) primarily because of changes in family functioning over the recent decades in western countries (Cabrera et al., 2000; Dubeau, Coutu, & Lavigueur, 2013). The results of this study seem to be in alignment with this notion of a general shift in the caregiving roles of mothers and fathers that is also reflected in parents' language use with their preschool aged children.

Second, the age of children in the current study at the time of videotaping ranged from 37-60 months whereas the average age of children in most of the prior studies was either less than 36 months or more than 60 months (e.g., Leaper et al., 1998; Rowe, Coker, & Pan, 2004; Tamis-LeMonda, Baumwell, & Cristofaro, 2012). The children's age-related difference between the current and previous studies is particularly important in light of prior evidence that suggested

a moderating effect of children's age on parent-gender related differences in parental early language (Leaper et al., 1998). Connecting back to Bronfenbrenner's (1998) propositions, the child, being at the center of his bioecological model, has the potential to influence her/his own development. Possibly, as children grow older, mothers' and fathers' pragmatic language during parent-child interactions become more similar than different.

Third, aspects of the macrosystem, ethnicity and SES, in Bronfenbrenner's (1998) ecological model also seem to influence the quality of early parent-child verbal interactions. The macrosystems are the distal systems in the human development model and these systems influence child development through other systems of the model (i.e., exosystem, mesosystem, and microsystem). Despite the strong evidence for ethnicity- and/or SES- related variability in parental language (Hart & Risley, 1995; Hoff, 2003; 2006), the extant literature is both very limited and old for all measures of mothers' and fathers' quantity and quality of language pertaining specifically to interactions with 3-5-year-olds in low-SES African American families. A comparison between Rowe et al. (2004) and the current study provides evidence for possible ethnicity-related differences in mothers' and fathers' quality of language with their children. Rowe et al. examined mother-child and father-child verbal interaction in low-income White families and reported the raw means for mothers' and fathers' directives as 13.9 and 16.8, respectively. In contrast, the raw means for parental directives in father-daughter, father-son, mother-daughter, and mother-son groups in the current sample of low-income African American families were 42.3, 50.7, 36.0, and 44.8, respectively.

Similarly, a comparison among this study, Rowe et al. (2004), Bingham et al. (2012), and Tamis-LeMonda et al. (2012) suggests SES-related differences in the findings of the existing studies. All of the abovementioned studies except Bingham et al. included low-SES families in

their respective investigations and suggested no differences in mothers' versus fathers' quantity of language. On the other hand, Bingham et al. reported that mothers talked more than fathers in their primarily middle-class sample. The observed similarity in mothers' and fathers' language during early verbal interactions seems to be specific to low-SES families, which supports the findings of several prior studies (e.g., Hart & Risley, 1995; Hoff, 2006; Hoff-Ginsberg, 1991) that had suggested differences in parental language in low, mid, and high-SES families. Consequently, it can be presumed that the quantity of mothers' and fathers' language in low-SES families is more similar to each other than in middle-class families. Although mothers' and fathers' language use might be similar to each other in low-SES families, it varied within mother-child and father-child groups in the current study. Supporting the findings of Rowe, Leech, and Cabrera (2016), the big spread, as indicated by range, in the parents' quantity and quality of language appears to suggest within-group variations in the current study. For example, fathers' and mothers' number of open-ended questions during parent-child verbal interactions in this study ranged from 0-34 and 0-48, respectively. This evidence suggests that the role of SES in parental language is not black and white; instead, it is more complex, possibly due to environmental influences within SES groups, such as chaos at home (e.g., Vernon-Feagans, Garrett-Peters, Willoughby, & Mills-Koonce, 2012).

Fourth, the difference in the operational definition of the measures of parental quantity and quality of language in the current study and prior studies might have influenced the results, which was a possibility also noted in Leaper et al.'s (1998) meta-analysis. Researchers have defined measures of parental quantity and quality of language (i.e., amount of talk, questions, directives, and declaratives) in several different ways, and depending on how a particular variable was measured, the findings varied too. For example, Leaper et al. reported that the

operational definition of questions influenced not only the possibility of finding a difference between mothers' and fathers' number of questions with their children but also the direction of the effect. Additionally, they found that the operational definition had a moderating effect on differences in mothers' and fathers' quantity of language. Despite being old, these findings still seem to be true.

Finally, the interactive context (i.e., dyadic versus triadic) also appears to influence the way mothers and fathers talk with their preschool aged children. As noted in various prior studies, mothers and fathers are more similar in terms of their language use with their young children in dyadic situations than in triadic situations (e.g., Bingham et al., 2012; Golinkoff & Ames, 1979). As Bingham et al. noted, triadic and dyadic situations are fundamentally different from each other such that each participant is expected to receive fewer opportunities to talk in triadic situations. However, family dynamics also might play a role when both parents and child are interacting together (Pancsofar & Vernon-Feagans, 2006). Therefore, it is a possibility that the absence of differences in mothers' versus fathers' quantity and/or quality of language reported in the current study was due to the dyadic nature of parent-child interactions.

Cumulatively, the evidence from the current study combined with the prior studies suggests inconsistent findings in terms of parent-gender related differences in parental quantity and/or quality of language during early parent-child interactions in dyadic contexts (e.g., Bingham et al., 2012; Kornhaber & Marcos, 2000; Rowe et al., 2004; Tamis-LeMonda et al., 2012). Although it is a possibility, the extant literature is too limited to be able to make any certain claim regarding the shift in maternal and paternal roles being the source of changes in parental language with their children.

Daughters versus Sons

On the basis of prior literature, the quantity of parental language was expected to be highest in the mother-daughter group. In terms of parental questions, the highest number/proportion of closed-ended questions were expected to be in the mother-daughter and mother-son groups, and the highest number/proportion of open-ended questions were expected to be in the father-son group. It was anticipated that mothers would use more directives with their daughters but more declaratives with their sons. However, no clear related hypotheses predicting which group would have most parental directives and/or declaratives could be generated due to the lack of research on fathers' language with their daughters versus sons. The results of the current study did not support any of the hypothesized differences mentioned above as no child-gender related differences were found in either mothers' and fathers' quantity and/or quality of language with their preschool aged children.

Although limited, prior research had indicated differences in parents' quantity and/or quality of language with their sons versus daughters. Various aspects of the current study that vary from prior studies in this area might have contributed to these differential findings. One of the most important differences is that the research suggesting differences in parental speech with their daughters and sons had focused on mothers only (i.e., Cherry & Lewis, 1976; Clearfield & Nelson, 2006; Leaper et al., 1998). Furthermore, the majority of the few studies that had included both mothers and fathers in their investigations are more than three decades old (e.g., Bright & Stockdale, 1984; McLaughlin, Schutz, & White, 1980). Consequently, just the time lapse between this study and the prior studies might have led to the differential findings.

Gilkerson and Richards (2009) conducted the only other recent study that examined both mothers' and fathers' talk with their sons versus daughters. Lending support to the older

findings, they reported that mothers of daughters talked more in their study. However, the sample of their study differed from the current study in terms of one key aspect: the age of children in Gilkerson and Richards ranged from two-to-thirty months as compared to the age range of 37-60 months for participant children in the current study. Even studies investigating child-gender related differences in mothers' language were primarily conducted with 24-month-old children (e.g., Clearfield & Nelson, 2006; Cherry & Lewis, 2006). Furthermore, from their meta-analysis, Leaper et al. (1998) had reported that the magnitude of the effect size for differences in mothers' quantity and/or quality of language during parent-child interactions was significantly larger for children between 12-24 months of age than for children between 25-48 months of age. It appears that the results of the current study align with Leaper et al. in terms of finding minimal incidences of child-gender related differences in mothers' language use with preschoolers (i.e., 3-5-year-olds). Given these cumulative findings, it is a possibility that child-gender related differences in the quantity of mothers' language disappear once children have reached 36 months of age. Based on the differences related to child age in the current study and in Gilkerson and Richards, the same might be true for fathers. However, the evidence related to fathers is still too limited to make any such claim with confidence.

Despite being recent, the results of Gilkerson and Richards (2009) cannot be fully compared with the current study because although Gilkerson and Richards provided information related to the education level of the mothers included in their study, they did not give any information related to fathers' education level. Moreover, they provided mothers' education level for the full sample (i.e., $n = 329$) of the study, whereas the sample for fathers' and mothers' talk with their sons versus daughters was $n = 239$. Therefore, it is difficult to determine how many mothers with an education level of high school or below were included in this particular analysis.

Additionally, the authors provided no other demographic information (e.g., ethnicity, income level, etc.) regarding participants of the study, which makes it even more difficult to compare the results of their study and the current study. With no substantial information related to participant's demographic characteristics from Gilkerson and Richards, it is difficult to make any claim related to differences between the findings of their study and those of the current study.

Interestingly, prior findings had predominantly suggested that mothers talk more with daughters; however, even the means for mothers' quantity of language in this study were higher in the mother-son group (total verbal utterances= 253.1; utterances per minute= 17.4) than in the mother-daughter group (total verbal utterances= 238.2; utterances per minute= 16.1).

Furthermore, in terms of fathers' quantity of language with sons versus daughters, the findings of the current study were not in line with the results of Gilkerson and Richards (2009). As opposed to Gilkerson and Richards' finding of higher paternal word counts with sons than with daughters, the raw means for fathers' quantity of language were higher for interactions with daughters (total verbal utterances= 266.5; utterances per minute= 17.3) than for interactions with sons (total verbal utterances= 258.1; utterances per minute= 16.3). There is a possibility that the difference in the ways that amount of parental talk was measured in the two studies might have contributed to the differential findings. In their meta-analysis, Leaper et al. (1998) noted that the effect size was significantly larger for observed differences in mothers' amount of talk when it was measured through total words or rate than through duration of talk or mean length of utterance. Gilkerson and Richards measured parental amount of talk through number of words whereas in the current study the measure of parental amount of talk referred to total verbal utterances (unit of utterance being sentences and/or phrases) and utterances per minute. Because this study focused primarily on type of utterances and not words, no set limit of words was prescribed for a

unit of sentence/phrase such that a unit of sentence/phrase in the current study could include 2-3 words or 4-5 words or sometimes even more depending on the individual who was talking. This choice of measure in the current study might have underrepresented the quantity of language for parents who had a tendency to use longer sentences/phrases.

As Leaper et al. (1998) reported in their meta-analysis, the type/use of toy also might have influenced the results of the current study. Researchers in several studies (e.g., Leaper, 2000; Leaper, Leve, Strasser, & Schwartz, 1995) collected data from a semi-structured play session that employed gender stereotypical (both male and female) toys in families' homes and found that the gender-typed activity influenced parents' behavior. In contrast, the semi-structured play-sessions in the current study were recorded at the children's respective childcare centers with a gender-neutral toy (i.e., play dough). Prior studies have reported diminished gender-typical behavior in parents when a specific play activity was assigned to parents and children as compared to when parent-child pairs were free to pick a toy or no toys were provided. Additionally, Lanvers (2004) suggested that a study design that used an unstructured play-session in a natural environment might be more favorable for investigating parents' gender-typed language or behavior. In light of these prior findings, it is quite possible that the nature of data collection in the current study influenced its results that indicated no differences in mothers' and fathers' early speech with sons versus daughters.

Finally, evidence indicates that as children grow older, their linguistic skills grow as well (Huttenlocher et al., 2010), which might further influence their ability to elicit language from their parents during parent-child verbal interactions (Leaper, 2013). This might be why those prior studies that found child/parent-gender related differences in parental quantity and/or quality of language with their children included children younger than 2-years of age in their respective

studies. Comparatively, by the time children are older (i.e., 36-months or above), it is possible that the child/parent-gender related differences in parental quality of pragmatic language with their children diminish. In their bioecological model of human development, Bronfenbrenner and Morris (2006) proposed that human development evolves throughout a person's life-span. Supporting this notion, it appears that the characteristics of the developing child, maturation in this case, can influence the proximal process of early parent-child verbal interactions.

Quantity of Child Language

The second research question of this study compared the father-daughter, father-son, mother-daughter, and mother-son groups on daughters' versus sons' quantity of language. Based on prior findings, daughters were anticipated to talk more with their mothers in the current study; however, the results did not support this hypothesis. Instead, children's quantity of language did not differ among the four groups of this study. Prior evidence related to gender-related differences in children's quantity of language with their parents is mixed; therefore, it is important to parse out the findings of the current study and compare them with the earlier literature. This section presents discussion of the factors that might have influenced the differential findings of the current study.

Although various research studies have reported differences in girls' and boys' verbal abilities, this might not be as true for children's talkativeness during early parent-child verbal interactions. From their meta-analysis of 79 studies, Leaper and Smith (2004) concluded that the magnitude of the effect size for gender-related differences in children's quantity of language was almost negligible. Furthermore, their analysis suggested that the differences in boys' and girls' quantity of language may decrease as they get older. Specific findings of their investigation revealed that girls are more talkative than boys during the first three years of their lives. This is

likely why several other studies that reported gender-related differences in children's early language development primarily examined children below 3-years-of age (e.g., Andersson et al., 2011; Huttenlocher et al., 1991).

Looking through the lens of Bronfenbrenner (1998), a mutual influence of both parents and children might be a reason for not finding gender-related differences in children's quantity of language with their mothers and/or fathers in the current study. Just as mothers and fathers did not differ in terms of their quantity of language with their sons versus daughters, children were very likely being responsive to the amount of stimulation they received for language use. Similar to mothers' and fathers' quantity of language, children's quantity of language as measured through total verbal utterances and utterances per minute varied largely within, rather than between, the four groups of this study. That is, individual differences between children other than their gender or their parents' gender were greater influences on their language.

It is important to consider the homogeneous sample of the current study, which included primarily African American low-SES families, while interpreting the results. Evidence from Huttenlocher et al. (2010) reported SES as a significant predictor of children's language from 14-46 months of age. At the same time, they did not find child gender to be a significant predictor of children's language during those ages. Therefore, it can be assumed that the similarity in 3-5-year old sons' and daughters' quantity of language with their mothers and fathers might be a function of their shared SES. Also, it is important to keep in mind that similar does not necessarily mean good, especially because a plethora of evidence has indicated SES-related differences in both parents' and children's language behavior (e.g., Hart & Risley, 1995; Hoff, 2003, 2006). Compared to parents in higher-SES families, parents in lower-SES families are reported to use more directives, less diverse vocabulary, talk less, and produce less language-

eliciting speech with their children (Hart & Risley, 1995; Hoff-Ginsberg, 1991; Topping, Dekhinet, & Zeedyk, 2013). Subsequently, children in lower-SES families often receive limited exposure to rich language and have less advanced linguistic skills (Hoff, 2006).

Considering that no parent or child-gender-related group differences were found in quantity/quality of parent language or quantity of child language, it seems that the results of the current study support Hyde's (2005) 'gender similarities hypothesis', which states that males and females are more similar to each other than different. Particularly within a confined range of SES, gender does not seem to be a source of variation in parents' quantity and/or quality and children's quantity of language.

Exploratory Findings

Based on observed bivariate correlations among parental quantity, quality and children's quantity of language, I conducted exploratory analyses (i.e., Fisher's Z-tests) to compare the correlation coefficients among the four groups of the current study. Because type-I error was not controlled in this analysis, it is important to interpret the results cautiously. This section presents the discussion related to the exploratory findings. Interestingly, the four groups of this study differed with respect to whether bivariate correlations among parental quantity/quality and children's quantity of language were significant.

Overall, more significant differences in correlation coefficients were observed in proportion-based analyses. For count-based variables, most of the significant differences in correlations were observed when comparing the father-son to the mother-son group. In contrast, for proportion-based analyses, most of the significant correlational differences were observed between the father-son and the mother-daughter groups. This distinction might be because the variation in length of parent-child interaction was not controlled in the count-based variables as it

was in proportion-based variables. The correlations in the father-daughter and mother-son groups were most similar to each other when the duration of parent-child sessions was allowed to vary. On the other hand, the father-son and father-daughter groups had their most similar correlations when the measures of language for parents and children were measured proportionally.

The results related to significant correlations between parental quantity/quality and children's quantity of language are in line with prior research (e.g., Cartmill et al., 2013; Cristofaro & Tamis-LeMonda, 2011). However, extending the prior findings, this study compared the magnitude and strength of these correlations among father-daughter, father-son, mother-daughter, and mother-son groups. Notably, not all aspects of parental pragmatic language were associated with children's quantity of language. Moreover, the results suggested no uniform pattern of correlations between aspects of parental quantity/quality of language and children's quantity of language among the four groups of this study. Given that I could not find any prior research investigating the association between parental quantity and quality of language with their preschool aged children, the findings of this study provide some novel insights related to fathers' and mothers' early language with their children. Precisely, these results highlight how different pragmatic features of parental language associate with each other in the four groups of this study and how these associations differ for each group. Together, the group-related differences in the correlations seem to be an indication of more complex within-group dynamics, especially due to the variations within father-daughter, father-son, mother-daughter, and mother-son groups for all parental and child language measures.

Lending support to Bronfenbrenner's (1998) ecological model, these exploratory findings highlight the bi-directional aspect of early parent-child verbal interactions. It appears that parents and children not only influence each other's language use but also that these influences vary by

group. For example, the bivariate correlation between parental proportionate usage of closed-ended questions and children's utterances per minute in this study was significant only in mother-son group. As well, given the wide spread of parental and child language measures in the father-daughter, father-son, mother-daughter, and mother-son groups, it is possible that the interaction between each dyadic pair influences the associations among specific aspects of parental and child language. Together, it appears that both parents and children had active and mutual participation in the 15-minute play-sessions that were videotaped in this study, which further suggests that instead of talking *to* their children, parents talk *with* them.

Study Limitations

Although this study provides important insights into early parent-child verbal interactions, there are some limitations that are worth mentioning here. In order to capture the most naturalistic early father-child verbal interaction, parent-child pairs were left alone for the 15-minute play session. However, I cannot be certain that the videotaped play-sessions represented the natural daily language use of both parents and their children. The fact that both parents and children were aware of the video camera in the room might have influenced their behavior in some ways. For example, the presence of the video camera might have caused mothers and fathers to either talk more or less with their child during the videotaped session. However, despite the knowledge of being videotaped, parents were not aware of the specific features of language that I was interested in observing; therefore, even if the participant parents were modifying their behavior in a particular way, they were probably unable to alter their language in each and every aspect. Additionally, whereas the play-sessions recorded in this study represented a proxy of early parent-child verbal interactions in lower-SES families, it is difficult to capture the true nature of this process. Specifically, this is because the other method that

various other researchers have used is through direct observations of parent-child interactions where a researcher is present in the room during the session. The presence of a third person in the room can also encourage parents and children to alter their behavior. Moreover, in direct observations, researchers cannot go back and replay the interaction as they can do with the videotapes. Therefore, although not exactly natural, videotaped observations without a third-party present potentially provide closer to authentic and richer information in this regard.

Investigating developmental changes in parent-child dyads was not central to the current study; therefore, multiple videotaped sessions over time were not required. However, having only one observation of 15-minute play session per parent-child pair still adds to the limitations of this study. Especially because the play-sessions were not recorded in participants' natural home environment, inclusion of more than one session may have provided a more natural picture of parent-child verbal interaction (i.e., participants may have become used to the camera). It may have helped any parent or child who was feeling anxious about being observed to be less anxious over time. Additionally, one session might not be sufficient to represent an individual's typical behavior. For example, in one case the child was feeling sad that day, which was evident in the videotape, and could have influenced both this parent's and this particular child's language behavior during that one play-session. Although many times the play-session was rescheduled if the child was not feeling well or was just not ready for several different reasons, such rescheduling was not possible in every such instance due to other constraints such as parents not being able to come at another time.

Some father participants in this study reported that although the target child did not reside with them, they were in regular contact with her/him. Some of these fathers/father figures reported their income in a comparatively higher range despite the participating children being

enrolled at the Head Start centers that serve children only from a low-income population. Many of these children were possibly enrolled in the Head Start program on the basis of their mothers' income (by virtue of living with just their mothers) but had a father figure in their lives with relatively higher annual income. Being an indicator of SES, the higher income elevated the status of these fathers in society, which might have influenced their language use during the videotaped play-sessions as well. However, the result of ANOVAs/MANOVA among father-daughter, father-son, mother-daughter, and mother-son groups remained the same (i.e., no significant differences) even after controlling for parental income. Therefore, at least in this study with a restricted sample of lower-income father-child pairs, the slightly higher income level of fathers/father figures did not influence the results of this study.

Instead of observing the same child with his or her mother and father, independent pairs of father-daughter, father-son, mother-daughter, and mother-son were examined in the current study, which can be a limitation. Although an independent sample provided more power for the statistical analyses, it might be better to observe language behavior of mothers and fathers with the same child. Specifically, this would be because family dynamics might play a role in the ways mothers and fathers interact with their children. For example, it is possible that mothers and fathers complement each other in their language usage with their children (Tamis-LeMonda, 2004) and I happened to videotape parents who were either more or less verbal with their children in the dyadic situation than they would have been in the triadic situation. It would be feasible for future studies to compare mother-father-child triadic interactions to the respective dyadic situations. In contrast, it would be more challenging to find families with same-aged sons and daughters to compare mothers' and fathers' interactions with their two children of differing genders.

The majority of the father participants in the current study co-resided with the child and the mother/mother figure of the child; however, 50% of the children in the mother-daughter group and 60% of the children in the mother-son group lived primarily with their mothers. This difference between father and mother participants adds to the limitation of this study. In particular, this distinction could have confounded the results of the correlation analyses. Although challenging to recruit, a more balanced sample of co-residing and separated fathers and mothers can provide a better picture of early parent-child interactions in low-SES families.

Another limitation of this study was that the measure of declaratives had a broad definition that included multiple parental speech components (e.g., explanations from parents, comments on a child's actions, praise, prohibitions). Therefore, whereas significant correlations between parental declaratives and children's quantity of language were observed in the full sample and in some gender-specific groups, it is not possible to determine which specific aspect/s of fathers' or mothers' declaratives were associated with children's language quantity. Furthermore, child language was coded only for its quantity; therefore, any associations between fathers' or mothers' early language and children's language skills except children's amount of language could not be examined in this study.

Future Directions

Whereas there are some limitations of this study, further research can provide additional insights into the current findings. First, to be able to discern the associations between different aspects of parental declaratives and other parental and child language variables, the declaratives should be further coded into subcategories. Parental use of declaratives can be categorized into explanations: parents explaining or describing something to their children; comments: parents commenting on their children's actions; and prohibitions: parents prohibiting their child from

doing something. The additional coding will provide richer information related to mothers' and fathers' early language with their children and its association with other aspects of fathers' speech and children's speech.

Second, the current study focused mainly on parental early language input; therefore, children's language was coded only for its quantity. At the same time, some significant correlations between children's quantity of language use and parents' quantity/quality of language input were observed in this study. Coding of children's quality of language can provide meaningful information in terms of the relation between lower-SES children's early language and their parents' early language input. Therefore, in addition to further coding parents' declaratives, I plan to code children's language for its qualitative features (e.g., questioning, describing, labelling, and diversity of utterances) in future studies. I believe that dually coding both parents' and children's early quantity and quality of language in one study can potentially present a more complete picture of the early father-daughter, father-son, mother-daughter, and mother-son early verbal interaction processes.

Third, most of the prior related research has primarily included White middle-class families in their respective studies (e.g., Bingham et al., 2012; Pancsofar & Vernon-Feagans, 2006). Although some researchers recruited their participants from low-SES families, ethnically, those families were either diverse or primarily represented a European-American ethnicity (e.g., Clearfield & Nelson, 2006; Rowe, Coker, & Pan, 2004; Tamis-LeMonda et al., 2012). As discussed before, the SES- and ethnicity-related differences between the samples of prior studies and the current study might have led to the differential findings of the current study. Therefore, future studies should explore the possibility of ethnicity being a contributing factor to the variability within low-SES parents' early language input by recruiting a more heterogeneous

group of families. Furthermore, age of the child participants also appeared to be a factor that could have influenced the difference in findings of the prior research and the current study. Previous studies that reported parent-gender and/or child-gender related differences in parents' and/or children's early language focused on younger children; therefore, future studies should compare parental and child early language input in father-daughter, father-son, mother-daughter, and mother-son groups when children are less than 3-years-old.

Fourth, evidence suggests an association between fathers' residential status and their involvement in their children's lives (e.g., Fagan & Iglesias, 1999; Nord, Brimhall, & West, 1997). Fathers who do not cohabitate with their child may not be fully aware of child's linguistic skills, which can influence how they talk with their child. Most of the father participants co-resided with their respective participant child, which limited the ability to compare the early language of residential versus non-residential fathers in this study. Although the participating mothers in mother-daughter and mother-son group were residential, the fathers of most of those children did not live with them. Evidence suggests that fathers' residential status can influence mothers' behavior with their children as well (Fagan & Barnett, 2003); therefore, future research should investigate the influence of father's residential status on parental and child early speech in father-daughter, father-son, mother-daughter, and mother-son groups.

Fifth, given the differential parental household income among groups, the analyses in the current study were conducted both with and without including parental annual household income as a covariate. However, both of the analyses provided comparable results. Therefore, I plan to conduct a covariate analyses for other family characteristics related variables (e.g., children's age, child-care arrangement in the prior year, parental education, and father's residential status) to find the specific source of variations in parental and child language within each group. In a

subsequent analysis, I plan to conduct MANCOVAs comparing parental quantity/quality and children's quantity of language after controlling for the significant family characteristics related covariates identified in the covariate analysis. In addition, I plan to conduct regression analyses predicting parental quantity/quality of language from family characteristics.

Finally, the results of this study are in line with the prior research suggesting fathers play a role in children's early language development (e.g., Rowe, Coker, & Pan, 2004). Collectively, the results highlight the importance of both fathers' and mothers' role in children's early language development. However, it appears that differences in findings of studies that compared mothers' versus fathers' early language with their children are associated with situations (i.e., triadic versus dyadic) in which parent-child verbal interactions were observed (e.g., Pancsofar & Vernon-Feagans, 2006; Rowe, Coker, & Pan, 2004). Therefore, future studies should compare parental and child early language among father-daughter, father-son, mother-daughter, and mother-son groups in triadic versus dyadic situations.

Conclusion

It appears that the current study raised many more questions related to early parent-child verbal interactions. It was evident that parents and children within each group varied in their quality and/or quantity of language; however, gender was not the source of this observed variation in this study. While acknowledging that further research is required to fully understand and extend the findings of the current investigation, the knowledge garnered through this study provides meaningful information that can be used to understand early language interactions and to design future research studies in this area.

Validating the importance of including fathers in investigations on early parental language input, the results of this study add to the existing knowledge about the nature of early

father-child verbal interactions. Explicitly, these findings confirm that just like mothers, fathers also are involved in meaningful verbal interactions with their children and play a role in children's early language development. Extending the prior findings, the evidence from this study suggests that low-SES fathers' quantity/quality of language with their preschool aged children is equivalent to that of mothers'. Additionally, both mothers and fathers in this sample did not differentiate their early speech with sons versus daughters, which may be indicative of evolution in family functioning in the past three decades.

Given the lack of recent studies examining differences between the early language input of mothers and/or fathers with their 3-5 year-old sons and daughters, this study sheds light on this under-explored area of research. However, the available evidence is not sufficient to make any certain claims regarding parent or child gender related differences in parental quantity of language with their preschool aged children. The current study is the first to compare both mothers' and fathers' quantity of language with their 37-60 month-old sons versus daughters. Moreover, the sample of this study was predominantly African-American, which fills a large gap in the existing literature given that the majority of the prior research on early parent-child verbal interactions had focused primarily on White and middle-class families. Ultimately, it appears that Bronfenbrenner's (1998) propositions related to environmental influences on child development are of particular importance in investigations related to early parent-child verbal interactions. In addition to parent and child gender, other environmental and biological aspects, such as child's age, SES, and ethnicity can influence the way parents talk with their young children. A combination of various aspects of child and the layered environmental systems around her/him together influence children's early language development; therefore, a comprehensive approach

would parse out the role of each aspect as a possible source of variation in parents' and children's early speech.

APPENDIX A
FLYER FOR PARENTS



**PARENTS OF 3-4 YEARS OLD CHILDREN CAN GET FREE FOOD
COUPONS**

We need father figures and/or mother figures of 3-4 years old children to participate in a study. **Parents** will participate in a 30-minute sessions that involves playing and interacting with your child. **The sessions will take place at the child care center where your child goes to school.**

As a thank you for your participation, you will receive free food coupon from

!!Chick-Fil-A!!

IF you are interested in participating, PLEASE FILL OUT THE ATTACHED FORM AND RETURN IT TO YOUR CHILD'S CHILD CARE CENTER.

If you have any questions, contact:

Smriti Jangra @ xxx-xxx-xxxx

Thank you giving your consent to participate in my research study. In order to proceed further please provide the below information and **return this form to your child's Child Care Center:**

Father's (or Father figure's) Name: _____

Mother's (or Mother figure's) Name: _____

School that your child attends:

Child's Name:

Child's Date of Birth _____ Child's Gender: ☐ Male ☐ Female

Contact phone number (Mother): _____ Email Address _____

Contact phone number (Father: _____ Email Address _____

Please tell us when you are available for a 30-minute session:

Mother: Date _____ Time _____

Father: Date _____ Time _____

In case, you have any questions or concerns, please contact:

Smriti Jangra

Phone: xxx-xxx-xxxx

Email: xxxx

APPENDIX B

PARENT INFORMED CONSENTS



The Florida State University
College of Education
(850) 644-4592

Smriti Jangra, MS

INFORMED CONSENT FORM

Title: Parent-son and parent-daughter early verbal interaction and its relationship with parents' child-rearing beliefs (PARENT CONSENT)

Investigator: SMRITI JANGRA, MS.

Telephone: [REDACTED]

This letter requests that you participate in a research project that is designed to develop a greater understanding of the nature of early parent-son and parent-daughter verbal interactions and its relationship with parents' child-rearing beliefs. Further, we are interested in comparing mother-child and father-child verbal interactions and if they relate to parents' child-rearing beliefs. This project will provide important information for understanding parent-child verbal interactions during child's early years. The proposed study is graduate research conducted under the supervision of major advisor, Dr. Beth Phillips, FSU Dept. of Educational Psychology and Learning Systems, Florida Center for Reading Research.

If you decide to participate in this project, your part in the project would include:

1. Participating in a 15-minute video-recorded session of you and your child's interaction at the childcare facility your child attends. You will be able to choose the day and time for participation in this part of the study. You can choose to participate before, during or after regular school hours. You will be asked to engage in a play activity with your child. You will be provided with all necessary props and assistance during completion of this task. We will stop video-recording at any moment if you request.
2. Completing a questionnaire that asks for information about characteristics of your family, such as number of children, your current occupation, amount of education completed, and your child-rearing beliefs.

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Your participation may result in the following benefits:

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FSU Human Subjects Committee approved on 4/05/2013. Void after 3/12/2014. HSC # 2013.10125

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_____ Name of child's school		_____ Parent e-mail
_____ Parent's street address	_____ City	_____ State Zip



The Florida State University
College of Education
(850) 644-4592

Smriti Jangra, MS

INFORMED CONSENT FORM

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Investigator: SMRITI JANGRA, MS.

Telephone: [REDACTED]

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FSU Human Subjects Committee approved on 3/31/2014. Void after 3/11/2015. HSC # 2014.12176

All information obtained as a result of this project will be kept confidential, to the extent allowed by law. Confidentiality will be ensured in the following ways: In public reports of the results of this project, we will only report results that have been averaged over large numbers of children. No individual child or family will ever be identified publicly. Assessments of your child's skills are solely for research purposes. These assessments and audio- and video-recordings will be kept in a locked file storage area in research offices at the College of Education or at the Florida Center for Reading Research at Florida State University, identified only by a code, and will not be available to your child's school or to any other person or institution unless you ask us in writing to do so. All materials will be retained for a period of 7 years following completion of the project, with the exception of the videotapes, which will be maintained for 5 years.

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<hr/>		
Printed name of child		Child's Date of Birth
<hr/>		<hr/>
Name of child's school		Parent e-mail
<hr/>		<hr/>
Parent's street address	City	State Zip
<hr/>	<hr/>	<hr/>

FSU Human Subjects Committee approved on 3/31/2014. Void after 3/11/2015. HSC # 2014.12176



The Florida State University
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Smriti Jangra, MS

INFORMED CONSENT FORM

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Investigator: SMRITI JANGRA, MS.

Telephone: [REDACTED]

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FSU Human Subjects Committee approved on 3/05/15. Void 3/02/16. HSC # 2015.14819

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Parent's street address	City	State	Zip

FSU Human Subjects Committee approved on 3/05/15. Void 3/02/16. HSC # 2015.14819



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FSU Human Subjects Committee approved on 1/15/16. Void 1/11/17. HSC # 2015.17196

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FSU Human Subjects Committee approved on 1/15/16. Void 1/11/17. HSC # 2015.17196



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FSU Human Subjects Committee approved on 12/15/2016, void after 12/13/2017. HSC #2016.19793

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FSU Human Subjects Committee approved on 12/15/2016, void after 12/13/2017. HSC #2016.19793

APPENDIX C

PARENT DEMOGRAPHIC SURVEY

Parent Demographic Survey

Instructions: Please respond to these questions with regard to your child _____.

SECTION I

- 1) Your Name _____
- 2) What is your specific relationship with this child (CIRCLE ONE)?
 - a) Biological Mother/ Father
 - b) Adopted Mother/ Father
 - c) Legal Guardian
 - d) Mother Figure/ Father Figure
- 3) Is English your native language?
 - a) Yes
 - b) No
- 4) Is English your child's native language?
 - c) Yes
 - d) No
- 5) What is your occupation? _____
- 6) What was your child's care giving arrangement in the previous year? (CIRCLE ONE)

Parental care	Family child-care at home (in non-relative's home)
Relative Care	Child-care Center
- 7) How many years of schooling have you completed? (CIRCLE ONE)

8 th Grade or Less	Some High School	GED
-------------------------------	------------------	-----

High School Diploma	AA/AS Degree	Some College Degree
Bachelor Degree	Master's Degree	Doctoral/Postgraduate Degree

8) How many years of schooling has the other parent/parental figure of the child completed? (Circle One)

8 th Grade or Less	Some High School	GED
High School Diploma	AA/AS Degree	Some College Degree
Bachelor Degree	Master's Degree	Doctoral/Postgraduate Degree

No other parental figure currently in regular contact (at least once every month) with the child

9) How many residents are there in your home? _____

10)What is your household income to nearest \$5,000 per year? (CIRCLE One Number or Range)

\$5,000	\$10,000	\$15,000
\$20,000	\$25,000	\$30,000
\$31,000 - \$40,000	\$41,000 - \$50,000	\$51,000 - \$75,000
\$76,000 - \$100,000	\$101,000 - \$125,000	\$126,000 - \$150,000 Higher or than \$175,000

11)What is your ethnicity? (CIRCLE ONE OR WRITE IN A RESPONSE)

White
 Black or African-American
 Haitian/Creole
 American Indian or Alaska Native
 Asian or Pacific Islander
 Other_____

12)Are you Hispanic?

Yes
 No

If there is another parent/parental figure in regular contact then

Do you and child's other parent/parental figure live in the same home?

- a) Yes
- b) No

If YES, then stop here. Thank you for your time!

If NO, then continue with SECTION II

SECTION II

13)How often do you see this child?

- a) Daily, lives in same home
- b) Twice a week or more
- c) Once a week
- d) Once or more per month
- e) Less than once per month

14)How often does the other parent see this child?

- a) Daily, lives in same home
- b) Twice a week or more
- c) Once a week
- d) Once or more per month
- e) Less than once per month

15)How many residents are there in the other parent's home? _____

16)What is the other parent's household income to nearest \$5,000 per year? (CIRCLE One Number or Range)

\$5,000	\$10,000	\$15,000
\$20,000	\$25,000	\$30,000
\$31,000 - \$40,000	\$41,000 - \$50,000	\$51,000 - \$75,000
\$76,000 - \$100,000	\$101,000 - \$125,000	\$126,000 - \$150,000 Higher than \$175,000

Thank you for your time

APPENDIX D

HEADSTART APPLICATION



CAPITAL AREA COMMUNITY ACTION AGENCY, INC.
309 OFFICE PLAZA DRIVE
TALLAHASSEE, FLORIDA 32301
(850) 201-2050
HEAD START CENTERS



Child's Name: _____

CENTER APPLYING FOR: 1 st choice:	2 nd choice:
--	-------------------------

Franklin County
Franklin County Head Start
1250 Hwy 98
Eastpoint, Florida 32328
7:30 a.m. - 3:00 p.m.

Jefferson County
Jefferson County Head Start
950 Mammie Scott Drive
Monticello, Florida 32344
7:30 a.m. - 5:00 p.m.

Bainbridge Road Head Start
2303 Old Bainbridge Road
Tallahassee, Florida 32303
7:30 a.m. - 6:00 p.m.

Leon County
Mabey Street Head Start
240 Mabey Street
Tallahassee, Florida 32304
7:30 a.m. - 2:00 p.m.

Louise B. Royal Head Start
1124 North Duval Street
Tallahassee, Florida 32303
7:30 a.m. - 2:00 p.m.

South City Head Start
2813 South Meridian Street
Tallahassee, Florida 32301
7:30 a.m. - 6:00 p.m.

To qualify, you must be a resident of Leon, Jefferson and Franklin County. Applications will NOT be processed for enrollment until all documentation is provided and verified.

Child must be 3 or 4 years old by September 1 of the year for which you are applying.

1. Child's Birth Certificate or Passport
2. Proof of Guardianship (if your name is not on the Child's Birth Certificate)
3. Valid driver licenses, Student I.D., State Issue I.D.
4. Verification of all family income of (Parent(s) or Guardian(s) for the past 12 months such as:
 - ✓ Most Current Income Tax form (1040, 1040A, W-2, 1099, etc.)
 - ✓ Check Stubs (12 consecutive months)
 - ✓ SSI, SSA, or Social Security Benefits (current award letter(s))
 - ✓ Proof of residency (current lease and document with same mailing address)
 - ✓ Child Support – total distribution (12 consecutive months)
 - ✓ Unemployment Compensation – current unemployment Letter of Eligibility
 - ✓ TANF (Cash Assistance) – computer printout from the Department of Children & Families
 - ✓ Statement from Employer – on letterhead that includes date of hire, current pay rate, number of work hours per week, total income for the last 12 months, verification signature & date.

You and your spouse must work full time or be enrolled in school full time or a combination of both to qualify for the full day programs at Bainbridge Road, South City and Jefferson County Head Start Centers.



Capital Area Community Action Agency, Inc.
Head Start Child Development Program
309 Office Plaza Drive
Tallahassee, Florida 32301



Child's First Name		Child's Middle Name		Child's Last Name		Child's Birthday		Sex <input type="checkbox"/> Male <input type="checkbox"/> Female		SSN (optional)	
Race/Ethnicity <input type="checkbox"/> Asian <input type="checkbox"/> Black <input type="checkbox"/> White <input type="checkbox"/> Hispanic/Latino <input type="checkbox"/> American Indian/Alaska Native <input type="checkbox"/> Hawaiian/Pacific Islander <input type="checkbox"/> Multi-Racial <input type="checkbox"/> Other						Primary Language Spoken <input type="checkbox"/> English <input type="checkbox"/> French <input type="checkbox"/> Spanish <input type="checkbox"/> Haitian Creole <input type="checkbox"/> Arabic <input type="checkbox"/> Other			Primary Health Coverage <input type="checkbox"/> Medicaid <input type="checkbox"/> Private <input type="checkbox"/> Tri-Care <input type="checkbox"/> Florida KidCare (CH-P) <input type="checkbox"/> Medicare/CHIP <input type="checkbox"/> Other		
Parent/Guardian Lives with Family? <input type="checkbox"/> Yes <input type="checkbox"/> No						Teen Parent? <input type="checkbox"/> Yes <input type="checkbox"/> No					
First Name		Last Name		Birthday		Sex <input type="checkbox"/> Male <input type="checkbox"/> Female		Parental Status <input type="checkbox"/> Parent <input type="checkbox"/> Foster <input type="checkbox"/> Legal Guardian			
Race/Ethnicity <input type="checkbox"/> Asian <input type="checkbox"/> Black <input type="checkbox"/> White <input type="checkbox"/> Hispanic/Latino <input type="checkbox"/> American Indian/Alaska Native <input type="checkbox"/> Hawaiian/Pacific Islander <input type="checkbox"/> Multi-Racial <input type="checkbox"/> Other						Primary Language Spoken <input type="checkbox"/> English <input type="checkbox"/> French <input type="checkbox"/> Spanish <input type="checkbox"/> Haitian Creole <input type="checkbox"/> Arabic <input type="checkbox"/> Other			Highest Grade Completed <input type="checkbox"/> Grade 9 or Below <input type="checkbox"/> High School Grad <input type="checkbox"/> Grade 10 or 11 <input type="checkbox"/> GED <input type="checkbox"/> Tech/Trade <input type="checkbox"/> Associate Degree <input type="checkbox"/> Bachelor's <input type="checkbox"/> Masters <input type="checkbox"/> Some College <input type="checkbox"/> Other		
Employment Status <input type="checkbox"/> Full Time <input type="checkbox"/> Part Time <input type="checkbox"/> Seasonal <input type="checkbox"/> Unemployed <input type="checkbox"/> Retired/Discho <input type="checkbox"/> Other		Currently Enrolled in School <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Full-Time <input type="checkbox"/> Part-Time		Child's Relationship to Adult <input type="checkbox"/> Natural/Adopted <input type="checkbox"/> Foster <input type="checkbox"/> Grandchild <input type="checkbox"/> Niece/Nephew <input type="checkbox"/> Other		Custody <input type="checkbox"/> Yes <input type="checkbox"/> No		Provides Financial Support <input type="checkbox"/> Yes <input type="checkbox"/> No			
Phone Numbers Home () - - - - - Cell () - - - - - Work () - - - - -		Email address:									
Parent/Guardian Lives with Family? <input type="checkbox"/> Yes <input type="checkbox"/> No						Teen Parent? <input type="checkbox"/> Yes <input type="checkbox"/> No					
First Name		Last Name		Birthday		Sex <input type="checkbox"/> Male <input type="checkbox"/> Female					
Race/Ethnicity <input type="checkbox"/> Asian <input type="checkbox"/> Black <input type="checkbox"/> White <input type="checkbox"/> Hispanic/Latino <input type="checkbox"/> American Indian/Alaska Native <input type="checkbox"/> Hawaiian/Pacific Islander <input type="checkbox"/> Multi-Racial <input type="checkbox"/> Other						Primary Language Spoken <input type="checkbox"/> English <input type="checkbox"/> French <input type="checkbox"/> Spanish <input type="checkbox"/> Haitian Creole <input type="checkbox"/> Arabic <input type="checkbox"/> Other			Highest Grade Completed <input type="checkbox"/> Grade 9 or Below <input type="checkbox"/> High School Grad <input type="checkbox"/> Grade 10 or 11 <input type="checkbox"/> GED <input type="checkbox"/> Tech/Trade <input type="checkbox"/> Associate Degree <input type="checkbox"/> Bachelor's <input type="checkbox"/> Masters <input type="checkbox"/> Some College <input type="checkbox"/> Other		
Employment Status <input type="checkbox"/> Full Time <input type="checkbox"/> Part-Time <input type="checkbox"/> Seasonal <input type="checkbox"/> Unemployed <input type="checkbox"/> Retired/Discho <input type="checkbox"/> Other		Currently Enrolled in School <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Full-Time <input type="checkbox"/> Part-Time		Child's Relationship to Adult <input type="checkbox"/> Natural/Adopted <input type="checkbox"/> Foster <input type="checkbox"/> Grandchild <input type="checkbox"/> Niece/Nephew <input type="checkbox"/> Other		Custody <input type="checkbox"/> Yes <input type="checkbox"/> No		Provides Financial Support <input type="checkbox"/> Yes <input type="checkbox"/> No			
Phone Numbers Home () - - - - - Cell () - - - - - Work () - - - - -		Email address:									
Is the <input type="checkbox"/> mother/ <input type="checkbox"/> father of the child incarcerated? <input type="checkbox"/> Yes <input type="checkbox"/> No											
ADDITIONAL Family Members in Household living with child (Do not list Appointed Parent/Guardian)											
First/Last Name		Birthday		Sex <input type="checkbox"/> M <input type="checkbox"/> F		Married <input type="checkbox"/> Yes <input type="checkbox"/> No		Language		Relationship to Primary Adult	
Local Member in Household (please circle)				Total Number in Family (Count yourself and all family members supported by parent(s) above) (please circle)							
1 2 3 4 5 6 7 8 9 10 other				1 2 3 4 5 6 7 8 9 10 other							
Living Address				Apt or Lot #		City		State		Zip	
Mailing Address (if different)				Apt or Lot #		City		State		Zip	
Parent Signature/Guardian's Signature:						Date:					



Family Information						
Person's Status (check one)	Marital Status (check one)	Homeless Family	Military Family	Refused by (DCY/Health Dept etc)	Receiving SNAP (food stamps)	WIC
<input type="checkbox"/> One <input type="checkbox"/> Two	<input type="checkbox"/> Married <input type="checkbox"/> Single <input type="checkbox"/> Divorced <input type="checkbox"/> Separated	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Is Family a Self-Sufficient Client?		Getting Ahead in a Just-Gettin' by World?				
<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No				
ALL Family Income MUST be REPORTED (mark each box)						
TANF	Supplemental Security Income (SSI)	Foster Care	Child Support	Social Security (Retirement, Disability, Survivors, Dependent)	Unemployment	
<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
CHILD'S Health Information and Developmental Concerns						
Are there any specific family needs or crisis? <input type="checkbox"/> Yes <input type="checkbox"/> No (If yes, provide documentation)						
Does the child have a medical condition? <input type="checkbox"/> Yes <input type="checkbox"/> No (If yes, please list)						
Does the child have a disability or special need? <input type="checkbox"/> Yes <input type="checkbox"/> No (If yes, please describe)						
Does the child have a behavioral issue? <input type="checkbox"/> Yes <input type="checkbox"/> No (If yes, please describe)						
Does the child have an Individual Education Plan (IEP) or IISBP? (Written document of child's educational needs and goals?) <input type="checkbox"/> Yes <input type="checkbox"/> No						
Emergency contacts (List other than Adult 1 or Adult 2)						
Name (First/Last)	Relationship to Child	Contact Number	Type (Check One)	Emergency Contact?	Release To?	
		() -	<input type="checkbox"/> Cell <input type="checkbox"/> Home <input type="checkbox"/> Work	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Name (First/Last)	Relationship to Child	Contact Number	Type (Check One)	Emergency Contact?	Release To?	
		() -	<input type="checkbox"/> Cell <input type="checkbox"/> Home <input type="checkbox"/> Work	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
CERTIFICATION (CERTIFY AND ENDORSE THE FOLLOWING)						
I certify that this information is true. If any part is false, my participation in this agency's programs may be terminated and I may be subject to legal action. I also understand that the information in this application will be held in strict confidence within the agency and is accessible to me during normal business hours.						
Parent/Guardian's Signature: _____ Date: _____						
School Year: _____	Program Code: _____	Program Desc: _____	Delegate ID: _____	Class Age: _____		
Participation Year: 1 2 3	Application Status: _____	Application Date: _____	Acceptance Status: _____			
Center Name: BR, RC, JC, LDR, MB, SC			Center ID: 2294, 2295, 2296, 2297, 2298, 2299			
Eligibility Information						
Child Eligible Next Year? Yes No		Brother/Sister Age Eligible Next Year? Yes No				
Income Status: Eligible Over		Disability Status: Z (Zero Disability)				
Federal Guidelines		X (Suspected) - D (Diagnosed)				
Family Income:						
USDA Status: Free Reduced None		CACFP Certification Date:		USDA Household Income:		
Elig-Parent Stat: Pt:		Elig-Disabled Pt:		Elig-Income Pt:		
Elig-SSI / SSA Pt:		Elig-PS Pt:		Elig-Student Pt:		
Elig-Other Pt:		Elig-Age Pt:		TOTAL ELIG RATING:		
Verification Information						
Income Verified By? () W-2 () Check Stub () Tax Return () Letter () Notarized Affidavit () Other: _____						
() Financial Aid () Income Verification Letter () SSI/SSA () Notarized Letter () Child Support						
Birth Verified By? () Certified Birth Certificate () Passport () Hospital Birth Certificate						
Income (list by family member) Twice a month x 24 = Annual Income Weekly x 52 = Annual Income Every 2 Weeks x 26 = Annual Income						
Family Member	Amount	Per	X	Annual Income	Income Source	
	\$			\$	From Whom	
	\$			\$		
Total Yearly Income of Family				\$		
Processed By: _____				Date Processed: _____		

APPENDIX E

CHILD ASSENT SCRIPT



The Florida State University
College of Education
(850) 644-4592

Smriti Jangra, MS
Phone: (xxx) xxx-xxxx
E-mail: xxxx

Child Assent Script

Hello _____ (child's name), my name is _____ (observer's name). How are you doing today? I would like your help in a project I am doing. I would like you to play some games with your _____ (mother or father). If you do not feel like playing at any moment, you just let me know and we will stop. You won't get in trouble.

Okay? So will you play these games with your _____ (mother or father)?

If child says yes....add:

Ready to play now?

If child says no, the child will be thanked and excused.

APPENDIX F
SCRIPT FOR PARENT-CHILD SESSION

Script for parent-child session

Directions for parent

Please sit here (pointing to the mat/table-chair) with your child and play with him/her as you would normally at home, for 15 minutes. Please use only the toys that I am giving you and try to keep the child in this area (mark the area using hand gestures) due to the video recording. If the child seems to lose interest, try to engage him/her for few more minutes. I will walk out of this room and come back in 15-minutes to give you a signal to wrap up. After getting that signal you should start wrapping up. Also, please do your best to ignore me and do not speak to me during the session. I will be ignoring anything your child says to me.

Directions for child

Here, I brought some play dough and toys for you and your (mom/dad) to play with. You can take them and sit with your father on this mat and play.

APPENDIX G

PARENT LANGUAGE CODING PACKET

FIRST PAGE CODE SHEET

CHILD ID: _____

Name of the Child _____

Child Gender _____

Recording with _____

Recording Date _____

Coding (first or second) _____

Open-ended questions: Questions asked by parents that require two words or more to answer.

Closed-ended questions: Questions asked by parents that require one-word answer (e.g., OK, Yes, No, etc.)

Directives: Parent giving directions to the child.

Declaratives: Anything that does not fit in the above category. Example, commenting on what child is doing, statements, praises, etc.

Repetition: Parents repeating themselves or child

QO for Open-ended questions	UOE for Unorthodox Oral Expressions
QC for Closed-ended questions	RC for Repeating after child
DI for Directives	RS for Repeating self
DE for Declaratives	IS for Incomplete sentence
	TS for True Sound

LAST PAGE CODE SHEET

CHILD ID: _____

Total Number of Utterances: _____

Total Number of Open-ended Questions (QO) _____

Total Number of Closed-ended Questions (QC) _____

Total Number of Directives (DI) _____

Total Number of Declaratives (DE) _____

Total Repetitions of Child (RC) _____

Total Repetitions of Self (RS) _____

Total Number of Incomplete Sentences (IS) _____

Total Number of True Sounds (TS) _____

Total Number of Unorthodox Oral Expressions (TS) _____

Total Duration of Video (in minutes) _____: _____

APPENDIX H
CHILD LANGUAGE CODING SHEET

(Child Language Coding Sheet)

Sheet no. _____

Verbal Utterances of Child							
Child Name:		Child ID:		Recording with:			
Total Number of Utterances all sheets:		Total Number of sheets:					
No. of Utterance	(X)	No. of Utterance	(X)	No. of Utterance	(X)	No. of Utterance	(X)
1		1		1		1	
2		2		2		2	
3		3		3		3	
4		4		4		4	
5		5		5		5	
6		6		6		6	
7		7		7		7	
8		8		8		8	
9		9		9		9	
10		10		10		10	
11		11		11		11	
12		12		12		12	
13		13		13		13	
14		14		14		14	
15		15		15		15	
16		16		16		16	
17		17		17		17	
18		18		18		18	
19		19		19		19	
20		20		20		20	
21		21		21		21	
22		22		22		22	
23		23		23		23	
24		24		24		24	
25		25		25		25	
26		26		26		26	
27		27		27		27	
28		28		28		28	
29		29		29		29	
Total		Total		Total		Total	

Coder's Initials _____

APPENDIX I

IRB APPROVAL MEMORANDUMS

The Florida State University
Office of the Vice President For Research
Human Subjects Committee
Tallahassee, Florida 32306-2742
(850) 644-8673, FAX (850) 644-4392

APPROVAL MEMORANDUM

Date: 4/22/2013

To: Smriti Jangra

Address: 3302 Stone Building 1114 W Call St. Tallahassee, FL 32306-4453
Dept.: EDUCATIONAL PSYCHOLOGY AND LEARNING SYSTEMS

From: Thomas L. Jacobson, Chair

Re: Use of Human Subjects in Research

Parent-son and parent-daughter early verbal interaction and its relationship with parents' child-rearing beliefs

The application that you submitted to this office in regard to the use of human subjects in the research proposal referenced above has been reviewed by the Human Subjects Committee at its meeting on 03/13/2013. Your project was approved by the Committee.

The Human Subjects Committee has not evaluated your proposal for scientific merit, except to weigh the risk to the human participants and the aspects of the proposal related to potential risk and benefit. This approval does not replace any departmental or other approvals, which may be required.

If you submitted a proposed consent form with your application, the approved stamped consent form is attached to this approval notice. Only the stamped version of the consent form may be used in recruiting research subjects.

If the project has not been completed by 3/12/2014 you must request a renewal of approval for continuation of the project. As a courtesy, a renewal notice will be sent to you prior to your expiration date; however, it is your responsibility as the Principal Investigator to timely request renewal of your approval from the Committee.

You are advised that any change in protocol for this project must be reviewed and approved by the Committee prior to implementation of the proposed change in the protocol. A protocol change/amendment form is required to be submitted for approval by the Committee. In addition, federal regulations require that the Principal Investigator promptly report, in writing any unanticipated problems or adverse events involving risks to research subjects or others.

By copy of this memorandum, the Chair of your department and/or your major professor is reminded that he/she is responsible for being informed concerning research projects involving human subjects in the department, and should review protocols as often as needed to insure that the project is being conducted in compliance with our institution and with DHHS regulations.

This institution has an Assurance on file with the Office for Human Research Protection. The Assurance Number is FWA00000168/IRB number IRB00000446.

Cc: **Beth Phillips, Advisor**
HSC No. **2013.10125**



Office of the Vice President For Research
Human Subjects Committee
P. O. Box 3062742
Tallahassee, Florida 32306-2742
(850) 644-8673 · FAX (850) 644-4392

RE-APPROVAL MEMORANDUM

Date: 04/02/2014

To: Smriti Jangra [REDACTED]

Address: 3302 Stone Building 1114 W Call St. Tallahassee, FL 32306-4453

Dept.: EDUCATIONAL PSYCHOLOGY AND LEARNING SYSTEMS

From: Thomas L. Jacobson, Chair

Re: Re-approval of Use of Human subjects in Research:

Parent-son and parent-daughter early verbal interaction and its relationship with parents' child-rearing beliefs

Your request to continue the research project listed above involving human subjects has been approved by the Human Subjects Committee. If your project has not been completed by 03/11/2015, you are must request renewed approval by the Committee.

If you submitted a proposed consent form with your renewal request, the approved stamped consent form is attached to this re-approval notice. Only the stamped version of the consent form may be used in recruiting of research subjects. You are reminded that any change in protocol for this project must be reviewed and approved by the Committee prior to implementation of the proposed change in the protocol. A protocol change/amendment form is required to be submitted for approval by the Committee. In addition, federal regulations require that the Principal Investigator promptly report in writing, any unanticipated problems or adverse events involving risks to research subjects or others.

By copy of this memorandum, the Chairman of your department and/or your major professor are reminded of their responsibility for being informed concerning research projects involving human subjects in their department. They are advised to review the protocols as often as necessary to insure that the project is being conducted in compliance with our institution and with DHHS regulations.

Cc:

HSC No. 2014.12176

The Florida State University
Office of the Vice President For Research
Human Subjects Committee
Tallahassee, Florida 32306-2742
(850) 644-8673, FAX (850) 644-4392

RE-APPROVAL MEMORANDUM

Date: 3/5/2015

To: Smriti Jangra

Address: 3302 Stone Building 1114 W Call St. Tallahassee, FL 32306-4453
Dept.: EDUCATIONAL PSYCHOLOGY AND LEARNING SYSTEMS

From: Thomas L. Jacobson, Chair

Re: Re-approval of Use of Human subjects in Research

Parent-son and parent-daughter early verbal interaction and its relationship with parents' child-rearing beliefs

Your request to continue the research project listed above involving human subjects has been approved by the Human Subjects Committee. If your project has not been completed by 3/2/2016, you must request renewed approval by the Committee.

If you submitted a proposed consent form with your renewal request, the approved stamped consent form is attached to this re-approval notice. Only the stamped version of the consent form may be used in recruiting of research subjects. You are reminded that any change in protocol for this project must be reviewed and approved by the Committee prior to implementation of the proposed change in the protocol. A protocol change/amendment form is required to be submitted for approval by the Committee. In addition, federal regulations require that the Principal Investigator promptly report in writing, any unanticipated problems or adverse events involving risks to research subjects or others.

By copy of this memorandum, the Chair of your department and/or your major professor are reminded of their responsibility for being informed concerning research projects involving human subjects in their department. They are advised to review the protocols as often as necessary to insure that the project is being conducted in compliance with our institution and with DHHS regulations.

Cc: []
HSC No. 2015.14819



Office of the Vice President For Research
Human Subjects Committee
P. O. Box 3062742
Tallahassee, Florida 32306-2742
(850) 644-8673 · FAX (850) 644-4392

RE-APPROVAL MEMORANDUM

Date: 11/12/2016

To: Smriti Jangra [REDACTED]

Address: 3302 Stone Building 1114 W Call St. Tallahassee, FL 32306-4453

Dept.: EDUCATIONAL PSYCHOLOGY AND LEARNING SYSTEMS

From: Thomas L. Jacobson, Chair

Re: Re-approval of Use of Human subjects in Research:

Parent-son and parent-daughter early verbal interaction and its relationship with parents' child-rearing beliefs

Your request to continue the research project listed above involving human subjects has been approved by the Human Subjects Committee. If your project has not been completed by 01/11/2017, you are must request renewed approval by the Committee.

If you submitted a proposed consent form with your renewal request, the approved stamped consent form is attached to this re-approval notice. Only the stamped version of the consent form may be used in recruiting of research subjects. You are reminded that any change in protocol for this project must be reviewed and approved by the Committee prior to implementation of the proposed change in the protocol. A protocol change/amendment form is required to be submitted for approval by the Committee. In addition, federal regulations require that the Principal Investigator promptly report in writing, any unanticipated problems or adverse events involving risks to research subjects or others.

By copy of this memorandum, the Chairman of your department and/or your major professor are reminded of their responsibility for being informed concerning research projects involving human subjects in their department. They are advised to review the protocols as often as necessary to insure that the project is being conducted in compliance with our institution and with DHHS regulations.

Cc:

HSC No. 2015.17196



Office of the Vice President For Research
Human Subjects Committee
P. O. Box 3062742
Tallahassee, Florida 32306-2742
(850) 644-8673 · FAX (850) 644-4392

RE-APPROVAL MEMORANDUM

Date: 12/15/2016

To: Smriti Jangra [REDACTED]

Address: 3302 Stone Building 1114 W Call St. Tallahassee, FL 32306-4453

Dept.: EDUCATIONAL PSYCHOLOGY AND LEARNING SYSTEMS

From: Thomas L. Jacobson, Chair

Re: Re-approval of Use of Human subjects in Research:

Parent-son and parent-daughter early verbal interaction and its relationship with parents' child-rearing beliefs

Your request to continue the research project listed above involving human subjects has been approved by the Human Subjects Committee. If your project has not been completed by 12/13/2017, you are must request renewed approval by the Committee.

If you submitted a proposed consent form with your renewal request, the approved stamped consent form is attached to this re-approval notice. Only the stamped version of the consent form may be used in recruiting of research subjects. You are reminded that any change in protocol for this project must be reviewed and approved by the Committee prior to implementation of the proposed change in the protocol. A protocol change/amendment form is required to be submitted for approval by the Committee. In addition, federal regulations require that the Principal Investigator promptly report in writing, any unanticipated problems or adverse events involving risks to research subjects or others.

By copy of this memorandum, the Chairman of your department and/or your major professor are reminded of their responsibility for being informed concerning research projects involving human subjects in their department. They are advised to review the protocols as often as necessary to insure that the project is being conducted in compliance with our institution and with DHHS regulations.

Cc:

HSC No. 2016.19793

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BIOGRAPHICAL SKETCH

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