COMMUNICATIVE FUNCTIONS OF PRESCHOOLERS AND THEIR MOTHERS
ACROSS CULTURES AND SOCIOECONOMIC STATUS

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ABSTRACT

DANAI C. F. KASAMBIRA: Communicative Functions of Preschoolers and their

Mothers Across Cultures and Socioeconomic Status

(Under the direction of Oscar A. Barbarin and Elizabeth R. Crais)

The purpose of this study was to describe the cognitive-communicative functions

demonstrated by typically developing preschoolers and their mothers during teaching and

play interactions with a focus on differences in these communicative functions across

racial/ethnic group, socioeconomic status (SES), and gender. The relationship between

mothers' and preschoolers' communicative functions, as well as the relationship between

mothers' and preschoolers' communicative functions and children's vocabulary,

language, and social skills was examined.

Data from the Familial and Social Environments of Young Children study, a

supplement to the National Center for Early Development and Learning's (NCEDL)

Multi-State Study of Pre-Kindergarten, were analyzed for this dissertation. Secondary

analyses of race/ethnicity, SES, gender; and child outcomes variables of receptive and

expressive language, vocabulary, and teacher ratings of the children's social skills were

conducted using the NCEDL dataset. A coding system adapted from the work of Joan

Tough (1982; 1984) and Ida Stockman (1996) was developed to calculate descriptive

statistics for Means and Standard Deviations of frequencies of individual communicative

functions per racial, SES, and gender group. Linear regression was utilized to analyze the

relationship between communicative functions and children's language and social skills

(N = 95), and whether the frequency and type of communicative functions differed by race/ethnicity, SES, and/or gender (N = 95). Pearson's correlations were conducted to identify any relationships between mothers' communicative functions and children's communicative functions.

Results showed significant relationships between particular mother communicative functions and child communicative functions and outcomes. Few child communicative functions, however, predicted child outcomes. Rather, demographic factors such as SES, gender, and race/ethnicity, along with certain mother communicative functions, had a stronger link with the child outcomes.

These results contribute to the literature on preschoolers' communicative function use, and the association among these communicative functions, academics, and social skills. Furthermore, the results provide data on how mothers' communicative function use might relate to their children's, and how culture and gender might play a role in a child's communicative function use. This information can be used to promote understanding of different pragmatic communication styles in preschoolers in order to improve assessment and intervention practices for all children.

To Chuck, Mom, Dad, Farai, and Kudzai for all of your love and support.

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CHAPTER 1: LITERATURE REVIEW

Referral of Culturally and Linguistically Diverse Preschoolers for Special Services

African American (AA) children are at increased risk for misidentification for learning and socio-emotional problems (Donovan & Cross, 2002; Hosp & Reschly, 2004). This misidentification is often due to some AA children's use of a differing language variety (African American Vernacular English) or pragmatic behavior being mistaken for disordered when traditional assessments based on European American (EA) children are used (Gildersleeve-Neumann, 2005; Paradis, 2005). Additional evidence of the increased risk of referral that preschoolers who are culturally[1] and linguistically diverse (CLD) face was provided through a study of 52 preschool programs in 40 states with results showing that AA preschoolers were twice as likely to be expelled than White or Hispanic preschoolers, and five times more likely to be expelled than Asian American preschoolers (Gillam, 2005).

Besides race/ethnicity, socioeconomic status (SES) is also a risk factor that might affect the performance on traditional measures of children who are CLD. Moreover, there exists a link between race/ethnicity and low SES, exemplified by child poverty rates for non-Hispanic Whites being at 11 percent, but at 37 percent for AAs in 2000 (U.S. Census Bureau, 2001). An additional issue to consider is that children from low SES

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[1] The United Nations Educational, Scientific and Cultural Organization (UNESCO, 2002) described culture as the, "…set of distinctive spiritual, material, intellectual and emotional features of society or a social group, and that it encompasses, in addition to art and literature, lifestyles, ways of living together, value systems, traditions and beliefs". Within large societies, religion, race, ethnicity, gender, class, political, sexual orientation, or a combination of these subcultural factors can define membership in subcultures. For the purposes of this dissertation, the term "culture" will be used broadly unless a specific subcultural factor (e.g. race/ethnicity, SES, gender) is specified explicitly.

backgrounds, regardless of race/ethnicity, often are exposed to different discourse styles and vocabulary than those of middle SES (Ogbu, 1981; Qi, Kaiser, Milan, & Hancock, 2006; Hart & Risley, 1995, 1999; Heath, 1983). Hence, children who possess the cultural factor of race/ethnicity along with low SES are more likely to be referred for special services (e.g. behavioral, special education, speech and language) and perform poorly on standardized tests that are designed for middle SES, EA children, or children who use Standard American English (Campbell, Dollaghan, Needleman, & Janosky, 1997; Craig & Washington, 2000; Craig, Washington, Thompson-Porter, 1998; Fagundes, Haynes, Haak, & Moran, 1998; Washington & Craig, 1992), and subsequently more likely to qualify for special services.

Gender has also been a risk factor for referral for special services. For instance, boys were four and one-half times more often expelled from school than girls regardless of their racial background (Gillam, 2005). Therefore, boys who possess the cultural factor of race/ethnicity along with low SES may be at increased risk.

Because of the limited research exploring why preschool teachers refer particular children for special services and the knowledge that communication styles differ across groups of children, the effect of communicative competence (or pragmatic skills) on behavior must be investigated in order to shed light on potential reasons for the disproportionate amount of children who are CLD being referred for special services. Beyond traditional standardized tools, referrals for special services by teachers may occur based on other factors, particularly those related to children's communication styles. Indeed, misinterpretation of pragmatic communication differences may help explain patterns of teacher referral for some children. For example, preschool teachers tend to

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refer students based on the child demonstrating a particular subset of behaviors, such as noncompliance, impulsive behaviors, and violent physical reactions, or a need for a one-on-one instructional setting (Mamlin & Harris, 1998; Nungesser & Watkins, 2005). Some also argue that referrals for special services are socially defined, where teachers often use subjective and nonquantifiable criteria (Edgar & Hayden, 1985). For example, research has shown that teachers with strict standards for behavior tended to refer children with low levels of aggression for special services more often than those teachers with more lenient behavior standards (McIntyre, 2001). Thus, the referrals in McIntyre's study depended more on how tolerant the teachers were of behaviors that deviated from their own personal standards than academic indicators. Mamlin and Harris (1998) supported this idea in their review of reasons for referral by stating that teachers may refer students because they cannot control the students' behavior in the classroom, reducing the 'teachability' of the student. Hence, it is not always academic concern (e.g. discrepancies between ability and achievement, specific academic or skill deficits) alone that leads to children being referred for special education services, but a combination of academic and behavioral matters that are driving the referrals (Mamlin & Harris, 1998). Some teachers are aware of how their reasons for referral may not match with objective, academic criteria for special education qualification. For example, over half of the teachers in Mamlin and Harris's study (1998) used the referral process to obtain resource room services for students, but these same teachers frequently said that they did not believe the special services were necessarily appropriate in all cases. Rather, the resource room services seemed to be the teachers' only option to educate students they had difficulty teaching.

Although some teachers are aware of why they may inappropriately refer children for special education services, some are not aware of how communication style and behavior influenced by the child's home setting may influence the child's communication and behavior at school. Researchers have attempted to answer the question of why teachers have difficulty teaching particular students. It has been suggested that there is often incongruence between socialization beliefs and parenting styles and teaching styles. For example, AA and L families are less often in teaching style congruence with teachers of their preschoolers than EA families (NCEDL, 2001). This incongruence can have implications for preschooler academic success. For instance, a modest link between strong home-school congruence and language and math readiness skills was found and parenting styles that were less controlling, highly supportive, and child centered were linked with early academic success in preschoolers (NCEDL, 2001). Thus, preschoolers that come from homes that are not as congruent with the teacher's interaction styles and that are more controlling and less supportive or responsive may be at increased risk for academic difficulty.

It is important that teachers understand the home-school congruence phenomenon and how it may affect their own referral practices. For example, even though teachers in Nungesser and Watkins' (2005) study agreed that the home environment contributes primarily to social competence and behaviors exhibited at school, few of the teachers believed that communication style (pragmatics) played a role in the child's behavior. This illustrates the lack of awareness among teachers that language and communicative competence can factor into resulting behavior at school. In summary, determining why teachers refer students for services is an ongoing enterprise and research to date indicates

that behaviors that differ from the teacher's and school's standards can be a contributing factor to referral for a variety of special services. Thus, a focus on how potential differences in pragmatic behaviors might relate to referral for special services is needed in order to determine why over-referral of certain populations exists.

Some data exist on gender and culture in pragmatics or politeness styles (Leaper, Tennebaum & Shaffer, 1999), but this research has not yet been translated to practice on a wide scale; neither do these data apply to the preschool age group. The lack of practical knowledge on communicative functions in preschoolers may result in teachers misunderstanding the communicated messages of children who are CLD, student conflict with peers or teachers of a different culture, and poor social outcomes for the child (Delpit, 1995; Harry, 1992; Kalyanpur & Harry, 1999; Terrell & Terrell, 1996). Gender differences in pragmatic communication may further compound the misunderstanding, possibly explaining why males are more often referred or suspended from preschool than females (Gillam, 2005).

Although some cultural and gender differences have been documented when studying pragmatic skills, communicative functions, a component of pragmatics, have not been documented adequately for AA preschoolers. Thus, there is a need for a research focus on typical pragmatic development of preschoolers who are CLD of differing SES. This information can be used to promote understanding of different pragmatic communication styles in preschool children and improve assessment and intervention practices for all children. Thus, the purpose of this study was to: (a) describe the communicative functions of preschoolers and mothers across three different races/ethnicities and two SES groups, as well as between children's gender groups; (b)

examine the relationship between mothers' and preschoolers' communicative function use, and (c) explore the relationship among mothers' and preschoolers' communicative functions; and their teacher's perception of the child's social skills, the child's vocabulary skills, and the child's expressive and receptive language skills. To lay the groundwork for the study, however, the first step is to review the theoretical frameworks and existing data on pragmatic skills.

<div align="center">*Pragmatics*</div>

There are several different language domains with Phonology, Syntax and Semantics being studied more frequently than Pragmatics. Phonology is a domain targeted at the sound system of a language. Language Syntax focuses on the *grammatical relations* between words and other units within a sentence, whereas, Semantics encompasses the *meanings* of linguistic structures at the word level. Pragmatics is the language domain concerned with the proper use of communicated utterances in social contexts. It encompasses several aspects of social communication including prosody, intonation, turn-taking, joint attention, responding to questions, and commenting (Ninio & Snow, 1996; Pellegrini, Brody, & Stoneman, 1987). Communicated utterances have a purpose or function and can be intentional or unintentional, processed or not processed, and typically follow the norms of communication behavior found in the speaker's society. Although some assume that the language domains of syntax and semantics are most important in school, pragmatic skill is proving to be equally important to a child's academic development (Brinton & Fujiki, 1993; Gallagher, 1993).

Importance of Pragmatic Skills

Anecdotally, parents, practitioners, and teachers have been known to consider pragmatics a crucial component of language, as evidenced by Individual Education Plan (IEP) goals targeted at conversational skills. Researchers have supported this idea, maintaining that because of the links among language impairment, social skills, and socio-emotional behavior, development of communicative competence is important for successful interactions with peers and school personnel (Black & Hazen, 1990; Brinton & Fujiki, 1993; Damico, & Damico, 1993; Gilmore & Glatthorn, 1982; Guralnick & Paul-Brown, 1989; Roth & Clark, 1987). Even by preschool age, children prefer to interact with more responsive (i.e. communicatively competent) peers (Hadley & Rice, 1991) and because communicative competence is integral to social interaction, a deficit in this area might predict social (Brinton & Fujiki, 1993) and/or academic failure, particularly if the child is not responsive to teachers.

In the academic setting, it is imperative that a child be communicatively competent to convey successfully their intentions, be understood, and comprehend the communicated intent of the teacher (Halliday, 1973). More specifically, a child must answer questions, as this is a communication function through which children gather knowledge and teachers gauge students' knowledge (Ryder & Leinonen, 2003). In addition to judging how children respond to questions, teachers also observe and critique the manner in which the children apply other communicative functions such as asking questions or making inferences. Therefore, to better aid teachers in measuring communicative competence, researchers continue to explore how children who are typically developing acquire pragmatic skills.

The Study of Pragmatic Development

Pragmatics is the least researched of the three language domains: syntax, semantics, and pragmatics (Bruner, 1981) and consideration of the study of language in social contexts did not come to the forefront until the 1980s (Brinton & Fujiki, 1993). Those who study pragmatic development are concerned with (a) the age of onset of particular pragmatic skills, (b) how these skills are acquired, (c) individual differences that might emerge in pragmatic acquisition, and (d) factors that influence the order and speed at which a child acquires pragmatic skills. Although pragmatics is studied on a smaller scale, it is just as important as syntax and semantics since pragmatic rules define effective and appropriate language use (Ninio & Snow, 1996). For this reason, some developmentalists have focused primarily on pragmatic research; however, there are also challenges to conducting research in this area.

Problems with Pragmatic Research

Unfortunately, research on pragmatics has been fraught with inconsistency in the analyses and definitions of pragmatic behaviors. Furthermore, the results of studies designed to analyze pragmatics in infants and toddlers below the age of three (Bates, 1976; Dore, 1974; Halliday, 1975; McShane, 1980) have limited generalizability to pragmatic skills in older children (Ninio & Snow, 1996). The variety of theoretical frameworks applied in pragmatic research has also inhibited the cohesion of studies and the corresponding conclusions. For instance, even though several studies coded the same pragmatic behaviors, many of the coding systems were designed based on different theoretical foundations (Halliday, 1975). Thus, theoretical frameworks of pragmatic research will be examined next.

Historical Overview of Theoretical Frameworks of Pragmatic Research

A historical overview of how pragmatic researchers have supported their studies theoretically is in order. The next section includes a review of: (a) the use of general language acquisition theory in pragmatic research, and (b) pragmatic acquisition theories. *General language acquisition theories applied to pragmatic acquisition.* Early in the development of language acquisition theory, it was thought that children learned language through imitation of a model, with that model providing positive reinforcement for correct language production. However, this theory of language learning did not account for children's ability to generate their own language and utter sentences not yet modeled (Bruner, 1981). Therefore, later theorists studying syntax supposed that the child came with some innate language ability, which accounted for this generative ability of novel language. Noam Chomsky (1965) proposed that children innately recognized language via a Language Acquisition Device (LAD), which allows children to recognize a universal, deep structure of language and produce well-formed utterances. This use of this theory alone to explain pragmatic development was later contested by those who believed that the LAD might need 'priming' by an outside language partner in order to work (Bruner, 1981). Furthermore, Chomsky also proposed that mentally represented grammar developed with a 'trigger' or shaping impact of environmental stimuli. To apply this theory to pragmatic development, Chomsky's 'trigger' can be considered similar to Bruner's 'primer'. Although parents can serve as this 'primer' in early childhood during social interactions, application of the LAD alone to pragmatic research was not a good fit as it was truly designed to explain syntax acquisition.

A theory for semantic acquisition was touted by Katherine Nelson called the Functional Core Model (FCM) (Bruner, 1981). As the LAD proposed that children come with innate language mechanisms, Nelson also asserted that a child is equipped with an understanding of semantic concepts about action and develops scripts or sequential structures of temporally linked acts. This process gives the child a format or context in which to organize concepts sequentially into sentence form and elaborate on what has previously been learned, moving the child past the one-word stage of language (Bruner, 1981).

These two theories of language acquisition have been used by researchers in pragmatics studies but are not entirely appropriate for the explanation of pragmatic acquisition because there is more to competent social language production than correct syntax and semantics. For instance, besides shared grammar and lexicon, pragmatic language depends on shared presuppositions about the intentions and conditions of an utterance in order to meet conversational conditions (Bruner, 1981). The stark difference between semantic/syntactic mastery and mastery of speech acts (pragmatics) is that some syntax and semantic skills can develop unassisted and are rarely followed by corrective feedback from adults during early acquisition. Parents, however, more often correct their children's violations of speech act rules or conventions (Bruner 1981). Additionally, speech acts have been observed prelinguistically, prior to the development of syntax and semantics, so this fact bolsters some theorists' ideas that pragmatic skills are the *most* important of the three domains and can serve as a scaffold for the other two domains to develop (Bruner, 1981).

Specific pragmatic acquisition theories. The broad application of syntactic or semantic language acquisition theory without consideration of the specific domain of pragmatics has gradually decreased and efforts have been made to remedy this problem in more recent pragmatic studies. Some pragmatic theories have been designed to: a) describe how pragmatic behavior is acquired, b) explain how children derive *implied* meanings that differ from the literal meaning of an utterance, or c) explain how children develop the ability to follow pragmatic rules.

Specifically, Bruner (1981) posited that the aforementioned correction of speech acts by parents that is unique to the pragmatic domain could be better supported by the theory of the Language Assistance System (LAS). The phenomenon of parental correction of pragmatic violations introduces the research question of the role of the 'tutor' in pragmatic language acquisition. As a result, previous studies have found that pragmatic skills depend on language context and interactions between two speakers, and that the adult plays a much more important role than simply being a model (LAD). The LAS assures that the child has an appropriate context in which to develop pragmatic skills and the language partner provides appropriate input to the child's LAD. Thus, the LAS, which can be described as parental correction coupled with the thought that one needs a language partner in order to have a conversation, has guided some research on pragmatic skills.

Additional theoretical frameworks specific to pragmatics have been developed. For example, we know through life experience and research that a communicated utterance can be interpreted several different ways, and Sperber and Wilson's (1995) Relevance Theory provides a mechanism to explain how an expression can be interpreted

to mean more than what is linguistically expressed. Sperber and Wilson proposed that linguistic and contextual maneuvers (e.g., asking questions about a story, or using world knowledge/prior experience to determine the intended meaning of an adult's utterance(s) are required for accurate interpretation of an utterance. A child must master three components of Relevance Theory including understanding of Linguistic Meaning, Contextual Meaning of Explicature, and Contextual Meaning of Implicature (Ryder & Leinonen, 2003). These aspects of Relevance Theory are measurable, progressive skills that increase in difficulty. Therefore, it is also an appropriate theoretical framework for the study of specific pragmatic behaviors and has been adapted by researchers to outline the developmental progression expected in their studies. Accordingly, the increasingly complex quality of the processes observed using Relevance Theory has aided developmental researchers in determining (a) if there is a developmental pattern in terms of the ability to answer questions that require increasing contextual/pragmatic processing, and (b) if there will be a developmental pattern in terms of how children use the contextual information provided by a language partner (Ryder & Leinonen, 2003).

Another angle of pragmatic development concerning the study of communicative functions during conversation has been explored using a different theoretical framework than Relevance Theory. For example, Pellegrini, et al. (1987) examined the development of the ability to follow pragmatic rules using Grice's (1975) conversational maxims as part of their theoretical framework. These conversational maxims consist of the four categories of *quantity* (i.e., contributions to conversations should only be as informative as necessary), *quality* (i.e., contributions are truthful), *relation* (i.e., contributions are relevant), and *manner* (i.e., contributions are clear and orderly, not ambiguous, verbose,

or obscure). These conversational maxims are considered universal and used across the lifespan. Although typical adults might occasionally violate conversational maxims, children's violations may indicate that they are either unable to apply their knowledge of these maxims or that they simply lack knowledge of these maxims (Pellegrini, et al., 1987). Hence, the use of Grice's conversational maxim theory in research on communicative functions during conversation is appropriate since violations of the maxims can be measured and, in turn, can add to the knowledge base of how these pragmatic skills emerge in natural, conversational contexts during early childhood.

As part of the ongoing quest to determine how pragmatic skills emerge, external contributing factors to a child's acquisition of pragmatic skills have been a focus of some scholars' research. For instance, it has been theorized that adult language input may affect acquisition, but at the same time, little research has focused on this specific area of pragmatics. Thus, Becker (1994) investigated this particular aspect of pragmatics in preschoolers because she thought her results might be conceptually important for other research questions on pragmatics.

Becker's goal was to refine and build on the limited research base of parental language input and its effect on the acquisition of pragmatic skills in preschoolers. Although there is a dearth of research in this specific area, theoretical conclusions about parental input had already been drawn. For example, Becker (1994) discusses theorists such as Bowerman, Shatz, Gleason, Perlmann, Hay, Cain, and Greif who have reported that parents actively teach pragmatics and that this is a commonplace, directive and conscious activity in which parents engage. These theorists agree that parental input entails direct instruction about what forms to use in particular social situations, direct

instruction on the nature of pragmatic conventions, and behavior that shows the relationship between linguistic form and context. Their studies also suggest that parents use particular techniques (e.g. prompting and modeling) to socialize pragmatic behaviors in their children and the researchers go on to theorize that these specific parental input traits facilitate acquisition and growth of pragmatic competence and understanding (Becker, 1994).

The theories (LAS, Relevance Theory, Gricean theory) all relate to pragmatic development but are each used for different aspects of pragmatics. And although these theories seem conceivable, few of the contexts employed in these experiments were conversational and, as Pellegrini et al. (1987) noted, pragmatic communicative competence and parental input are sensitive to the interactive context. Thus, the lack of conversational context may have impacted the amount and quality of pragmatic behaviors produced in previous studies and is foundational to the theory of direct parental instruction of pragmatic behaviors. Furthermore, closer examination of the data reveals that the theoretical ideas on parental input were based on little, and primarily anecdotal data. Rather than simply disavowing these previous theories because they were based on data that was not as rich or abundant as desired, however, Becker (1994) remained cognizant of these theories, using the theories' strengths and limitations to guide her research design. Despite Becker's efforts to improve on or verify previous theories, her conclusions should still be taken with caution until a similar study is conducted with a larger, more demographically inclusive sample.

By coding language samples for the use of communicative functions, the current study drew from the strengths of different pragmatic theories, as did Becker (1994). For

example, determination of the amount and variety of communicative functions the preschoolers and mothers used was guided by components of Grice's (1975) conversational maxims, as communicative functions were only counted if they fell under Grice's principles of *relation* (contributions are relevant), and *manner* (contributions are clear and orderly, not ambiguous, verbose, or obscure. There may have been valid communicative functions that did not conform to these two Gricean categories such as when a child was singing a song or doing a rhyme irrelevant to the immediate learning context. In the cases where communicative functions did not adhere to the *relation* or *manner* principles within the immediate conversational context (learning or free play), in the current study the utterance was not coded.

The author also agrees with Bruner's (1981) application of the LAS, which suggests the need for a language partner and 'tutor' in order for the child to have a conversation and develop pragmatic skills. Therefore, within the current study, looking for a statistical correlation between the mother's communicative function use and the child's communicative function use was driven by the LAS theory in anticipation that the results may reveal how the 'tutor's' communicative function input affects the child's communicative function output.

Pellegrini, et al.'s (1987) theoretical framework asserting that conversational context is crucial to the study of pragmatics also impacted the current study in two ways. First, the 'tutor' (Bruner, 1981) in the context of the current study was the mother; however, the mother was also in the role of teacher during part of the interaction, not just in the customary role of play partner. This was a contextual difference not often found in previous studies of language and its impact on academic outcomes may be highly

relevant, where the schoolteacher is most often in the teaching role. The second way that the theory of context played a vital role in pragmatic behavior influences in the current study concerned the manner of data collection, which allowed for a more naturalistic setting (e.g. child's home) with familiar surroundings and language partners (e.g. mother, siblings).

Last, the author accepts the Relevance Theory, which provided a framework to explain that there is a developmental progression that increases in difficulty when children acquire pragmatic skills. However, since this is a cross sectional study measuring one time point, versus a longitudinal experiment, Relevance Theory was not cited as basic to this study. Still, due to the scarcity of data on communicative function use at age four, this study may provide additional information, helping to fill that gap in the developmental profile of pragmatic acquisition.

Besides the variety and inconsistency of theoretical application in previous investigations of pragmatics in typically developing children, there are gaps in the research with respect to influences on children's pragmatic skills. Hence, some studies that sought to investigate selected external influences on pragmatic development will be critiqued in order to frame the discussion on future directions in pragmatic research and how this study was designed to address some of those future directions.

Influences on Pragmatic Behavior

Researchers have hypothesized about and provided evidence of outside influences on children's pragmatic behaviors (Becker, 1994; Damico & Damico, 1993; Hart & Risley, 1999; Haslett, 1983; Pellegrini, Brody, & Stoneman, 1987; Ryder & Leinonen, 2003; Snow, Perlmann, Berko-Gleason, & Hooshyar, 1990). For example, culture has

been tied to mother-child interaction styles and can result in varying communicative interactions. Furthermore, children of low SES, regardless of cultural background, are exposed to different discourse styles than those of higher SES (Hart & Risley, 1995). As a result, SES must also be noted as a potential influence on pragmatics for all cultural groups. In studies with older children, gender differences have also been found to affect pragmatic skills, and the language behaviors of parents might also affect their children's pragmatic skills (Becker, 1994). Researchers have also provided evidence that the conversational context and the age of the child also influence pragmatic skills (Pellegrini, et al., 1987). The variety and interaction of these influences exemplify the complexity of the study of pragmatic development. Before interactions can be explained, though, researchers work to understand and describe how each influence works individually.

Cultural differences. Language and culture are closely tied and numerous studies have documented that children are acculturated into society via language socialization with their parents, siblings and peers even before they enter school (Damico& Damico, S.K., 1993; Heath, 1983; Ochs, 1988; Sanchez, 1983; Schieffelin & Ochs, 1988; Schieffelin, 1990, Vygotsky, 1978). Therefore, if a child comes to school influenced by a culture other than the mainstream, they may have difficulty socializing in the mainstream classroom (Damico & Damico, 1993; Heath, 1983). Furthermore, the social language conventions of the child's culture can be different from the listeners' norms which might result in misunderstanding of intended communicated utterances and pragmatic behaviors, as well as negative attitudes toward the social language conventions that differ from the listener's norm (Damico & Damico, 1993; Shuy & Williams, 1973; Taylor, 1973).

Cultural influences on the specific language domain of pragmatics have been documented when considering contextual cues during interactions (Gumperz, 1982, Heath, 1983). Contextual cues are verbal and nonverbal signs provided by the speaker that help the listener relate to and understand what is being said. The listener also draws upon previous experiences and presuppositions to apply the contextual cues and accurately understand the utterance (Damico & Damico, 1993). Data gathered from Heath's (1983) study of two communities (one AA working class and the other EA working class) in the Piedmont area of the Carolinas illuminated cultural differences where the social legacies of each community influenced the contextual cues used and pragmatic behaviors used in social interactions. Furthermore, in a study comparing AA to EA children, differences in prosody, rate of speech, and standard expressions were evident during informal conversation between the two groups (Goodwin, 1990); bolstering the idea that culture has an effect on pragmatic skills.

Culture has also been proven to influence social skills when considering cultural beliefs on age and the role of children and language partners. For instance, several cultures do not allow children to converse with adults directly or ask unsolicited questions as commonly accepted in EA, middle SES society (Borofsky, 1987; Crago, 1988; Heath, 1982; Ochs, 1988). In Philips's (1983) study, American Indian children responded less to their teachers' queries when compared to EA children. Certainly, cultural differences in children's responses to adults' questions may carry over into school if a child who is CLD is uncomfortable speaking to an adult (e.g. teacher, staff, administrator) in the same way mainstream children are expected to, ultimately putting the child who is CLD at risk for difficulty in learning interactions.

Conflict management style is also an area of pragmatic behavior that can be influenced by culture (Farver & Lee-Shin, 1997; Philips, 1983; Sanchez Medina, Martinez Lozano, & Goudena, 2001). For example, in a study comparing 64, 4-to5-year-old Dutch (Holland) and Andalusian (Spain) preschoolers during leisure time at school, the Dutch children tended to make sure their point of view was known, rather than prioritize maintaining the interaction at the expense of their own personal interest as the Andalusian children did (Sanchez Medina, Martinez Lozano, & Goudena, 2001). In another study, Farver and Lee-Shin (1997) observed differences in conflict management style between 46 Korean-American (KA) and 46 EA preschoolers, and attributed these differences to how the children were culturally socialized at home by their mothers. Through observation of each child in their preschool during free-play time, it was noted that the KA children minimized conflict more during their social interactions than the EA children (Farver & Lee-Shin, 1999). In an anthropological study of American Indian children and their use of English, two grade school classrooms on the Warm Springs reservation, as well as two EA classrooms in nearby Madras, Oregon were observed and compared (Philips, 1983). The American Indian students in this study were able to maintain interactions for a longer duration without conflict breaking down the interaction. Phillips (1983) explained that this was due to the Warm Springs American Indian cultural characteristic of not needing to control others' talk turns, as the children in the EA culture were more accustomed to doing.

African American children. The influence of AA culture on language has been specifically studied. In recent years, research has been designed to evaluate the performance of AA children on traditional language assessments. Consequently, more

culturally appropriate, informal assessment protocols (Campbell et al., 1997; Craig &
Washington, 2000; Craig et al., 1998; Fagundes et al., 1998; Mount-Weitz, 1996; Qi,
Kaiser, Milan, & Hancock, 2006; Qi, Kaiser, Milan, McLean, & Hancock, 2003; Qualls
& Harris, 1999; Roberts et al., 1997; Seymour, Roeper, & de Villiers, 2003a & b;
Stockman, 1996; Washington & Craig, 1992), and a standardized tool (Seymour, Roeper,
& de Villiers, 2005) have been developed to differentiate linguistic difference from
disordered language. Yet, information on pragmatic differences in AA preschoolers,
especially when considering the reasons for referral by teachers for social communication
disorders, is lacking (Hwa-Froelich, Kasambira, & Moleski, 2007; Stockman, 1996;
Wyatt, 1999).

Despite the sparse data in the literature, certain communicative functions can
begin to be expected of AA children and demonstration of communicative functions is
important for preschoolers' academic and social success. For instance, in a study of eight,
AA three-year-olds, the common pragmatic functions observed included Comments,
Requests, Obligated and Unobligated Responses, Repairs, and Verbal Routines
(Stockman, 1996). In a more recent study of AA Head Start children using modified
Tough (1982; 1984) codes, Hwa-Froelich et al., (2007) found that the higher level
communicative functions of Prediction, Projection, Reasoning, and Repairs, were not
demonstrated as often as the other lower-level communicative functions. Verbal Routines
were also not demonstrated as much as other communicative functions. The sample size
(N=16) for this study, however, was small and the ages ranged between three and five
years old (M=3.94, SD=0.25), so generalization from this sample is challenging.
Nevertheless, more descriptive information such as these studies on how AA

preschoolers use communicative functions can contribute to the long-term goal of determining why teachers might misinterpret AA children's communicative functions and disproportionately refer them for special services.

The aforementioned studies highlight how race/ethnicity influences language in general, and, more specifically, how it influences the pragmatic domain of language. In summary, the data have shown cultural differences in components of pragmatic language such as: a) contextual cues used during interactions as those cues are based on the social legacies passed down in each culture, b) conflict management style, c) social language conventions like politeness, and d) prosody and rate of speech. In contrast, several other pragmatic language studies (Becker, 1994; Ryder & Leinonen, 2003; Pellegrini, et al., 1987) have not utilized samples that allowed for consideration of racial/ethnic influences on pragmatics. Furthermore, other studies (Butterworth & Morissette, 1996; Flax, Lahey, Harris, & Boothroyd, 1991; Kraus & Glucksberg, 1969; Loukusa, Leinonen, & Ryder, 2007) have not reported cultural factors such as race/ethnicity in their articles. There has, however, been a steady increase in the recognition of the scarcity of diverse participants in studies (Hart & Risley, 1999; Haslett, 1983; Snow et al., 1990) and more emphasis on race/ethnic culture is indicated if the research implications are to be applied to a wider population.

Socioeconomic status. In contrast, some researchers posit that SES, more so than race/ethnicity, can influence the language interaction styles of the adults in children's lives, which ultimately affects the child's language development to where pragmatic behaviors between low SES AA and EA children can be the same. Essentially, when SES is controlled adequately in research, some racial/ethnic differences may disappear. In

their study of 42 families of varying SES (e.g., public assistance, working class, professional) Hart and Risley (1995) recorded everything said around and to the very young children in the families, gathering a corpus of language including: (a) contextual information (e.g., type of activity, language partner), (b) nonverbal cues (e.g., pointing, giving), and (c) verbal behavior (e.g., pragmatic functions, types of utterances, words). Language development, especially development of vocabulary, was affected by caregiver interaction styles due to SES differences, and the amount of parent's talkativeness was positively correlated with SES (Hart & Risley, 1995).

This evidence notwithstanding, some studies have failed to find differences by SES in some components of language. For instance, some researchers have found that families of low and middle SES within a racial group did not exhibit differences in all aspects of mother-child pragmatic interactions (Hammer & Weiss, 1999). In Hammer and Weiss' study, six AA, low SES and six AA, middle SES mother-infant dyads were observed playing. Although the mothers who were low SES incorporated language goals (e.g. social goals such as songs, teasing, rough housing; task performance goals such as showing a child how to do something or directing the child; language goals such as labeling, proving a model, talking about a child's toy) in play situations significantly less than the middle SES mothers, they did not differ in the amount and type of communicative acts. These results are an example of the potential interaction between SES and race/ethnicity and that, although differences between SES within an ethnicity have been found in other language domains like vocabulary (Hart & Risley, 1995), differences in some pragmatic behaviors by SES may not always be apparent once race/ethnicity is introduced as a demographic factor. Furthermore, results of studies

producing deductions about SES influences on pragmatic skill without utilizing

racial/ethnic considerations (Becker, 1994; Butterworth & Morissette, 1996; Pellegrini, et

al., 1987; Ryder & Leinonen, 2003) should be taken with prudence. The contradictory

evidence on SES differences in pragmatic behavior is not sufficiently strong enough to

draw conclusions either way for the current study. At any rate, with Hart and Risley's

(1995) research finding of SES differences while controlling for race/ethnicity, taken

together with the referenced studies that also found SES differences, it stands to reason

that both a family's SES and race/ethnicity might influence pragmatic development. For

that reason, the current study is designed to examine both race/ethnicity and SES.

Gender. Like culture and SES, gender has been established as an influence on

language development overall. Several studies have analyzed the gender variable to look

for possible effects on pragmatic development. For example, the onset of very early, pre-

linguistic pragmatic behaviors such as pointing has been observed earlier in girls than

with boys. Butterworth and Morissette (1996) studied 13 girl and 14 boy infants over

time, using the MacArthur Communicative Development Inventory (CDI-Infant Form,

Fenson, Dale, Reznick, Thal, Bates, Hartung, Pethick, & Reilly, 1993) to gauge early

gesture behavior and language development. Girls acquired pointing skills earlier than

boys and the age of pointing onset was predictive of the number of subsequent gestures

produced and auditory comprehension at the age of 14:4 months (Butterworth &

Morissette, 1996). But because the statistical difference between girls and boys was slight

in this case, the results only pointed to a *potential* difference in nonverbal pragmatic

skills by gender. Additionally, Loukusa et al., (2007) conducted a study of pragmatic

language comprehension development in 210, typically developing Finnish children ages

3- to 9-years-old, but no gender differences were found on their pragmatic processes of reference assignment, enrichment, and implicature (Relevance Theory).

Nevertheless, work by Butterworth and Morissette (1996) showing slight gender differences can support earlier research by Haslett (1983). Using Joan Tough's (1984) communicative functions as a measure, Haslett (1983) studied 49 preschoolers of various SES and ethnicity aged 2-5-years-old. Her data showed that even though there were no significant differences in the types of communicative functions demonstrated by gender, girls developed language strategies (communicative functions) earlier than boys, resulting in the girls achieving a more advanced level of cognitive complexity in their language strategies. Furthermore, boys in Hwa-Froelich and colleagues' (2007) study did simpler types of Reporting than girls such as labeling, as well as more negative Obligated Responses than the girls.

In addition to gender differences in pragmatic behaviors among children, language partners may interact differently with a child based on the gender. For example, research on parental socialization of children has indicated that there are differences in parent responses to children based on the child's gender (Pellegrini, et al., 1987). Moreover, theorists have suggested that fathers are more concerned with a son's performance than a mother would be. However, this notion has been contradicted by other research where fathers interacted with their children similarly, regardless of gender (Pellegrini, Sigel, & Brody, 1985a, 1985b). As a consequence, investigation of the effect of children's gender on parent reactions has receded from the forefront and, instead, researchers have focused on gender differences between parents in different interactional settings with the child (Pellegrini, et al., 1987).

Overall, gender differences found in these studies (Haslett, 1983; Butterworth & Morissette, 1996) have been consistent with the gender differences expected and shown in language development studies of syntax and semantics. Aside from smaller, case study type samples (Flax et al., 1991) or the few pragmatic studies that did not control for gender (e.g. Snow et al., 1990), pragmatic researchers have done an adequate job of either controlling for gender by balancing the samples as much as possible (Butterworth & Morissette, 1996) or having only one gender in the study (Kraus & Glucksberg, 1969).

Effects of parents. Since evidence of the interaction between the factors of child gender and parental behaviors have been observed (Pellegrini, et al., 1987), further scrutiny of parental effect on pragmatic development is warranted. First, parents' overall style of interaction with children may affect their children's language. Furthermore, differences in parental practices by racial/ethnic and poverty status have been documented where AAs and parents who were Poor used more control and criticism/correction more often than dialogic practices (e.g. elaboration, explaining, recognition of cause-effect relationships in order to help the child draw their own conclusions, responding sensitively), when compared to Non-Poor, EA parents (Barbarin, Aikens, Swick, Early, Bryant, Clifford, & Howes, 2007). The increased use of dialogic practices predicted preschoolers' language skills but had no effect on socioemotional competence. The parenting style characterized by more control also had no effect on child language. These results show how dialogic parenting practices, which are similar to the communicative functions of Reporting, Reasoning, and Responding, may be influential on preschoolers' language development.

Given that parents are usually a child's first language partners, the study of conversational skills between children and their parents is a logical point at which to start research on the development of communicative competence. In a study of five EA, middle SES families, Becker (1994) audio taped the interactions among the family members over a one-year period in order to analyze the parental language input to each preschooler and each preschooler's growth in pragmatic competence. The research showed that parents provided a variety of direct and indirect pragmatic input in response to their children's pragmatic behaviors and these indirect comments forced children to devise the correct pragmatic response without a direct model by using their cognitive skills. This research was important as it confirmed the results of previous studies asserting that practice of pragmatic skills with an increased cognitive load (e.g. child response to indirect parental input) can facilitate a child's acquisition of more complex pragmatic skills. Researchers have also argued that: (a) pragmatic socialization is common, (b) the predominant form of parent input is prompting and modeling, and (c) despite those two prominent forms of input, there are differences in parental pragmatic input across families (Becker, 1994). Becker noted that individual differences across families in her study were related to the number and length of interactions the parents provided. Therefore, between family differences should not be inferred from this specific data alone since the amount of interactions differed. Future research designs could remedy this problem by either standardizing the amount of time spent in interactions by each family, or reducing the length of observations analyzed from families who have excessive data.

Investigators also have described how parents behave in pragmatic language interactions, but with samples that use only one race/ethnicity and usually middle SES, widespread generalization of these conclusions is not possible. For example, parents can influence their children's pragmatic development directly and Becker (1994) suggested that parents recognize their obligation to foster pragmatic skills in their children as a function of acculturation and "proper" parenting. This might be a safe inference to make, but there were still differences found in parental pragmatic input that Becker attributed to the child's past behavioral responses to input provided, families' beliefs about how pragmatic skills are acquired, and differing socialization styles among the families (Becker, 1994). So even in her homogenous sample, the family differences in pragmatic input were significant and might indicate that if the sample were expanded to different SES and cultures, ideas about pragmatic socialization being common, a part of acculturation, and also inputted via a direct prompt or model might differ across groups. Thus, further study on parental influences on children's pragmatic behaviors with more comprehensive samples is necessary.

Historically, parental reactions to children's violations of syntax rules had been empirically examined, but not reactions to pragmatic violations. In order to help fill this gap in the literature, Pellegrini et al. (1987) studied 54, 2- 3- and 4-year-olds who were interacting with their mothers, fathers, and then their parents together in the home. Mothers and fathers responded differently to children's language when they were in dyads with the children vs. triads where both parents and the child were present (Pellegrini et al., 1987). Previous theories hypothesizing that parents interact differently with children depending on the interactional context were also confirmed by this data.

However, the ultimate goal of maintaining discourse was evident for both parents even though fathers were deemed to be more directive by correcting violations more than mothers. Fathers were similar to mothers in that they still tried to maintain discourse in their own way by modeling and clarifying for the children (Pellegrini et al., 1987). Therefore, the goal of discourse continuation that is more apparent in mothers and the directiveness trait more often demonstrated by fathers might not be mutually exclusive as previously thought; and fathers could have the same goal that just manifests itself in a different way.

  Mother's pragmatics. Since mothers are most often primary caregivers in early childhood, they have been specifically studied as a sub-group when considering parental influence on child language acquisition. As the mother may influence the child's language skills based on the level of language input provided (Kloth, Janssen, Kraaimaat, & Brutten, 1998; Pellegrini, Perlmutter, Galda, & Brody, 1990; Teichman, & Contreras-Grau, 2006); Zegiob & Forehand, 1975), the mother's pragmatic input may also influence the child's acquisition of pragmatic skills. Previous literature on parental language influence on typical language development has suggested a hierarchy of parental talking styles (Hart & Risley, 1995; Kloth et al., 1998; Pellegrini, McGillicuddy-DeLisi, Sigel, & Brody, 1986). For example, parental language that is more directive and less responsive does not place as much cognitive demand on the child and is characterized by more interruption and redirection of the child's attention and, ideally, parental language would be more responsive (Beckwith & Rodning, 1996; Paavola, Kunnar, & Moilanen, 2005; Tamis-LeMonda, Bornstein, Baumwell, 2001; Yoder & Warren, 2001). Essentially, the parent exerts more control over the interaction, resulting in less variety in the child's

language production and/or comprehension (Baumwell, Tamis-LeMonda, & Bornstein, 1997; Hart & Risley, 1995). On the contrary, a higher level of parental language is more sensitive and responsive to the child, thus facilitating increased variety in and quality of child language output (Baumwell, et al., 1997; Peterson, Jesso, & McCabe, 1999; Whitehurst, Falco, Lonigan, Fischel, DeBaryshe, Valdez-Menchaca, & Caulfield, 1988). Although the children in Hockenberger, Goldstein and Haas' (1999) study had developmental disabilities, the same phenomenon of a positive relationship between increased facilitative style and children's language outcomes was evident in these low SES, mother-child dyads. Further, Kloth et al., (1998) more specifically identified three levels of mother's communicative style which consisted of: (a) Non-intervening (e.g. no direct pressure from the mother for the child to respond verbally), (b) Explaining (e.g. mother's goal was to provide information), and (c) Directing (e.g. mother engaged in directing the child's behavior by means of verbal control). A significant positive correlation existed between the Explaining style and the outcomes of children's receptive language (Kloth et al., 1998). The two levels of Directing and Explaining correspond respectively with mother's "lower" level versus "higher" level pragmatic behaviors measured in the current study.

In a specific study of pragmatic behaviors of mothers interacting with their children during teaching tasks, Pellegrini et al., (1986) posited that lower level talk occurred when a mother provided for the child less cognitively demanding and more directive language such as statements, directives, and conversational management comments. Higher level input from the mother included strategies that were more demanding for the child to process and respond to, such as questions or statements that

prompted the child to evaluate the situation (Pellegrini et al., 1986). Culture has also been tied to mother-child interaction styles and can result in varying communicative interactions (Becker, 1994; Green, 2002; Ochs & Schieffelin, 1986, Ogbu, 1981; Teichman, & Contreras-Grau, 2006). African American culture and its role in mother-child interactions have been researched specifically.

African American mother-child interaction. Several studies have been conducted on mother-child interactions of AAs when considering other language domains (Britto, Brooks-Gunn, & Griffin, 2006; Hammer, Nimmo, & Cohen, 2005; Roberts, Jurgens, & Burchinal, 2005; Wallace, Roberts, & Lodder, 1998). Few studies, however, have been designed to describe AA mother-child interaction concerning pragmatic skills and most had small sample sizes and did not consider SES (Blake, 1993; Hammer & Weiss, 1999, Pellegrini et al., 1987). For example, Blake (1993) coded three AA mother-child (aged 19-27 months) interactions for pragmatics and found that mothers and children primarily used statements to maintain the conversation, engage each other, or meet personal wants and needs. Although Blake's (1993) study provided information on communicative functions of AA mothers, the limitations of small sample size and the fact that the participants were infants and toddlers are apparent in regard to the current study. An additional barrier to generalization across studies on AA mother-child interactions includes the variations in the coding of communicative functions that occur across the studies. Hence, research on typically developing, AA preschoolers with consideration for SES, larger sample size, and the effect of the mother's language on the AA child's language is still needed.

Context. The context in which parents interact with their children can affect the language production of the children during conversation, and therefore may have an influence on the child's communication in the context of the school setting with teachers and peers (Becker, 1994; Pellegrini et al., 1987). As referred to in the discussion on parental influence on children's pragmatics, conversational participants need to be studied in a variety of interactional settings, as language production varies according to the interactional context of the conversation. For example, empirical data showed that when examining differences between father-child and mother-child dyads, fathers in dyads with 2-year-olds repeated their own utterances more than mothers in 2-year-old dyads (Pellegrini et al., 1987). But in the third, triad context, where both parents interacted with the child at the same time, no between parent differences were found for any of the reaction categories. So, it is apparent that differing conversational contexts can be dynamic and variable, potentially affecting the pragmatic behavior of the child in different ways. Pellegrini and colleagues' findings of parental responses to children's language differing as a function of interactional context was critical to the field of pragmatic research because previous studies had not focused on the type of language context as a key variable to consider.

Conversational context is also thought to be integral to the learning process when pragmatic skills are involved. For instance, in a study of 45 3-, 4-, and 5-year-olds (24 girls and 21 boys; same SES, no ethnicity indicated, the children were found to accurately answer questions of particular grammatical forms in one context but not in another (Ryder & Leinonen, 2003). Thus, it was advantageous that Ryder and Leinonen recognized that pragmatic and situational factors, not simply the linguistic structure of a

question posed by a teacher, might be the cause of difficulty in answering questions. Unfortunately, the same study did not elicit the language in social conversational contexts like others had (Becker, 1984; Haslett; 1983; Pellegrini et al., 1987) and this research design factor presents difficulties for generalization of findings across studies.

Age. Data on parents as models of pragmatic behaviors, as well as of the early development of prosody and communicative functions in children up to the age of three years have been described (Butterworth & Morissette, 1996; Flax et al., 1991; Halliday, 1975; Hammer & Weiss, 1999). The examination of communicative function use during later preschool is lacking, ironically, when this time point in language development is characterized by rapid growth and the typical increase in social situations (e.g., preschool, childcare) makes this time period ripe for pragmatic learning.

The few studies that have focused on preschoolers have found age effects on pragmatic behavior. In their data, Ryder and Leinonen (2003) observed a developmental pattern of question answering skills and the use of complex contextual information to answer questions that increased with age. As the children got older, they were obliged to integrate prior context, world knowledge/experience, and verbal cues to answer questions that required making implications (Ryder & Leinonen, 2003). Furthermore, Loukusa et al. (2007) found that the largest increase in occurrence of correct answers provided by the children happened between the ages of 3 and 4-years-old. More of this kind of age-related data is critical because it provides knowledge to educators and interventionists of what specific types of contextual cues would better facilitate the answering of more complex questions at certain ages.

Pellegrini, et al. (1987) hypothesized that children would violate maxims less with increasing age, and their data also showed a significant effect for age. These researchers concluded that when younger children violate maxims with "no response" they may not yet realize they are obliged to respond to a particular type of comment made by the parent (Pellegrini et al., 1987). This thinking is reasonable and additional explanations for instances when the children responded irrelevantly at older ages were provided. In these cases, Pellegrini and colleagues claimed that it seemed the children knew they were obliged to provide some type of response, but might not have understood the statement semantically. This exemplifies the suggestion that young children do recognize the social obligation to respond to certain forms of utterances (e.g. syntactically or semantically) even if they are not able to respond accurately (Bruner, 1981; Krauss & Glucksberg, 1969).

Researchers have also presented evidence that the age effect on pragmatic skills persists past early childhood through adolescence. For example, in early elementary school (Kindergarten-5th grade), communicative competence continues to gradually increase as a function of age (Krauss & Glucksberg, 1969). In their study of 74 male Kindergarten, 1st, 3rd, and 5th grade dyads, Krauss and Glucksberg (1969) measured the children's ability to correctly assign referents, and the adequacy of their communication. What's more, they took care to differentiate between linguistic and communicative competence because children can achieve linguistic competence (grammatical) at age 3:5, but achieve some level of communicative competence prelinguistically (Bruner, 1981). Because of the empirical evidence presented, the study of developmental stages of pragmatic abilities cannot be ignored since major developmental shifts have been

observed with specific communicative functions and strategies at certain ages (Haslett, 1983). Other research has targeted pragmatic language development in even older children in adolescence, showing that the development of language does not stop at late childhood as previously believed (Nippold, 2000). The difference between earlier and later developing pragmatic skills, however, is that pragmatic development in adolescence is subtle and more gradual than the rapid growth found in preschool. Due to the still meager amount of data exemplifying potential age effects on pragmatics at certain ages, research from infancy through adolescence can be utilized in order to better elucidate how pragmatic skills are developed. Meanwhile, the current study's focus will be one age point (4-year-olds) that has been neglected in previous pragmatic research.

Coding systems to examine pragmatic behaviors. The last aspect to be discussed concerning previous pragmatic research involves specifics about some coding systems utilized in those studies. Becker's (1994) examination of parental input to preschoolers included 18 behavioral codes that were divided into four categories of: (a) How to say it, (b) When to say it, (c) What to say, and (d) How to organize it. Becker based the coding system on, "… the literature and from transcripts collected by two other researchers" (Becker, 1994, p. 135). Becker, however, did not identify this previous literature or the two other researchers specifically. Although this coding system included many of the pragmatic behaviors to be used for the current study, Becker's sample consisted of five EA, middle SES families. Hence, it was not clear whether the application of this exact coding system to the current study would be appropriate for the low SES EA, middle and low SES AA, and middle and low SES, L participants in the current study. Pellegrini et al. (1987) also coded for pragmatic behaviors during parent-child interactions, but their

coding system was designed to measure parental pragmatic behaviors and the extent to which the children were actively engaged in the interaction. Thus, the coding system did not allow for a more specific analysis of the child's pragmatic behavior as it did for the parents. Although Flax et al.,'s (1991) coding system used with preschoolers included some communicative functions that could have been used in the current study, their system did not include codes for higher level pragmatic behaviors expected of 4-year-olds such as Reasoning, Projection, Imagining, or Predicting. A coding system more appropriate for 4-year-olds was found in Joan Tough's (1982, 1984) system, which was comprised of 39 different categories/subcategories with seven major categories of communicative behaviors. Previous researchers (Haslett, 1983; Hwa-Froelich et al., 2007) have adapted Tough's system of codes that represent cognitive distinctions associated with communication, but further modification, detailed in the Methods chapter, was applied for the current study.

Future Directions for Pragmatic Research

The reviewed studies have shed light on strengths and weaknesses in the pragmatic literature and provided ideas on how to refine future research designs. Problems with: (a) the application of various theoretical frameworks, (b) the language context used, (c) age of the participants, (d) sample size, and (e) homogeneity of sample demographics have made generalization of these results difficult.

Theoretical Application

Future directions in research could include application of language development theory that is appropriate for pragmatics. Pragmatic language acquisition must occur in a social context (Pellegrini, et al., 1987) and for this reason it is not practically sound to say

that language can develop with LAD only (Bruner, 1981). Thus, a critique of the theories

discussed indicates that an assessment of a child's conversational partner and the input

the partner provides is also essential to the understanding of the child's pragmatic

development. Additionally, Bruner (1981) joins several other theorists who claim that

because the observation of language development is context-sensitive, pragmatic skills

would be best studied in a social context with a conversational partner. The current study

applied these pragmatic theoretical ideas through evaluation of the mother's pragmatic

behavior and inclusion of a social interaction like play.

Context

The lack of conversational context being controlled in several studies has also

limited the naturalistic elicitation of pragmatic behaviors from the participants. Pellegrini,

et al., (1987) found differences in dyad vs. triad contexts, indicating that consideration for

conversational setting in future research design is essential. Furthermore, because

observation of communicative competence can vary according to the location of the

observation and topics discussed/activities done, future research should take the physical

context of the conversation, as well as the tasks into account. For example, research has

been conducted in classrooms where teachers provide learning interactions, whereas

parent-preschooler investigations often employ play interactions. Because of this, more

research to determine communicative competence of the child when the parent is in the

role of a teacher and play partner might elucidate on the role of pragmatic skills and

development during early learning experiences. The proposed study addressed this issue

by having the mothers participate in two teaching tasks with the child in addition to the

play task. Moreover, the physical environment became more natural because it was set in

the child's home. Although Pellegrini et al. (1987) took care to account for context and Becker (1994) provided a natural, home environment; they unfortunately omitted non-verbal communication from their coding schema. This limitation was addressed in the current study when coding was performed from videos in order to observe nonverbal cues that might provide a more comprehensive view of the participants' communicative competence.

Age

Now that there is some knowledge on the development of pragmatic skills in young children, researchers must also carefully consider the specific age of the young children being studied. This study aimed to reduce the dearth (relative to data gathered on older children and infants) of pragmatic information on preschool aged children. A 4-year-old time point was ideal as this is during formative academic years at which judgments and decisions are made about children that might affect the rest of their academic career.

Diversification of Samples

Future considerations in pragmatic research would also include diversifying and increasing the sample size to confirm previous results and provide new information on under-studied populations. Pragmatic research has traditionally used samples homogenous in SES and, more often than not, race/ethnicity; so generalizing to different populations has been limited. Thus, diversification of samples in new studies or replication of a myriad of scientifically sound studies with consideration for different populations could enrich the knowledge base of pragmatic use of language in a wider array of children.

Diversification of samples in research is needed because, more often than the mainstream group, children in lower SES and non-mainstream racial/ethnic groups are perceived by teachers as being uncooperative or uninterested in schoolwork and subsequently referred for behavioral or specialized services. However, as is often argued, it could be that the previous world knowledge and experiences that they come to school with (Alexander, Entwisle, & Thompson, 1987; Damico & Damico, 1993; Heath, 1983; Ryder & Leinonen, 2003) differ from the mainstream culture, which might contribute to the children seeming uncooperative or equipped with lower social skills. Furthermore, different verbal cues provided by their earliest educators (parents) might influence the children's cognitive development of question answering skills at school entry. It is also possible that the questions posed to the students through mainstream curriculum are also incongruent with these children's prior experience and world knowledge. Consequently, thoughtful consideration for culture and the potential home-school language incongruence were implemented in the current study through comparison of different cultural groups, along with provision of activities (e.g. solving a block puzzle, maze, and pretend play) and communicative function codes (Tough, 1984; Stockman, 1996) that are not dependent on a specific language dialect or learning style. Continued refinement of research in pragmatics has far reaching implications for children. Aside from improving day-to-day socialization outside of school, this information can be used to promote understanding of different pragmatic communication styles in preschool and improve assessment and intervention practices. Once the research has been translated to practice, teachers can model and facilitate children's language and a focus on pragmatic skills can

prepare children for successful learning interactions, conflict management, and peer interactions in mainstream classrooms.

Conceptual Framework

As this is an exploratory study to describe the communicative function use of AA, EA, & L 4-year-olds and their mothers, it was difficult to make concrete hypotheses. The dearth of previous research in this area with consideration for culture and SES, and the lack of adequate sample size in earlier studies also limited the ability to establish a firm hypothesis based on these demographic factors. Hence, it was expected that all typically developing children and mothers could demonstrate the communicative functions used in this study, regardless of race/ethnicity and SES (See Figure 1), and some differences in use may be more or less likely due to context or age of the children. Based on the absence of the communicative functions of Prediction and Projection in a small study (Hwa-Froelich et al., 2007), of AA preschoolers, however, it may be hypothesized that the AA children might not demonstrate those two particular communicative functions to be analyzed in the current study. But, that study had a small sample size (N= 16) thus limiting generalization of those results. Hence, the conceptual framework and statistical analysis of the current study allowed for discovery of any differences by race/ethnicity and SES (See Figure 1).

Previous literature on gender and language, did allow for a hypothesis that gender may influence how the children demonstrated communicative functions (Haslett, 1983; Butterworth & Morissette, 1996) (See Figure 1.1). For example, girls typically develop language more quickly than boys in a variety of language domains (e.g. articulation, vocabulary, syntax). Furthermore, parents also have been found to provide more casual

language stimulation to their girl children than their boys (Pellegrini et al., 1987).

Therefore, the conceptual framework was designed to examine whether the girls in this

sample demonstrated more usage of or variety of communicative functions than the boys

(See Figure 1.1).

Because pragmatic skills are important in academic settings, communicative

functions may be linked to a child's performance in other language domains. Further,

teachers refer for special services based in part on student behavior. Thus, communicative

functions, a component of pragmatic behavior, must be examined in order to determine if

differences in communicative function use might explain teacher referral practices. For

this reason, the current study explored whether the child's communicative function use

was related to the child's vocabulary and expressive and receptive language skills. Since

listeners also use communicative functions to judge communicative competence

(Halliday 1973; Hymes, 1964), the conceptual framework of this study also employed

communicative functions as a predictor of how the children's teachers rated their social

skills (See Figure 1.2).

The idea that children's language is reflective of parental language and SES

environment (Becker 1994; Hart & Risley, 1995; 1999) was foundational to the

conceptual framework of this study (See Figure 1.3). Thus, if a mother modeled more of

certain communicative functions when interacting with the child, it was anticipated that

the child also would produce these same communicative functions more so than other

children whose mothers did not use these functions so readily (See Figure 1.3).

Figure 1.1. Conceptual framework for the potential effects of demographics on frequency and type of communicative functions

Children's Demographics	Children's Communicative Functions
• Race/Ethnicity • Socioeconomic Status • Gender	• Responding • Self Maintaining • Directing • Reporting • Reasoning • Predicting • Projecting • Imagining
Mothers' Demographics	Mothers' Communicative Functions
• Race/Ethnicity • Socioeconomic Status	• Responding • Self Maintaining • Directing • Reporting • Reasoning • Predicting • Projecting • Imagining

Figure 1.2. Conceptual framework for the potential effects of children's frequency and type of communicative functions on children's outcomes

Children's Communicative Functions		Teacher's Perception of Children's Social Competency (TCRS)*

- Responding
- Self Maintaining
- Directing
- Reporting
- Reasoning
- Predicting
- Projecting
- Imagining

Children's Vocabulary Skills (PPVT-III)*

Children's Language Skills (OWLS)*
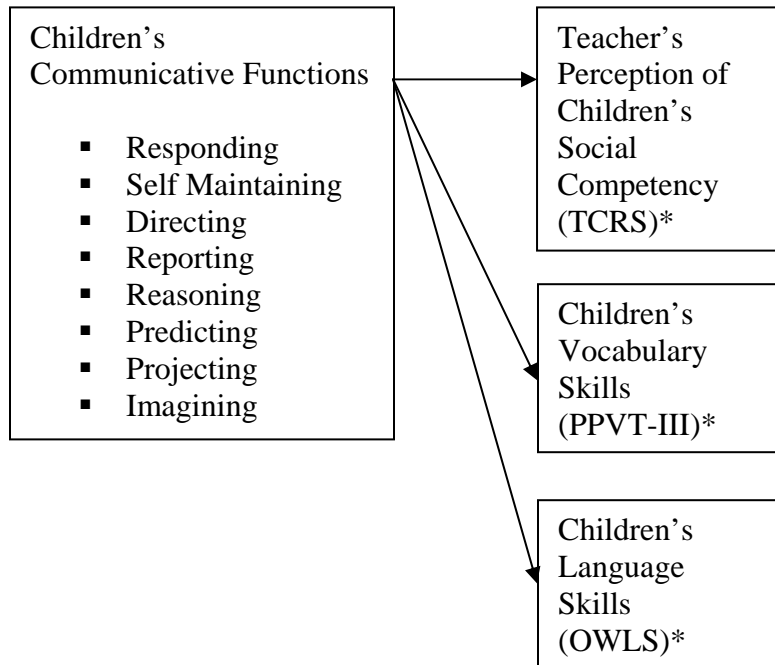
* TCRS = Teacher Child Rating Scale *(TCRS, Hightower et al., 1986), PPVT-III = Peabody Picture Vocabulary Test-3rd edition* (PPVT-III, Dunn & Dunn, 1997), OWLS = *Oral and Written Language Scale* (OWLS, Oral Expression Scale, Carrow-Woolfolk, 1995).

Figure 1.3. Conceptual framework for the potential relationship between mothers' frequency and type of communicative functions on children's frequency and type of communicative functions

Mothers' Communicative Functions

- Responding
- Self Maintaining
- Directing
- Reporting
- Reasoning
- Predicting
- Projecting
- Imagining

Children's Communicative Functions

- Responding
- Self Maintaining
- Directing
- Reporting
- Reasoning
- Predicting
- Projecting
- Imagining
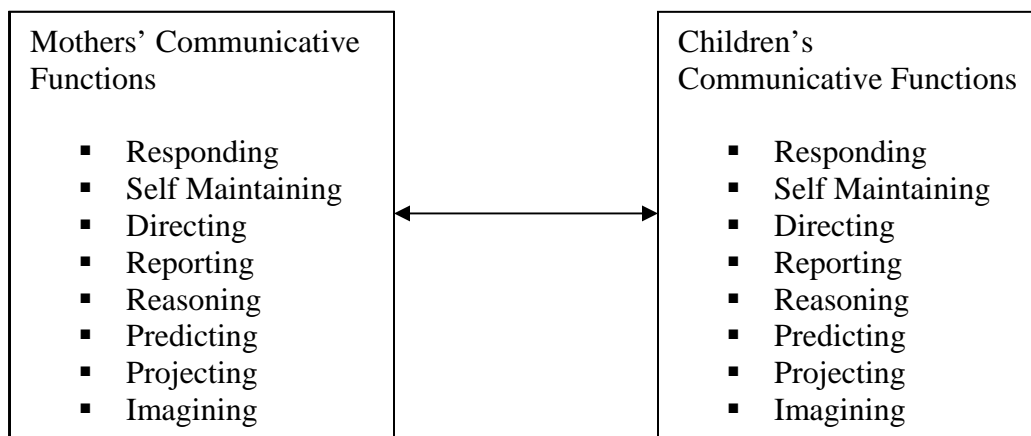
Current Study and Research Questions

This study was built on enhancing the results from previous pragmatic literature through: (a) consideration of the child's communicative partner (mother) in an additional role (teacher) as opposed to the often used play partner role, (b) consideration of the language context (e.g. home setting versus school or lab setting, play task versus learning task), (c) stratification of the sample by gender, SES and race/ethnicity (while applying background knowledge of how SES, culture, and gender can influence pragmatics), and (d) increased sample size. Thus, this study was designed to address the following research questions:

1) What is the frequency of use of communicative functions among typically developing, 4-year-olds and outcomes, and to what extent is this influenced by: (a) Poor or Non-Poor status; (b) AA, EA, and L race/ethnicity; and (c) gender during interactions with their mothers?

2) What is the frequency of use of communicative functions among (a) Poor or Non-Poor; and (b) AA, EA, and L *mothers* during interactions with their 4-year-old children?

3) To what extent do the frequency and type of the children's and mothers' communicative functions relate to the outcomes of (a) expressive and receptive language, (b) vocabulary, and (c) teacher perception of child social competency?

4) What is the correlation between mothers' communicative function use and four-year-old children's communicative function use during interactions?

CHAPTER 2: METHODS

Participants and Procedures of Larger Study

Secondary analyses were conducted on data collected as part of the Familial and Social Environments (Family) study funded by the Foundation for Child Development, which was a supplement to the National Center for Early Development and Learning (NCEDL) Multi-State Study of Pre-Kindergarten. The NCEDL study examined the outcomes and quality of pre-kindergarten (Pre-K) programs under the direction of state and local educational centers or in public schools. Participant data of language scores, vocabulary, and teacher ratings of children's social skills were collected at the beginning of Pre-K until the end of Kindergarten. Demographic data, language samples of mother-child interactions, and child outcome data were used for the current study.

Two hundred forty childcare centers (forty per state) were randomly selected from six states (Georgia, New York, Ohio, Kentucky, Illinois, and California) that had provided considerable resources to their Pre-K programs. Using stratified random sampling, their Pre-K programs were diverse in terms of geography (i.e. both rural and urban centers included), program settings, program duration (full day vs. part day), and educational requirements for teachers. One classroom from each center was then randomly selected to account for variation in program duration and teacher credentials. Four children (two boys and two girls) were randomly selected from each classroom, resulting in a total of 960 participants.

A total of 511 families from five states (Georgia, New York, California, Illinois, and Ohio) participated in the Family component of the study, with 296 mothers consenting to participate in the home based interviews from which the current study's mother-child interaction was observed. Additional funding for these home visits was provided by the Foundation for Child Development. The Family component of the NCEDL study was designed to provide information on each participant's home relationships, practices, and learning environments in order to examine the influence these factors had on school readiness outcomes, such as socio-emotional functioning, numeracy, reading, and academic motivation. Pertinent data from the Family component included each mother's self-report of demographic factors such as race/ethnicity and SES, as well as the videotaped mother-child interaction of two teaching tasks and a play interaction.

Twenty-five family interviewers (nine bilingual) were recruited and attended a three-day training session on the goals, measures, and equipment used in the study. Once trained, interviewers contacted families via postcards and then conducted a follow-up, scripted phone call to further discuss the study and obtain verbal consent. Home visits were then scheduled and the consent form was reviewed again at the beginning of the home visit in order to obtain written consent. Individual home-based interviews, information on socio-economic, socio-cultural, and familial contexts were obtained through open-ended questions, structured ratings, and videotaped mother-child interactions. Although these interactions were designed to allow participants to demonstrate a variety of cognitive skills, the mother-child interactions were used solely as a language sample within the current study.

Participants and Procedures for Current Study

Ninety-five participants were drawn from a sub-sample of the NCEDL database. Choices for race/ethnicity included Euro-American, African American, Latino, Asian/Indian, and Other. For the current study, only English speaking Euro-American, African American, and Latinos were used and the sample size was based on the number of English-speaking participants that had complete data. Forty-six percent of the child participants were male with 54% females. Thirty-five percent of the participants were AA, 37 % EA, and 28% L. For mother's race/ethnicity, one mother of a L child was EA. The study participants were split almost evenly by SES with 48 Poor (based on 150% of the federal poverty guideline) and 47 Non-Poor participants (above 150% federal poverty guideline). Table 1 illustrates the demographic characteristics of the study participants.

Table 1. Participant Demographic Characteristics

	Participants (n = 95)
Child's gender	
Male	46%
Female	54%
Child's race/ethnicity	
African American	35%
Euro-American	37%
Latino	28%
Mother's race/ethnicity	
African American	35%
Euro-American	38%
Latino	27%
Child and Mother's SES	
Poor	51%
Not Poor	49%

Mother-Child Interactions within the NCEDL Study

Parents and children participating in the Family component of the NCEDL were videotaped together in their homes doing two teaching tasks and one play task. The tasks were adapted from the National Institute of Child Health and Human Development (NICHD) Study of Early Child Care (2000). During the home visits, mother-child dyads were videotaped doing the three tasks for a maximum of 30 minutes. Mothers were briefly instructed by the interviewer to: 1) teach the child how to complete a maze in an Etch-a-Sketch toy, 2) teach the child how to solve a block puzzle, and 3) engage in free play with animal puppets. The first task typically engaged the child in executive function skills of planning and self control where the child was required to move a needle point from the start to the end of the maze without crossing the maze lines. For the block puzzle task, parents taught the child to combine blocks of different shapes and sizes into seven different towers to match a model rectangular tower. The skills of shape recognition, spatial perception, and pattern matching were employed for completion of this task. For the last task, the mother and child were free to play with animal puppets that allowed participants to exhibit a variety of play skills.

When fathers were primary participants in the interactions, those cases were excluded from the sample for the current study as male caregivers might interact with children differently than female caregivers (Pellegrini et al., 1987). Grandmothers who served as the child's primary guardian were included since they serve as the "mother figure" for the child. When siblings, fathers, and grandfathers participated during the interaction in a secondary role, the interactions were included. In these cases, only

utterances of the mother/grandmother and preschooler, however, were analyzed in order to maintain consistency of coded participants across language samples.

Mother-child interactions were recorded with a SONY DCR-TRV530 video camera recorder onto SONY Hi8 MP 8 mm video cassettes. The cassettes were converted into DVDs using a Pinnacle Dazzle DVD recorder. Research assistants used the DVDs to transcribe the language samples while using Windows Media Player 9 Series to view the DVDs. All language samples were transcribed into Codes for Human Analysis of Transcripts (CHAT), a format for computer transcription of the utterances (MacWhinney, 1996). Transcripts were then transferred into Microsoft Excel 2000 for ease of coding.

Development of Coding System

To examine the child's and mother's use of communicative functions, the utterances of each participant were coded. To aid in the development of the current coding system, coding systems from previous studies were reviewed. Because most studies had limited codes that did not allow for a more comprehensive observation of pragmatic behaviors in preschoolers, or focused on parent pragmatics and not children's, it was determined that the system of coding communicative functions that appeared the closest to what was needed in the current study was that of Tough (1982, 1984).

In order to link this coding system with how children might use these communicative functions in the classroom, the communicative function codes may be described in relation to the Galileo Alignment with Head Start Framework Indicators (U.S. Department of Health and Human Services, 2002) assessment tool, which was developed for legislation (ACYF-HS-IM-00-18 (8-10-00)) that includes the Head Start Child Outcomes Framework. This legislation was established to provide results-based

education performance standards and measures in Head Start, a federal program for preschoolers aged three to five years in low-income families. Head Start is an example of a preschool program that uses research-based curricula and methods and the program is common to children who are low SES. Hence, referral to what skills teachers expect from children in this type of program was appropriate for use in this sample.

The Galileo assessment tool includes the following Head Start domains of learning: a) Language and Literacy, Early Math, Nature and Science, Fine and Gross Motor, Creative Arts, Social and Emotional Development, Approaches Toward Learning, and Physical Health Practices. Within these domains, several sub-categories and skills are outlined (U.S. Department of Health and Human Services, 2002) and will be referred to in the following discussion. Many of the function codes used within the Galileo Framework translate to those used by Tough, for example Child Reporting (Labeling) used during Language Arts or Science activities, or Child Predicting used during Literacy activities. Thus, in adapting Tough's (1982, 1984) coding system, consideration was given to how these functions may map onto those utilized in the Galileo Framework.

Tough's original coding system was comprised of 39 different categories and subcategories with seven major categories of communicative behaviors. Other researchers had adapted Tough's system of codes that represent cognitive distinctions associated with communication. For example, in a study focused on preschoolers, Haslett, (1983) utilized Tough's coding system and Hwa-Froelich et al., (2007) also adapted Tough's (1982, 1984) coding system for use with AA Head Start children. These adaptations included elimination of upper level sub-categories of the seven major categories as the sample included preschool children only. Hence for the current, the later

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developing sub-category functions expected of school-aged children were eliminated. Tough's codes, although originally focused on children, can also be used with adults and were applied to analyze the mothers' pragmatics in the current study, since it was hypothesized that the mother's communicative functions may correlate with the child's during interactions and these functions may vary across SES and racial groups.

For the current study, all seven major categories were used but sub-categories were further adapted (See Appendix). For instance, some of the sub-categories were deleted as they may not have been expected as often in the typically congenial mother-child interaction (e.g. Subcode of Threatening under major category of Self-Maintaining), or it was difficult to determine accurately and objectively if the communicative function occurred without being in the room with the dyad (e.g. Subcode of Ignoring under major category of Responses).

In other cases, subcodes were collapsed in order to decrease confusion among coders and promote inter-rater reliability (e.g. Subcode of 'Reference to Physical and Psychological Wants and Needs' combined with subcode of 'Protection of Self Interests', three original subcodes under Imagining were collapsed together to form one major code of Imagining). On occasion, a subcode was added in order to capture the efforts of the mother or child's communicative intent (e.g. Under major code of Predicting, subcode of '*Eliciting* the Anticipation or Foreseeing of Events').

At times, these modifications served to add more detail to the major coding category, or reduce perceived overlap of subcodes across Tough's coding system. Several iterations of the coding system were modified and implemented on mother-child interactions that were part of the Family study, but were not part of the current study.

These modifications and subsequent revisions were made with an "expert" in language coding systems until it was determined that the following coding system could be accurately and objectively used on the study language samples. These codes are listed in order of lowest to highest complexity:

- Self Maintaining
  - Communicating to meet the speaker's needs to protect territory, property, or interests (e.g. "This is my space!" or "I want some ice cream.")
  - Criticizing others (e.g. "You're always acting silly.")
  - Expressing emotions (e.g. "I'm sad.")
- Directing
  - Guiding or controlling the listener's actions (e.g. "Turn it." or "Stop!").
  - Guiding one's own actions (e.g. "I go this way.")
  - Requesting information (e.g. "How do I do it?")
  - Collaborating in actions with others including negotiating of presence and negotiating mutual attention (e.g. "Can I play?" or "Look at this.")
- Reporting
  - Labeling (e.g. "That's a dog.")
  - Reference to details (e.g. "The lion is brown.")
  - Reference to an activity, incident, or reflection on an event (e.g. "I went to the park." or "She keeps coming in here.")
  - Reference to sequence (e.g. "one, two, three…" or "First he sits, next he stands, then last he walks.")
- Reasoning

- o Expressing cause-effect or dependent relationships (e.g. "When you turn this knob, it goes up.")

- o Explaining a process (e.g. "So you have to go left to get to the circle.")

- o Justifying actions or behaviors (e.g. "I shook it because it was messed up.")

- o Making comparisons (e.g. "It looks like that block.")

- o Questioning to scaffold and promote understanding ("What shape do you think goes there?")

- o Identifying a problem (e.g. "That is too big to fit in there.")

- o Identifying a solution to a problem (e.g. "A smaller one can fit in there.")

- Predicting

  - o Using language to anticipate events or to get another person to anticipate events (e.g. "I'm going to have stew for dinner." or "We're going to play with puppets later." or "I wonder what happens next").

- Projecting

  - o Expressing how others might feel or describing situations not experienced by the speaker (e.g. "I bet that makes you sad" or "Giraffes must get scared when the lion comes.").

- Imagining

  - o Using language in the process or act of pretending (e.g. "Roar! I'm Mr. Lion and am eating you!") (Tough, 1982).

Because Tough's coding system does not include some pragmatic functions usually observed in communication, an additional code from Stockman's (1996) study was included:

- Responses
    - Verbal or non-verbal replies or responses to questions (e.g. "Yes" or nodding of head in response)
    - Positive reinforcement or encouragement in response to an action (e.g. "Good job!")
    - Verbal imitation of another's utterance (e.g. Child: "Yipee!" Mom: "Yipee!")
    - Responses used to maintain the interaction or indicate understanding (e.g. "Uh-huh", or "Okay", or "I hear you")

More detailed definitions and examples of behaviors for each code are located in Appendix. When referring to the coding system for the current study, one will find eight major code categories with 27 subcodes. For the purposes of this study composites of only the eight major code categories were analyzed.

Training of Research Assistants for Transcription and Coding

Two Euro-American, one African American, and one Asian American adults helped transcribe the data along with the author who is African American. The author trained the four research assistants on how to transcribe using CHAT conventions (MacWhinney, 1996), as well as how to transcribe dialectical differences verbatim. Research assistants watched practice mother-child interactions together, practiced transcription, and then completed independent transcriptions. Once 90% or more

agreement between research assistants, as well as between the author and research assistants was established on practice cases, research assistants began independent transcription of actual cases to be used in the study. The author calculated reliability on 15% of the transcripts and conducted random reliability checks throughout the transcription of the entire sample to ensure that transcription reliability remained above 90%. Interrater reliability for transcription was calculated by dividing the total number of transcribed utterance agreements by the total number of transcribed utterances (number of agreed utterances/ number of agreed + disagreed utterances), resulting in a range of 89%-98% reliability. The author and research assistants transcribed the entire sample of mother-child interactions.

The author trained one research assistant to code the transcripts for communicative functions by reviewing the coding system with the research assistant and practicing on two non-study mother-child interactions. The author and research assistant clarified any discrepancies in order to gain agreement and also to refine and clarify the coding system. In order to observe non-verbal cues, transcripts were coded for communicative functions while watching the DVDs. All codes were mutually exclusive with one code per utterance except in two cases during the interactions where double coding for certain utterances was allowed. In the first case, the utterance must have met the criteria that the speaker was using a Directive communicative function with the intent to Reason (e.g. "Make sure you look first to see if you can go that way"). In this case, the utterance was coded as both "Reasoning-Explaining a Process" and "Directive-Directing Actions of Others". The second circumstance where double coding was allowed was when a speaker was pretending and using the Imagining communicative function while

demonstrating another communicative function (e.g. "Do you wanna play, Lion?" coded as both "Imagining" and "Directing-Collaboration-Negotiating Presence"). After the training phase, independent coding was then completed. Once the author and research assistant were at least 80% reliable on the practice cases, they each independently coded 20 study interactions. Interrater reliability for coding was calculated on 20% of the sample by dividing the total number of agreements by the total number of agreements plus disagreements (number of agreed utterances/ number of agreed + disagreed utterances). Coding reliability ranged between 78% and 89%. The author coded the rest of the sample.

Measures

Parent Questionnaire (NCEDL 2002). Race/ethnicity and family income were established via parental self-report during the home based interviews. Once information on income was gathered, poverty status was determined using the 150% of the federal poverty guideline to divide the NCEDL sample into Poor and Non-Poor groups. Families with household incomes below the 150% poverty level were categorized as Poor and those above the range were Non-Poor. This measure of poverty was chosen as it was frequently used by the states included in the current sample to determine which populations had economic need for state supported Pre-K programs (U.S. Department of Health & Human Services, 2001).

Teacher Report of Child Outcomes. Each child's classroom teacher completed the Teacher Child Rating Scale (TCRS, Hightower et al., 1986), which is a rating of the child's socio-emotional adjustment. The TCRS is a 32-item instrument with a 5-point Likert scale ranging from 1 (not at all) to 5 (very well) rating how well the statements

applied to the child. Internal consistency coefficients for the TCRS range from .85 to .95

and test-retest reliability ranges from .61 to .91. A Composite Score for the TCRS was

calculated for each child and scores from the Spring were used in this study in order to

measure the children's outcomes after teachers had been given time to become more

acquainted with the children.

Child Assessments. The *Peabody Picture Vocabulary Test-3rd edition* (PPVT-III,

Dunn & Dunn, 1997) was used to evaluate each preschooler's receptive vocabulary skills.

The test comes in two forms (Form IIIA and Form IIIB) and has 204 items (each item is

represented by four black-and-white drawings as choices) that progress in difficulty. It is

individually administered and takes approximately 10-15 minutes. In order to elicit a

response, the child is asked to point to the drawing that correctly illustrates the stimulus

word spoken by the examiner (e.g. "Point to dog"). Once Raw-scores are calculated, they

are converted into standard scores (M = 100, SD = 15), percentile ranks, normal curve

equivalents, test-age equivalents, and stanine scores. The alpha coefficient for all items

ranges from .92 to .98 with a median reliability of .94. Test–retest reliability ranges from

.91 to .94 and the PPVT-III's correlations with other verbal ability assessment tools range

from .40 to .76. Scores from the Spring were used for the current study in order to be

commensurate in the school year with the collection of the TCRS.

The *Oral and Written Language Scale* (OWLS, Oral Expression Scale, Carrow-

Woolfolk, 1995) measures children's expressive and receptive language skills and takes

approximately 10 to 25 minutes to administer. The child is asked to complete sentences,

answer questions, and generate sentences in response to verbal stimuli from the examiner.

Raw scores are counted and converted into standard scores (M= 100, SD= 15), percentile

ranks, stanines, normal curve equivalents, and test-age equivalents. Test-retest reliability

for the preschool range on the expressive language section of the assessment is .86 and

correlations between the OWLS and achievement tests range from .44 to .89. Scores from

the Spring semester were used for the current study in order to be commensurate in the

school year with the collection of the TCRS.

CHAPTER 3: RESULTS

Since regression analysis assumes that data are linear, normal, and homoscedastic, data were first examined for outliers, normality, linearity, and missing data. There were no missing data and the distributions of race/ethnicity, gender, and SES were normal. Communicative function code counts for the mothers and children were slightly abnormal so a square root transformation was conducted in Microsoft Excel 2007 in order to change the scale of the data and smooth the distribution. Square root transformation is appropriate for non-negative and count data and the current dataset met these requirements. Although Child Predicting and Child Projecting distributions were still skewed after the square root transformation, it was determined that these variables could remain in the analysis since they represent higher level communicative functions that might be still emerging in some typical 4-year-olds (See Figures 3.1 and 3.2). Indeed, 36/95 of the children did not have a single occurrence of Child Predicting and almost 77/95 did not use a Child Projecting behavior. Hence, the square root transformation data was used for the rest of the analyses.

Figure 3.1 Total Frequency of Child Predicting Codes
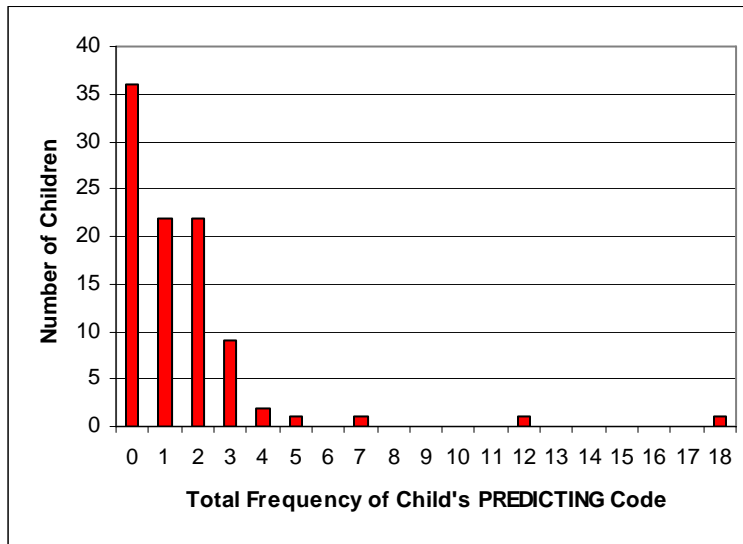
Figure 3.2 Total Frequency of Child Projecting Codes
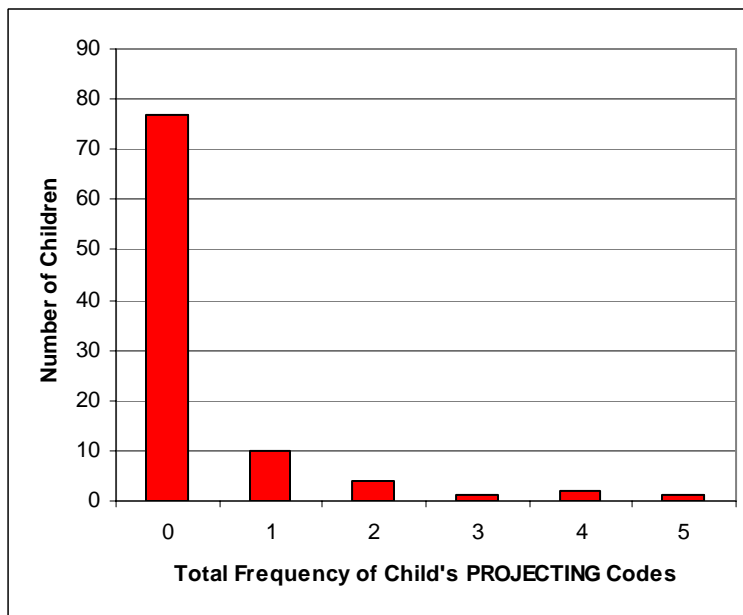
Research Question One

1) What is the frequency of use of communicative functions among typically

   developing, 4-year-olds and outcomes, and to what extent is this influenced by:

(a) Poor or Non-Poor status; (b) AA, EA, and L race/ethnicity; and (c) gender during interactions with their mothers?

Descriptive Results for Children by Race/Ethnicity

Descriptive statistics across the study of the eight categories of communicative function variables of children by race/ethnicity are represented in Table 3.1, along with the results of the child outcomes by race/ethnicity. Child Imagining, Responses, Reporting, and Directing occurred most often among the children, with Child Projecting and Predicting demonstrated the least frequently. When considering the frequency counts of the individual communicative functions demonstrated by the children and analyzing them using linear regression, there were no significant (p$\leq$.05) differences across racial groups. Furthermore, using linear regression there were significant differences by race/ethnicity on the child outcomes of vocabulary (PPVT-III, Dunn & Dunn, 1997) where the AA children scored significantly lower than the EA and L children with $R^2 = $ .148, *F* (1, 93) = 16.19, p<.000. Additionally, the AA children scored significantly lower on the OWLS (Carrow-Woolfolk, 1995) than either of the EA or L groups with $R^2 = $ .069, *F* (1, 93) = 6.94, p<.010. However, the EA and L children's scores on the OWLS and PPVT-III (Dunn & Dunn, 1997) were not significantly different from each other and were both comparable to the national norms for both tests (*M*=100, *SD*=15). There were no significant differences among all three racial groups on the TCRS (Hightower, 1986), the measure of social competence rated by the children's teachers.

Table 3.1. Descriptive Statistics of Variables for Children by Race/Ethnicity

Variable of Race/Ethnicity*	AA (N=33)			EA (N=36)			L (N=26)		
	M	SD	Range	M	SD	Range	M	SD	Range
Frequency of Communicative Functions									
Self Maintaining	4.5	4.3	0-15	5.8	4.2	0-22	5.6	3.8	1-15
Directing	21.2	12.7	5-51	23.2	15.4	3-69	26.7	15.3	3-58
Reporting	25.5	13.3	4-56	27.0	13.8	3-60	32.1	17.2	3-74
Reasoning	9.3	8.4	0-37	15.2	16.0	0-70	13.0	10.2	0-45
Predicting	2.3	3.8	0-18	1.1	1.1	0-3	1.0	0.9	0-3
Projecting	0.4	0.9	0-4	0.3	0.8	0-4	0.5	1.1	0-5
Imagining	33.2	21.2	0-90	29.2	20.3	1-92	34.0	18.1	0-64
Responses	27.6	18.0	7-78	28.0	15.9	7-74	27.9	12.5	9-48
Total	123.9	62.8	35-255	129.8	60.7	37-355	140.9	55.8	30-290
Child Outcomes+									
PPVT-III	87.70	13.73	52-112	100.10	15.87	64-128	99.19	11.0	76-118
OWLS	92.30	12.23	61-123	100.50	13.00	78-131	97.40	10.77	76-118
TCRS	3.59	0.87	1.6-5.0	3.70	0.80	2.1-4.74	3.66	0.60	2.7-4.75

Note. *Race/Ethnicity: AA= African American; EA= Euro-American; L= Latino; +Child Outcomes: PPVT-III = Peabody Picture Vocabulary Test 3rd Edition; OWLS = Oral and Written language Scale; TCRS = Hightower Teacher Child Rating Scale.

Descriptive Results for Children by Gender

Table 3.2 outlines the descriptive statistics of variables and outcomes by gender. When linear regression was conducted, the only significant difference in frequency of communicative functions between genders was due to the boys demonstrating Self Maintaining behaviors significantly less often than the girls with $R^2 = .061$, $F(1, 93) = 6.01$, p<.016. In addition, a significant difference was apparent between genders on the child outcome of the TCRS (Hightower, 1986) where boys were rated by their teachers significantly lower in social competence than girls with $R^2 = .061$, $F(1, 93) = 6.01$, p<.016.

Table 3.2. Descriptive Statistics of Variables for Children by Gender

Variable	Girls (N=51)				Boys (N=44)		
	M	SD	Range		M	SD	Range
Frequency of Communicative Functions							
Self Maintaining	5.98	4.07	1-22		4.50	4.13	0-15
Directing	23.37	13.95	3-69		23.57	15.23	3-66
Reporting	28.55	14.40	3-61		27.05	15.29	3-74
Reasoning	13.53	13.71	0-70		11.43	10.72	0-45
Predicting	1.41	2.77	0-18		1.61	1.96	0-12
Projecting	0.47	1.16	0-5		0.22	0.52	0-2
Imagining	32.69	19.44	1-92		31.04	20.72	0-88
Responses	28.35	16.02	7-78		27.25	15.39	7-74
Total	134.35	59.29	30-335		126.68	60.92	35-290
Child Outcomes+							
PPVT-III	95.29	13.60	64-126		95.82	16.49	52-128
OWLS	95.57	12.15	76-123		97.09	13.12	61-131
TCRS	3.83	0.67	2.5-4.8		3.45	0.83	1.6-5.0

Note. AA= African American; EA= Euro-American; L= Latino; +Child Outcomes: PPVT = Peabody Picture Vocabulary Test 3rd Edition; OWLS = Oral and Written language Scale; TCRS = Hightower Teacher Child Rating Scale.

Descriptive Results for Children by Socioeconomic Status

Descriptive statistics of the variables and outcomes for children by SES are illustrated in Table 3.3. Overall, children who were Poor tended to demonstrate less frequency of communicative functions than the Non-Poor children on most functions. However, when using linear regression, significant differences between SES groups were found for frequency counts of only three communicative functions and the Total Frequency of functions demonstrated by the children. For example, children who were Poor demonstrated Directing ($R^2 = .049$, $F (1, 93) = 4.83$, p<.030), Reporting ($R^2 = .064$, $F (1, 93) = 6.35$, p<.013), Reasoning ($R^2 = .071$, $F (1, 93) = 7.07$, p<.009), and Total Frequency of Communicative Functions (e.g. talkativeness) ($R^2 = .068$, $F (1, 93) = 6.83$,

p<.010) significantly less often than children who were Non-Poor. For child outcomes, there were significant differences by SES when considering vocabulary skill (PPVT-III, Dunn & Dunn 1997) where children who were Poor scored significantly lower than children who were Non-Poor with $R^2 = .113$, $F(1, 93) = 11.80$, p<.001. Children who were Poor also scored significantly lower ($R^2 = .074$, $F(1, 93) = 7.40$, p<.008) on the OWLS (Carrow-Woolfolk, 1997) than children who were Non-Poor. There were no significant differences between SES groups on the TCRS (Hightower, 1986).

Table 3.3. Descriptive Statistics of Variables for Children by SES

Variable	Poor (N=48)			Non-Poor (N=47)		
	M	SD	Range	M	SD	Range
Frequency of Communicative Functions						
Self Maintaining	4.89	3.76	0-15	5.70	4.51	0-22
Directing	20.38	13.05	3-58	26.62	15.30	3-69
Reporting	24.27	14.03	3-74	31.51	14.72	4-64
Reasoning	9.71	9.66	0-45	15.47	14.19	1-70
Predicting	1.42	2.70	0-18	1.60	2.11	0-12
Projecting	0.35	0.91	0-5	0.36	0.94	0-4
Imagining	28.58	17.78	0-64	35.34	21.62	1-92
Responses	26.71	16.74	7-78	29.00	14.57	8-72
Total	116.31	57.43	30-290	145.60	59.23	45-335
Child Outcomes+						
PPVT-III	90.60	14.88	52-116	100.57	13.34	75-128
OWLS	93.45	11.04	61-112	100.23	13.16	78-131
TCRS	3.52	0.84	1.6-5.0	3.79	0.67	2.55-4.8

Note. AA= African American; EA= Euro-American; L= Latino; +Child Outcomes: PPVT = Peabody Picture Vocabulary Test 3rd Edition; OWLS = Oral and Written language Scale; TCRS = Hightower Teacher Child Rating Scale.

Research Question Two

2) What is the frequency of use of communicative functions among (a) Poor or Non-Poor; and (b) AA, EA, and L *mothers* during interactions with their 4-year-old children?

Descriptive Results for Mothers by Race/Ethnicity

Table 3.4 represents descriptive statistics of the communicative function variables for mothers by race/ethnicity. Mother Directives and Reasoning were demonstrated the most and Mother Predicting, Self Maintaining, and Projecting being the least occurring communicative functions. Linear regression was used to analyze differences among groups. For frequency counts of the individual communicative functions demonstrated by the mothers, there were a few significant differences across racial groups. African American mothers demonstrated the communicative function of Self Maintaining significantly more than EAs and Ls ($R^2 = .045$, $F (1, 93) = 4.37$, p<.039) and Responses significantly less than EAs and Ls ($R^2 = .077$, $F (1, 93) = 7.79$, p<.006). In addition, both AA ($R^2 = .076$, $F (1, 93) = 7.70$, p<.007) and L ($R^2 = .125$, $F (2, 92) = 6.56$, p<.002) mothers produced significantly more Directive communicative functions than EA mothers.

Table 3.4. Descriptive Statistics of Variables for Mothers by Race/Ethnicity

Variable	AA (N=33)			EA (N=36)			L (N=26)		
	M	SD	Range	M	SD	Range	M	SD	Range
Frequency of Communicative Functions									
Self Maintaining	5.5	4.6	0-18	3.4	3.1	0-11	3.9	2.9	0-12
Directing	146.5	52.4	64-266	107.8	44.0	34-240	131.9	39.2	60-211
Reporting	34.7	16.4	7-70	40.4	18.3	12-82	41.0	12.8	18-72
Reasoning	109.3	45.8	24-219	89.6	54.6	24-268	106.4	41.4	36-238
Predicting	4.8	6.8	0-35	4.4	3.6	0-15	4.6	3.7	0-13
Projecting	1.7	1.7	0-6	1.6	1.8	0-7	2.0	2.1	0-7
Imagining	48.2	34.4	2-140	39.4	31.5	3-139	57.0	34.8	2-147
Responses	30.5	17.8	5-71	37.29	15.6	9-76	41.7	16.4	15-74
Total	381.2	135.9	157-669	324.5	122.4	149-606	388.6	95.6	185-562

Note. AA= African American; EA= Euro-American; L= Latino.

Descriptive Results for Mothers by Socioeconomic Status

Descriptive statistics of variables for mothers by SES are represented in Table 3.5. When using linear regression, several significant differences between SES groups were found for frequency counts of individual communicative functions used by mothers. Mothers who were Poor demonstrated Reporting ($R^{2} = .075$, F (1, 93) = 7.49, p<.007), Responses ($R^{2} = .160$, F (1, 93) = 17.71, p<.000), and Total Frequency of Communicative Functions (e.g. talkativeness) ($R^{2} = .047$, F (1, 93) = 4.54, p<.036) significantly less than mothers who were Non-Poor.

Table 3.5. Descriptive Statistics of Variables for Mothers by SES

Variable	Poor (N=48)			Non-Poor (N=47)		
	M	SD	Range	M	SD	Range
Frequency of Communicative Functions						
Self Maintaining	4.1	3.39	0-14	4.4	4.05	0-18
Directing	127.5	53.21	43-266	128.1	43.66	34-237
Reporting	34.6	16.96	7-72	42.6	14.90	18-82
Reasoning	92.8	44.65	24-238	109.4	51.45	24-268
Predicting	4.1	5.46	0-35	5.1	4.29	0-22
Projecting	1.8	1.73	0-7	1.7	1.94	0-7
Imagining	42.2	31.29	2-147	52.4	35.84	5-140
Responses	29.9	15.90	5-71	43.0	15.70	15-76
Total	337.1	127.39	149-669	386.9	114.54	178-612

Note. AA= African American; EA= Euro-American; L= Latino.

Research Question Three

3) To what extent do the frequency and type of the children's and mothers' communicative functions relate to the outcomes of (a) expressive and receptive language, (b) vocabulary, and (c) teacher perception of child social competency?

Regression Results

Regression analyses were conducted to explore the power of the mothers' communicative functions, the children's communicative functions, and the demographic

factors to predict child outcomes of receptive and expressive language (OWLS, Carrow-Woolfolk, 1997), vocabulary skills (PPVT-III, Dunn & Dunn 1997), and social competence (TCRS, Hightower 1986).

Vocabulary skill. The PPVT-III (Dunn & Dunn, 1997) score for each child was predicted by five variables as illustrated by Table 3.6. A child being AA, the communicative function of Child Predicting, and Poor status predicted PPVT-III scores with adjusted $R^{2=}$ .306, *F* (3, 91) = 14.82, p<.000, explaining 31% of the variance. Poor and AA status however predicted lower vocabulary. When Mothers' communicative function counts were added to the model, two additional predicting variables emerged. Mother Reasoning and Mother Reporting were significant predictors of PPVT-III scores with adjusted $R^{2=}$ .396, *F* (5, 89) = 13.32, p<.000, explaining 40% of the variance. In this case a higher frequency of Mother Reasoning predicted lower vocabulary skills and a higher frequency of Mother Reporting predicted higher vocabulary skills.

Table 3.6. Summary of Linear Regression Analysis for Demographics and Communicative Functions Predicting Vocabulary Skill *(N=95)*

Variable	B	SE B	F	p
Step 1				
AA	-12.013**	2.986	16.19	.000
Step 2				
AA	-13.649**	2.812	16.94	.000
ChPRE	6.246**	1.601	16.94	.000
Step 3				
AA	-12.379**	2.748	14.82	.000
ChPRE	5.730**	1.554	14.82	.000
SES	7.347**	2.599	14.82	.006
Step 4				
AA	-11.238**	2.709	13.35	.000
ChPRE	5.709**	1.511	13.35	.000
SES	8.615**	2.575	13.35	.001
MoREA	-1.365**	.542	13.35	.014
Step 5				
AA	-8.857**	2.723	13.32	.002
ChPRE	4.947**	1.473	13.32	.001
SES	7.431**	2.505	13.32	.004
MoREA	-2.260**	.603	13.32	.000
MoREP	3.228**	1.097	13.32	.004

Note. R^2 = .15 for Step 1; R^2 = .25 for Step 2; R^2 = .31 for Step 3; R^2 = .35 for Step 4; R^2 = .40 for Step 5. *p<.05 **p<.01. AA = Child African American; ChPRE = Child Predicting; SES = Is Family Poor/Non-Poor; MoREA = Mother Reasoning; MoREP = Mother Reporting.

Expressive and receptive language skill. Table 3.7 shows how SES and race/ethnicity affected the measure of receptive and expressive language (OWLS, Dunn & Dunn, 1997). A child being Poor and AA were significant predictors of lower scores

on the OWLS with adjusted $R^{2=}$.106, F (2, 92) = 6.56, p<.002 explaining 11% of the

variance.

Table 3.7. Summary of Linear Regression Analysis for Demographics Predicting Language Skills (OWLS)
(N=95)

Variable	*B*	*SE B*	*F*	*p*
Step 1				
SES	6.776**	2.491	7.399	.008
Step 2				
SES	5.937*	2.461	6.559	.018
AA	-5.990*	2.584	6.599	.023

Note. R^2 = .07; R^2 = .11 for Step 2. *p<.05 **p<.01. AA = Child African American; SES = Is Family Poor/Non-Poor.

A linear regression analysis of mother's communicative function counts and SES

revealed two additional predicting variables of expressive and receptive language skill as

illustrated in Table 3.8. A child being Poor and increased Mother Reasoning were

significant predictors of lower OWLS scores, with increased Mother Reporting predicting

higher OWLS scores resulting in adjusted $R^{2=}$.195, F (3, 91) = 8.58, p<.000, explaining

20% of the variance.

Table 3.8. Summary of Linear Regression Analysis for Demographics and Communicative Functions Predicting Language Skills (OWLS) *(N=95)*

	Variable	*B*	*SE B*	*F*	*p*
Step 1					
	SES	6.776**	2.491	7.40	.008
Step 2					
	SES	7.995**	2.432	8.27	.001
	MoREA	-1.506**	.516	8.27	.004
Step 3					
	SES	6.500**	2.404	8.58	.008
	MoREA	-2.228**	.559	8.58	.000
	MoREP	2.843**	1.009	8.58	.006

*Note. R^2 = .07 for Step 1; R^2 = .13 for Step 2; R^2 = .20 for Step 3. *p<.05 **p<.01. SES = Is Family Poor/Non-Poor; MoREA = Mother Reasoning; MoREP = Mother Reporting.

Social competence. Table 3.9 displays results of a linear regression analysis for the TCRS (Hightower, 1986). Gender was a significant predictor of the TCRS with a lower score on average for boys with R^2 = .061, *F* (1, 93) = 7.30, p<.000. Thus, Gender explained 6% of the variance for the TCRS scores.

Table 3.9. Summary of Linear Regression Analysis for Gender Predicting Social Competence *(N=95)*

	Variable	*B*	*SE B*	*F*	*p*
	Gender	-.380*	.154	6.08	.016

*Note. R^2 = .06. *p<.05 **p<.01.

Table 3.10 shows that when communicative functions and child demographic factors were entered into the model, the frequency of mother's use of Reasoning, the child being Poor, and the child being a boy were significant predictors of lower social

competence as rated by teachers with adjusted $R^{2} = .122$, F (3, 91) = 7.30, p<.002

explaining 12% of the variance for the TCRS scores.

Table 3.10. Summary of Linear Regression Analysis for Demographics and Mothers' Communicative Functions Predicting Social Competence *(N=95)*

	Variable	*B*	*SE B*	*F*	*p*
Step 1					
	Gender	-.380*	.154	6.08	.016
Step 2					
	Gender	-.395**	.152	5.14	.011
	MoREA	-.064*	.032	5.14	.048
Step 3					
	Gender	-.402**	.149	5.34	.008
	MoREA	-.077*	.032	5.34	.018
	SES	.345**	.150	5.34	.024

Note. R^{2} = .06 for Step 1; R^{2} = .08 for Step 2; R^{2} = .12 for Step 3. *p<.05 **p<.01. MoREA=Mother Reasoning; SES=Is Family Poor/Non-Poor.

Research Question Four

4) What is the correlation between mothers' communicative function use and their

four-year-old children's communicative function use during interactions?

Correlation Results

Table 3.11 represents correlations between the mothers' communicative functions and

the children's communicative functions. Pearson's correlations were run between

mothers' communicative function codes and the children's communicative function

codes to identify any significant relationships between the two groups' communicative

function use. The results were as follows:

(1) The correlation between Mother Self Maintaining and Child's Imagining was

significant ($r(93)$ = .30, p<10^{-4}).

(2) Mother Directing was significantly correlated with Child Reporting ($r(93) = .30$, $p<10^{-4}$) and Child Responses ($r(93) = .33$, $p<10^{-4}$).

(3) Mother Reporting was correlated with Child Reporting ($r(93) = .45$, $p<10^{-23}$), Child Responses ($r(93) = .42$, $p<10^{-23}$), Child Imagining ($r(93) = .33$, $p<10^{-4}$), and Child Total Communicative Functions ($r(93) = .47$, $p<10^{-23}$).

(4) Mother Reasoning was significantly correlated with Child Reporting ($r(93) = .27$, $p<10^{-4}$) and Child Responses ($r(93) = .32$, $p<10^{-4}$).

(5) The correlations between Mother Predicting and Child Reasoning ($r(93) = .27$, $p<10^{-4}$), Child Responses ($r(93) = .36$, $p<10^{-4}$), Child Total Communicative Functions ($r(93) = .39$, $p<10^{-4}$), Child Predicting ($r(93) = .27$, $p<10^{-23}$), and Child Projecting ($r(93) = .40$, $p<10^{-23}$) were significant.

(6) Mother Projecting was significantly correlated with Child Predicting ($r(93) = .30$, $p<10^{-4}$), Child Projecting ($r(93) = .35$, $p<10^{-4}$), Child Responses ($r(93) = .33$, $p<10^{-4}$), and Child Total Communicative Functions ($r(93) = .28$, $p<10^{-4}$).

(7) The correlation between Mother Imagining and Child Projecting ($r(93) = .30$, $p<10^{-4}$), Child Imagining ($r(93) = .80$, $p<10^{-23}$) and Child Total Communicative Functions ($r(93) = .47$, $p<10^{-23}$) were significant.

(8) Mother Responses were significantly correlated with Child Self Maintaining ($r(93) = .28$, $p<10^{-4}$), Child Directing ($r(93) = .30$, $p<10^{-4}$), Child Reporting ($r(93) = .31$, $p<10^{-4}$), Child Reasoning ($r(93) = .29$, $p< 10^{-4}$), Child Projecting ($r(93) = .32$, $p<10^{-4}$), Child Imagining ($r(93) = .27$, $p<10^{-4}$), Child Responses ($r(93) = .32$, $p<10^{-4}$), and Child Total Communicative Functions ($r(93) = .41$, $p<10^{-23}$).

(9) Mother Total Communicative Functions and Child's Projecting ($r(93)$ = .33, p<10^{-4}), Child Reporting ($r(93)$ = .40, p<10^{-23}), Child Imagining ($r(93)$ = .40, p<10^{-23}), Child Responses ($r(93)$ = .46, p<10^{-23}), and Child Total Communicative Functions ($r(93)$ = .46, p<10^{-23}) were significantly correlated.

Table 3.11. Correlations between Mothers' and Children's Communicative Functions

	ChSELF	ChDIR	ChREP	ChREA	ChPRE	ChPRO	ChIMA	ChRES	ChTOT
MoSELF	.16	.12	.06	.07	.19	.14	.30*	.24	.23
MoDIR	.09	.12	.30*	.00	.04	.17	.15	.33*	.24
MoREP	.22	.25	.45**	.26	.14	.23	.33*	.42**	.47**
MoREA	.08	.19	.27*	.21	.04	.21	.07	.32*	.26
MoPRE	.14	.25	.23	.27*	.51**	.40**	.25	.36*	.39*
MoPRO	.25	.19	.12	.11	.30*	.35*	.21	.33*	.28*
MoIMA	.19	.15	.26	.02	.18	.30*	.80**	.25	.47**
MoRES	.28*	.30*	.31*	.29*	.20	.32*	.27*	.32*	.41**
MoTOT	.20	.24	.40**	.17	.15	.33*	.40**	.46**	.46**

*p <10^{-4}, **p <10^{-23}
ChSELF=Child Self Maintaining; ChDIR=Child Directing; ChREP=Child Reporting; ChREA=Child Reasoning; ChPRE=Child Predicting; ChPRO=Child Projecting; ChIMA=Child Imagining; ChRES=Child Responses; ChTOT=Total Frequency of Children's Communicative Functions; MoSELF=Mother Self Maintaining; MoDIR=Mother Directing; MoREP=Mother Reporting; MoREA=Mother Reasoning; MoPRE=Mother Predicting; MoPRO=Mother Projecting; MoIMA=Mother Imagining; MoRES=Mother Responses; MoTOT=Total Frequency of Mothers' Communicative Functions.

Regression Results

Linear Regressions were conducted to examine whether mothers' communicative functions predicted child communicative functions. The results are as follows:

(1) *Mothers' responses.* Table 3.12 shows that Mother Responses, Mother Projecting, and Gender together were significant predictors of Child Self Maintaining with adjusted R^2 = .167, F (3, 91) = 7.30, p<.000, explaining 17% of the variance in Child Self Maintaining.

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Table 3.12. Summary of Linear Regression Analysis for Demographics and Communicative Functions Predicting Child Self Maintaining *(N=95)*

Variable	B	SE B	F	P
Step 1				
MoRES	.185**	.066	7.78	.006
Step 2				
MoRES	.195**	.064	7. 85	.003
Gender	-.512**	.188	7. 85	.008
Step 3				
MoRES	.153*	.065	7.30	.021
Gender	-.575**	.186	7.30	.003
MoPRO	.281*	.120	7.30	.022

Note. R^2 = .08 for Step 1; R^2 = .13 for Step 2; R^2 = .17 for Step 3. *p<.05 **p<.01. MoPRO = Mother Projecting; MoRES = Mother Responses.

(2) Mother Responses was a significant predictor of Child Directing with R^2 = .092, *F* (1, 93) = 9.41, p<.003, accounting for 9% of the variance in Child Directing and is illustrated in Table 3.13.

Table 3.13. Summary of Linear Regression Analysis for Mothers' Communicative Functions Predicting Child Directing *(N=95)*

Variable	B	SE B	F	p
MoRES	.307**	.100	9.41	.003

Note. R^2 = .09. *p<.05 **p<.01. MoRES = Mother Responses.

Table 3.14 shows that Mother Responses was also a significant predictor of Child Reasoning with R^2 = .082, *F* (1, 93) = 8.34, p<.005, accounting for 8% of the variance in Child Reasoning.

Table 3.14. Summary of Linear Regression Analysis for Mothers' Communicative Functions Predicting Child Reasoning *(N=95)*

Variable	*B*	*SE B*	*F*	*p*
MoRES	.329**	.114	8.34	.005

Note. R^2 = .08. *p<.05 **p<.01. MoRES = Mother Responses.

(4) *Mothers' reporting.* Mother Reporting was a significant predictor of Child

Reporting with R^2 = .203, *F* (1, 93) = 23.65, p<.000, accounting for 20% of the variance in

Child Reporting as illustrated in Table 3.15.

Table 3.15. Summary of Linear Regression Analysis for Mothers' Communicative Functions Predicting Child Reporting *(N=95)*

Variable	*B*	*SE B*	*F*	*p*
MoREP	.483**	.099	23.65	.000

Note. R^2 = .20 *p<.05 **p<.01. MoREP= Mother Reporting.

(5) Table 3.16 shows that both Mother Reporting and Mother Imagining together

were significant predictors of Child Total Communicative Functions with adjusted R^2 =

.291, *F* (2, 92) = 20.30, p<.000, accounting for 29% of the variance in Child Total

Communicative Functions.

Table 3.16. Summary of Linear Regression Analysis for Mothers' Communicative Functions Predicting Child Total Communicative Functions *(N=95)*

Variable	*B*	*SE B*	*F*	*P*
Step 1				
MoREP	.910**	.178	26.11	.000
Step 2				
MoREP	.640**	.186	20.30	.001
MoIMA	.340**	.100	20.30	.001

Note. R^2 = .22; R^2 = .29 for Step 2. *p<.05 **p<.01. MoREP = Mother Reporting; MoIMA = Mother Imagining.

(6) *Mothers' predicting and projecting.* Mother Predicting and Mother Projecting combined were also significant predictors of Child Predicting with adjusted $R^{2=}$ .279, *F* (2, 92) = 19.23, p<.000 accounting for 28% of the variance in Child Predicting as seen in Table 3.17.

Table 3.17. Summary of Linear Regression Analysis for Mothers' Communicative Functions Predicting Child Predicting *(N=95)*

Variable	*B*	*SE B*	*F*	*p*
Step 1				
MoPRE	.416**	.072	33.15	.000
Step 2				
MoPRE	.378**	.073	19.22	.000
MoPRO	.193*	.095	19.22	.044

Note. R^2 = .26; *R^2* = .28 for Step 2. *p<.05 **p<.01. MoPRE = Mother Predicting; MoPRO = Mother Projecting.

(7) Table 3.18 illustrates that Mother Predicting and Mother Projecting together, were significant predictors of Child Projecting with adjusted $R^{2=}$ .206, *F* (2, 92) = 13.23, p<.000, explaining 21% of the variance in Child Projecting.

Table 3.18. Summary of Linear Regression Analysis for Mothers' Communicative Functions Predicting Child Projecting *(N=95)*

Variable	*B*	*SE B*	*F*	*p*
Step 1				
MoPRE	.209**	.050	17.37	.000
Step 2				
MoPRE	.174**	.050	13.23	.001
MoPRO	.181**	.065	13.23	.006

Note. R^2 = .16; *R^2* = .21 for Step 2. *p<.05 **p<.01. MoPRE = Mother Predicting; MoPRO = Mother Projecting.

(8) *Mothers' imagining.* Mother Imagining was a significant predictor of Child Imagining, with $R^{2}=.648$, $F(1, 93) = 170.96$, p<.000, explaining 65% of the variance for Child Imagining as seen in Table 3.19.

Table 3.19. Summary of Linear Regression Analysis for Mothers' Communicative Functions Predicting Child Imagining *(N=95)*

Variable	B	SE B	F	p
MoIMA	.629**	.048	170.96	.000

Note. R^{2} = .65 *p<.05 **p<.01. MoIMA= Mother Imagining.

(9) *Mothers' total communicative functions and projecting.* Table 3.20 represents how Mother Total Communicative Functions and Mother Projecting were significant predictors of Child Responses with adjusted $R^{2}=.235$, $F(2, 92) = 15.42$, p<.000, explaining 24% of the variance in Child Responses.

Table 3.20. Summary of Linear Regression Analysis for Mothers' Communicative Functions Predicting Child Responses *(N=95)*

Variable	B	SE B	F	p
Step 1				
MoTOT	.196**	.040	24.45	.000
Step 2				
MoTOT	.170**	.041	15.42	.000
MoPRO	.380*	.165	15.42	.024

Note. R^{2} = .21; R^{2} = .24 for Step 2. *p<.05 **p<.01. MoTOT = Mother Total Communicative Functions; MoPRO = Mother Projecting.

Summary of Statistical Analyses

Statistical analyses for the current study were designed to investigate the relationship between demographic factors, communicative function use, and child social

and language outcomes. The association between mother's communicative functions and child communicative functions was also examined. There were relationships among particular mother communicative functions and child communicative functions and child outcomes. Few Child communicative functions predicted child outcomes. Rather, demographic factors such as SES, Gender, race/ethnicity; along with certain Mother communicative functions had a stronger influence on child outcomes.

CHAPTER 4: DISCUSSION

The purpose of this study was to explore the use of communicative functions among typically developing preschoolers and their mothers during learning and play interactions. As mothers' language use has been shown to influence a child's language use (Kloth, Janssen, Kraaimaat, & Brutten, 1998; Pellegrini, Perlmutter, Galda, & Brody, 1990; Teichman & Contreras-Grau; Zegiob & Forehand, 1975), questions remained as to the extent that the mother's use of communicative functions would influence the child's communicative function use. The influence of demographic factors such as race/ethnicity, SES, and gender on communicative functions and child language and social outcomes was also evaluated in order to shed light on how pragmatic behaviors are used across varying groups and the impact of these groupings on later outcomes. The larger sample size, variety of race/ethnicity, specific age group of 4-year-olds, and differing SES included in the study provided a novel dataset for the study of these particular communicative functions. Thus, the interpretation of the results and their implications will be discussed in this chapter.

Overall, there were no differences in communicative function by race/ethnicity among the children but differences were apparent between gender and SES groups. For instance, Self Maintaining was used less by boys and Directing, Reporting, Reasoning, and Total Communicative Functions occurred significantly less in children who were Poor. Possible implications for these group differences in child communicative functions will be discussed in detail.

Impact of Demographic Factors on Communicative Functions and Outcomes

In general, the current findings present empirical support for the hypothesis that 4-year-olds may come to preschool with communicative function use that differs by certain demographic factors. This finding is not surprising given previous data documenting differences in preschool children based on SES, gender, and race/ethnicity (Becker, 1994; Butterworth & Morissette, 1996; Gumperz, 1982; Hart & Risley, 1995; Haslett, 1983; Heath, 1983; Pellegrini, et al., 1987; Ryder & Leinonen, 2003). The following sections will discuss the demographic factors and communicative functions that related to child outcomes.

Race/Ethnicity. The lack of significant differences between racial/ethnic groups when considering child communicative functions runs counter to previous evidence of pragmatic language differences by race/ethnicity (Borofsky, 1987; Crago, 1988; Gumperz, 1982; Heath, 1982, 1983; Ochs, 1988; Phillips, 1983). Those studies, however, examined pragmatic characteristics such as prosody, rate of speech, standard expressions, and how children of certain cultures demonstrate pragmatic behaviors when their language partner is an adult versus a peer, whereas the current study did not include those factors in the coding system. It is possible that some of the differences by race/ethnicity found in previous studies and not the current one resulted from the potential confound of race/ethnicity and SES in some cases (e.g. AAs and Ls more often low SES than EAs). Furthermore, the racial/ethnic groups examined in these previous studies (e.g. American Indian, Dutch, Andalusian, Korean-American) did not all match the current study's racial/ethnic groups and the children differed in age from the current study participants. The lack of significant racial/ethnic differences in the frequency of communicative

functions at this level of analysis may indicate that most 4-year-olds, regardless of race/ethnicity, can perform the seven communicative functions when interacting with their mothers, despite the differences in vocabulary and receptive/expressive language skills found across racial groups. Or it may be that SES is more important than race/ethnicity for communicative functions at this age. However, it is unknown whether a more in-depth analysis of the sub-categories of the communicative functions would reveal differences by race/ethnicity, as this was not a component of the current study.

The significant differences by race/ethnicity on the child outcomes of vocabulary skill (PPVT-III, Dunn & Dunn, 1997) and receptive/expressive language (OWLS, Carrow-Woolfolk, 1995) where AA children scored significantly lower than EA and L children is supported by well established research showing that AA children commonly score lower on standardized language tests (Campbell et al., 1997; Craig & Washington, 2000; Craig et al., 1998; Fagundes et al., 1998; Washington & Craig, 1992), especially on the PPVT-III (Dunn & Dunn, 1997). For example, even though the PPVT-III (Dunn & Dunn, 1997) has been deemed appropriate for use with AA children since it was normed on a more representative sample of children who were culturally and linguistically diverse (CLD) (Washington & Craig, 1992), more recent evidence (Restrepo, et al., 2006) coincides with the current study's findings. When Restrepo and colleagues (2006) compared two vocabulary tests: the Expressive Vocabulary Test (EVT; Williams, 1997) and PPVT-III (Dunn & Dunn, 1997), AA children scored lower than EA children on the PPVT-III (Dunn & Dunn, 1997), suggesting that AA children were more at risk for being misidentified as language disordered when tested with the PPVT-III. Laing and Kamhi (2003) also noted that refinement of the PPVT-III's (Dunn & Dunn, 1997) norming

samples might simply decrease the mean distribution of the sample, resulting in AA children who are CLD still scoring lower than their peers but in the normal range. Though the current descriptive data alone cannot explain why the AA children in this study scored lower on the PPVT-III (Dunn & Dunn, 1997) and the OWLS (Carrow-Woolfolk, 1995), the findings reflect the reality that despite recent revisions of traditional standardized tools, the problem of a disproportionate amount of AA children being qualified for special services still exists. Furthermore, the result of the regression analysis that AA children scored lower on the OWLS (Carrow-Woolfolk, 1995) also can be attributed to the aforementioned bias against AA children when taking standardized tests. Another explanation for the lower outcome scores for AA children could be a potential confound between race/ethnicity and SES in the current sample where 60% of the AA children were Poor, 42% of L children were Poor, and 49% of EA children were Poor. With AA children being represented more in the Poor demographic group; both factors may have contributed to the lower scores.

When considering the child outcome of social competence, there were no significant differences across all three racial groups on the TCRS (Hightower et al., 1986). This bodes well for the ability of preschool teachers in this sample to rate consistently children's social skills regardless of race/ethnicity. This finding is in contrast to previous data (Nungesser & Watkins, 2005), but should be studied further, taking into account potential factors such as the age of children being rated and race/ethnicity of teacher raters.

Gender. A gender difference in child communicative functions was evident in the descriptive results where boys demonstrated significantly less Self Maintaining than girls.

Self Maintaining is a communicative function that involves protection of self interests, expression of wants and needs, criticizing, and expression of emotions. To put these results in practical terms related to a preschool classroom, it is helpful to describe communicative functions in the context of the Galileo Alignment with Head Start Framework Indicators (U.S. Department of Health and Human Services, 2002) assessment tool. As explained in the Methods chapter, the Galileo assessment tool includes the following domains of learning that will be referred to in this discussion: a) Language and Literacy, b) Early Math, c) Nature and Science, d) Fine and Gross Motor, e) Creative Arts, f) Social and Emotional Development, g) Approaches Toward Learning, and h) Physical Health Practices. Sub-categories and skills within these domains will be addressed in the following discussion in order to highlight the relationship between these communicative functions and language functions expected in Head Start preschoolers (U.S. Department of Health and Human Services, 2002).

The communicative function of Self Maintaining would be foundational to mastery of the following Head Start framework domains: Language Development (self expression by using appropriate words or gestures to relate feelings, needs, or opinions); Dramatic Play (using dramatic play to express feelings); Social and Emotional (resolving conflicts by expressing wants and needs, initiating and maintaining social relationships by appropriately asserting one's own right to use of materials, knowledge of self by talking about one's own interests; and Physical Health and Development (toileting by indicating the need to use the toilet). The fact that boys demonstrated fewer Self Maintaining occurrences than the girls might be one of the reasons to explain why boys

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are more often perceived by teachers to be engaged in conflict and subsequently more often referred for behavioral services (Gillam, 2005).

In a previous study that presented gender differences using Tough's (1982, 1984) coding system from which the current study's codes were adapted, Haslett (1983) found that although boys and girls used the same three to five communicative function subcodes to fulfill the major communicative functions, there were differences in the frequency of use of particular subcodes. For instance, girls used more of the subcodes of labeling and reference to detail than boys did. The current study therefore supports Haslett's findings of gender differences in the use of communicative functions although it was Self Maintaining on which the genders differed. Further, although there were no gender differences in the current study on global measures of language (OWLS, Carrow-Wolfolk, 1997; PPVT-III, Dunn & Dunn, 1997), previous data (Butterworth & Morissette, 1996) have shown that boys developed language strategies later than girls but Butterworth and Morissette studied infants. Therefore, the 4-year-old boys in the current sample may have been catching up to the girls in their pragmatic skills. In addition, other pragmatic research controlling for gender (Loukusa, et al., 2007) did not identify gender differences and therefore might support the limited gender differences in the current study. For example, when measuring the processes of Reference Assignment, Enrichment, and Implicature proposed by Relevance Theory (Sperber & Wilson, 1995), Loukasa, et al. (2007) found no gender differences. The processes measured in Relevance Theory, however, are concerned with pragmatic comprehension, not necessarily pragmatic production as in the current study. Thus, conflicting gender results found in

pragmatic research may be a result of methodological differences or study focus and call for further study considering gender and pragmatic use.

The result that teachers rated boys significantly lower in social competence via the TCRS (Hightower et al., 1986) also provides evidence of boys being deemed to have lower social skills. Further, regression analyses showed *g*ender to be a highly significant predictor of the TCRS (Hightower et al., 1986) where boys scored lower on average than girls. This finding was consistent with the descriptive data where boys were rated significantly lower on the TCRS than girls. Although the teachers rated the children for social competence without significant racial/ethnic differences, this result suggests that more study is needed in this area to determine if gender bias exists when teachers use this tool to consider the social competence of boys, or if it is possible that the TCRS (Hightower et al., 1986) is measuring less obvious social competence skills and is therefore a more sensitive tool that is able to measure accurately social competence in boys.

Socioeconomic status. Given that children who were Poor demonstrated less Directing, Reporting, Reasoning, and Total frequency of Communicative Functions (e.g. talkativeness) than children who were Non-Poor, a review of these communicative functions' association with academic skills expected of preschoolers would be of interest. All of the communicative functions analyzed relate to some of the Head Start Framework domains (U.S. Department of Health and Human Services, 2002), and an example of this link will be illustrated using the communicative function of Child Reporting.

Reporting is a communicative function comprised of labeling, reference to detail, reference to an activity, incident, or event and, reference to a sequence. Although it is

relatively a lower level skill than others coded (e.g. Reasoning, Predicting, Projecting), its use is pervasive across Head Start Framework domains and it is therefore very likely to be important to academic achievement in preschool. For example, Reporting is used in the Language Development domain that includes the sub-categories of: Listening and Understanding (retelling a familiar story, poem, or song in one's own words); Speaking and Communicating (self expression by using appropriate words or gestures to share information); and Conversation when often the skill of responding to a comment or question from others during conversation requires a Reporting-type response. Hence, the fact that Reporting is a lower-level communicative function does not necessarily mean that Reporting is less important than other communicative functions when considering preschool success.

Proficiency in other domains of the Head Start Framework also relies on Reporting skills. For instance, Reporting is often used in the domain of Literacy under the sub-categories of Book Knowledge and Appreciation when recalling story events using some spoken language. Skills in the Mathematics domain are also supported by certain Reporting skills. For example, the sub-category of Number and Operations includes the use of Reporting for Counting where the child counts to find out how many are in a group of ten or greater, or Patterns and Measurement when using words to refer to time and times of day. The communicative function of Reporting plays a large role in the following sub-categories of the Scientific Skills and Methods/Knowledge domain when Describing the Natural Environment by describing what an animal is doing as it is being observed, or Gathering and Presenting Data by describing data to peers or adults. These sub-categories of the Social and Emotional domain also employ Reporting, including

Knowledge of Self by describing one's own physical attributes and talking about one's own interests, or Initiating and Maintaining Social Relationships by saying names of friends. Many other sub-categories of the aforementioned domains use Reporting, and other domains not described such as Creative Arts, Approaches to Learning, and Physical Health and Development, utilize Reporting.

That children in the current study who were Poor demonstrated less Reporting than children who were Non-Poor might be explained in part by the language influence of their mothers, since mothers who were Poor also demonstrated significantly less Reporting than mothers who were Non-Poor. This finding is corroborated with previous research asserting that children of low SES, regardless of cultural background, are exposed to different discourse styles than those of higher SES (Hart & Risley, 1995; Heath, 1983; Ogbu, 1981). Unfortunately, because Reporting proves to be such a useful communicative function across academic and social domains, and it was the second most common communicative function for all children and the third most common for all mothers, less frequency of Reporting might result in children who are Poor actually performing below the standard that has been set in schools for preschoolers.

The finding that children who were Poor had lower PPVT-III (Dunn & Dunn, 1997) and OWLS (Carrow-Woolfolk, 1995) scores was consistent with previous data (Campbell et al., 1997; Craig & Washington, 2000; Craig et al., 1998; Fagundes et al., 1998; Washington & Craig, 1992). These previous studies have shown that children who are racially different from EA children are also inclined to score lower on standardized language assessments. The child being Poor also factored into a regression model exploring the power of mothers' communicative functions, children's communicative

functions, and demographic factors to predict social competence (TCRS, Hightower et al., 1986). The analyses resulted in increased use of Mother Reasoning, the child being Poor, and the child being a boy as being significant predictors of lower social competence. Although low SES contributed to the variance that explained the lower TCRS (Hightower et al., 1986) scores in the regression model, this finding was not supported by the descriptive results. When considering descriptive analyses between SES groups, no significant SES differences on the TCRS were observed. However, previous research has supported the finding that teachers rate children who are Poor and boys as having fewer skills than other Non-Poor children or girls when considering social skills in the classroom (Alexander, Entwisle, & Thompson, 1987; McLoyd, 1998).

Mother reasoning. When included in the previous regression model, an increase in the use of Reasoning by mothers, which is a higher level communicative function skill, was predictive of lower scores in social competence. It was not expected that Mother Reasoning would be a negative predictor of child outcomes since: a) it is a higher-level communicative function and, b) previous research had found parental Reasoning to have a positive effect on child outcomes (Crowley, Callanan, Jipson, Galco, Topping, & Shrager, 2001; Gleason & Schauble, 2000). For that reason, a comparison of the current study's definition of Reasoning (i.e., explaining a process, justifying actions and behaviors, making comparisons, recognizing causal and dependent relationships, identifying problems, identifying solutions to problems) and other studies' definitions revealed differences that might explain why mother Reasoning was negative in the current study.

For example, Gleason and Schauble (2000) included making inferences in their definition of reasoning, however, making inferences in the current study corresponded with the sub-category of recognizing causal and dependant relationships. Further, Gleason and Schauble (2000) indicated three subcategories of inferences with two of the subcategories being more effective than the other one. Thus, perhaps a more detailed analysis of the current study's sub-categories might parse out what sub-types of Reasoning were more negative (or positive) than others. Another difference between the current study's Reasoning code and Gleason and Schauble's (2000) occurred because they included the skill of predicting as a reasoning skill. In the current study, Prediction was a separate skill from Reasoning, and Prediction for both the child and mother were positive predictors of child outcomes. Hence, if Prediction was collapsed into the Reasoning code in the current study, the results may have been different.

The definition of reasoning used by Crowley et al. (2001) also differed from the current study. For instance, Crowley and colleagues considered reasoning to include strategies such as describing evidence and labeling that would have been considered to be Reporting in the current study. In general, Crowley et al. (2001) determined that the more explanatory the parents were, the more likely the child would be to produce their own explanation and reason on their own. If the Reasoning utterances in the current study were less explanatory and more directive, such as telling the child to "turn the knob" without further explanation, this may partially explain the negative child outcomes.

There may be several other explanations for why the use of Reasoning by mothers (as defined in the current study) was predictive of lower social competence. In particular, Gleason and Schauble (2000) found that when parents assumed more conceptual roles

and their children did more logistical activities such as physically conducting the scientific experiment while the parent did the reasoning, this was the least optimal way for the children to master the reasoning strategies required for the experiment. In the case of the current study where the parent used Reasoning skills such as explaining a process (e.g. how to do the Magna Doodle maze or the block puzzle), the child was often in the logistic role of physically implementing the steps to finish the task, versus taking on a more conceptual role during the interaction.

In addition, with several different types of Reasoning it is possible that when mothers were explaining a process, justifying actions, making comparisons, etc, the child did not have as much opportunity to talk. Moreover, since Mother Reasoning occurred more often during the teaching contexts than during the play component, it could be that when the mothers were primarily concerned with providing information via Reasoning, the child's ability to flourish socially was diminished. In essence, children may not get to practice their social skills in learning situations as much as in other contexts such as play. Moreover, an increased use of Mother Reasoning would not be as maternally responsive as an increased use of Mother Responses. Hence, the less responsive mothers may not be as sensitive to their children's language needs (e.g. use of simpler language strategies), therefore detracting from the child's language development. Additionally, mothers who used Reasoning more may have been using language strategies that were too high for their children, given their children's lower language levels as indicated by the outcome measures. Indeed, as the regression analyses also indicated, the mothers who used more Reporting had children with higher vocabulary scores.

Child predicting. When more regressions were conducted, the PPVT-III (Dunn &

Dunn, 1997) score was predicted by five variables including the communicative function

of Child Predicting, which was the single highest predictor of vocabulary skills. Child

Predicting was not significantly related to any other variables that would explain why it

so uniquely predicted vocabulary skill. However, Child Predicting was a low occurring

communicative function across the sample as illustrated in the distribution analysis for

normality (see Figure 3.1) in the Results chapter. Hence, perhaps since Child Predicting

was scarce, it might be an emerging skill and demonstration of that skill was

characteristic of children who had more advanced language skills overall, which would

include vocabulary skills.

Mother Communicative Functions' Effect on Child Communicative Functions and

Outcomes across Groups

When considering communicative function frequency for mothers, there were

significant differences found for race/ethnicity and SES. Although there often exists an

intersection between race/ethnicity and SES in America, the two variables were

controlled for in the current study and will guide the discussion of results more precisely.

Race/Ethnicity. The communicative function of Self Maintaining involves a

variety of behaviors (e.g. Protection of Self Interests, Criticizing, Expression of

Emotions) and possible explanations for why AA mothers demonstrated more Self

Maintaining than the other groups might benefit from future analysis of the specific types

of Self Maintaining, as not all subcategories of Self Maintaining have the same positive

or negative connotation. Further, the additional finding that both AA and L mothers

produced significantly more Directive communicative functions than EA mothers was

consistent with previous research where non-EA mothers were more directive with their children during interactions (Heath, 1983; Teichman & Contreras-Grau, 2006; Zegiob & Forehand, 1975). These differences in mothers' communicative functions by race/ethnicity can affect parenting style and subsequent child outcomes.

The increased use of Self Maintaining on the part of AA mothers can also be linked to their use of Directives since there are elements of directing another's behavior in the subcategories of Self-Maintaining and potentially negative connotations in Directives. Criticism (Self Maintaining) or negative comments and Directives are more prevalent in an authoritarian or Active-Restrictive parenting style, which has been found to be the least supportive parenting style (Koolahan, McWayne, Fantuzzo, & Grimm, 2002). Previous researchers have characterized some non-EA parents as being more directive and authoritarian. However, more research has determined that SES may have a stronger influence on parenting style than race/ethnicity and that parents of the same race/ethnicity are not necessarily monolithic in their parenting styles (Koolahan et al., 2002). Further, some nuances of directive parenting styles have been found to be protective of AA children but not of EA children (Flynn & Masur, 2007). In contrast, overall mothers in the current study who were Poor did not use more Directing or Self Maintaining, so race/ethnicity did appear to play a stronger role in the use of some communicative functions. Thus, broad generalizations by race/ethnicity should be considered with caution until more research can substantiate how it affects mothers' use of communicative functions with their preschool children.

Perhaps an additional way to help explain the differences in AA and L mothers' use of Directives when compared to EA mothers would be to examine their respective

use of Responses. In contrast to Directives, Responses were observed significantly less in AA mothers than EA and L mothers. The communicative function of Responses entailed a variety of behaviors used in response to something another said or did, including: a) Response to a Question, Statement, or Request for Action/Object, b) Praising Response including positive reinforcement or encouragement, c) Imitation of an utterance, and d) Maintaining Interaction utterances (fillers). The common associations between pragmatic behaviors representing particular mothering styles may explain this finding. For example, mothers who are typically more Directive tend to be mothers who also are considered less Responsive during interactions with their children (Baumwell, Tamis-LeMonda, & Bornstein, 1997). However, there are different types of Directives that call for a distinction such as intrusive Directives versus supportive Directives, for example (Flynn & Masur, 2007). This kind of distinction may be useful in future analyses of the Directives used by mothers in the current study.

Moreover, in the current study the L mothers were also more Directive than the EA mothers but they were not less Responsive, thus there is not necessarily an inverse correspondence between Directives and Responses for all mothers. Maybe this difference between AAs and Ls is one aspect that may help to explain why the outcomes of lower vocabulary and language scores were not apparent in the L children as found in AA children. Basically, even though L mothers shared the same trait with AA mothers of being more Directive, it may have been their differences in responsiveness that subsequently positively impacted their children's outcomes.

Since L mothers had an increase in Directives, but no significant decrease in Responses or resulting adverse affect on L child outcomes, it might be more accurate to

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view an enhanced mother language style as characterized by an addition of more Responses, versus simply a decrease in Directives. A maternal style typified by increased Responses might be understood as "maternal responsivity". Maternal responsivity can be described as the proportion of children's communication acts to which mothers respond promptly, appropriately, and contingently.

This difference in Responses in the current study has implications for language skills for some AA children where their lower vocabulary and expressive and receptive language skills may be attributed to decreased Responses observed in their mothers. Research reinforces this idea with findings that maternal responsivity plays a crucial role in early cognition, social competence, and language acquisition (Beckwith & Rodning, 1996; Flynn & Masur, 2006; Paavola, et al., 2005; Tamis-LeMonda et al., 2001; Yoder & Warren, 2001). Thus, the decreased maternal responsivity in the current study may have had a negative impact on later expressive and receptive language skills of the AA children.

Socioeconomic status. Race/ethnicity and SES often coexist in certain ways but the clear SES differences in mother's communicative functions found in the current study are worthy of discussion. Given that mothers who were Poor demonstrated Reporting, Responses, and Total Communicative Functions significantly less than mothers who were Non-Poor, it stands to reason that their children would also use less of both Reporting and Total Communicative Functions. In addition, Reasoning and Directives also were observed significantly less in *children* who were Poor. This match between mothers and their children may indicate the influence that the mother's decreased Reporting and overall talkativeness had on their children's diminished Reporting and talkativeness.

Furthermore, a difference in maternal interaction style between mothers who are Poor and Non-Poor may impact a variety of child communicative functions overall, especially when Mother Reporting proved to be a strong correlate with three out of eight of the child's communicative functions and Total Functions.

Mother reporting and reasoning. When mothers' communicative function counts were analyzed using linear regression, Mother Reporting and Mother Reasoning were significant predictors of PPVT-III (Dunn & Dunn, 1997) and OWLS (Carrow-Woolfolk, 1995) scores. However, the effects were opposite with a higher frequency of Mother Reporting predicting higher vocabulary and language scores, whereas, a higher frequency of Mother Reasoning predicted lower vocabulary and language scores. Hence, when considering these effects on children who are Poor and AA and their low receptive and expressive language skills, as noted an increased use of Reasoning by their mothers might not be as helpful as other mother communicative functions such as Reporting. Similar to the previous explanation for why mother's use of Reasoning predicted lower TCRS (Hightower et al., 1986) (social competence) scores for boys, Reasoning may not be the best medium for mothers to increase their AA child's lexicon and language skills. On the contrary, the use of Reporting might be a better way for mothers to augment vocabulary in their children since Reporting allows the mother to model and expand on words when labeling or referring to details about an object (Justice, 2002). Therefore, for mothers who used increased Reporting, their children were more likely to have higher vocabulary scores.

Additional Relationships of Mothers' Communicative Function with Child

Communicative Functions

Pearson's correlations were run between mothers' communicative function codes and the children's communicative function codes to identify any significant relationships between the two groups' use of communicative functions. In addition, linear regressions were conducted to examine if mothers' communicative functions predicted child communicative functions. Only results that have not been reviewed previously will be discussed.

Mother responses. Mother Responses had the strongest overall correlation with the child communicative functions in that they were correlated with all of the communicative functions but Child Predicting. Further, the frequency of Mother Responses was a significant predictor of Child Directing and Child Reasoning; thus, mothers being more responsive resulted in the child demonstrating more Directives and Reasoning. Child aptitude in these skills would be positive in academic settings depending on the Directive subcode (e.g. request for information) and for all Reasoning subcodes. The fact that Mother Responses partially predicted an increase in Child Self Maintaining but a decrease for Child Self Maintaining in boys might call for a different type of analysis to, first, determine if there were differences in how mothers interacted with their boys vs. girls, and, second, to see if any differences affected child communicative function use. As discussed earlier, Mother Projecting also predicted Child Self Maintaining. Thus, if mothers use less Responses and Projecting with boys, this might explain the lower Self Maintaining in boys to some degree, while other factors within the boys such as their overall social skills may also account for some of the variance. Self Maintaining presented the only gender difference in the children, however, so it is possible that none of the other mother's communicative functions negatively

impacted boys' communicative functions exclusively. Thus, careful analyses of the

mother-son interaction would be needed to verify this finding.

The same explanation of responsiveness fostering communicative functions in

children can be applied by using the communicative function of Mother Responses as a

measure of responsiveness or sensitivity. The findings that Mother Responses was a

strong predictor and correlate to child language behaviors in the current study paralleled

other research findings that indicated that the more responsive a mother was, the greater

frequency and variety of language output could be expected of the child (Beckwith &

Rodning, 1996; Flynn & Masur, 2006; Paavola, et al., 2005; Tamis-LeMonda et al., 2001;

Yoder & Warren, 2001).

Mother total communicative functions and predicting. Mother Total

Communicative Functions and Mother Predicting constituted the next strongest

correlations to five out of nine child communicative functions. Because Mother

Predicting was correlated with higher-level child communicative functions, it may be

integral to a child functioning academically, whereas Mother Total Communicative

Functions or talkativeness did not correlate with Child Reasoning or Predicting. Since

Mother Total Communicative Functions (i.e. talkativeness) was correlated with Child

Projecting, Child Reporting, Child Imagining, Child Responses, and Child Total

Communicative Functions, however, one can make the case that an overall increase in

language can relate positively to a child's communicative function use and overall

talkativeness as well. Given that Mother Total Communicative Functions and Mother

Projecting together were significant predictors of Child Responses, it makes sense that an

increase in mother talkativeness might be linked with an increase in child responses. The

finding that Mother Projecting predicts Child Responses could be explained by the idea that when a mother is Projecting, she is talking about the emotions and feelings of the child or someone else and this type of utterance is likely to elicit a response from the child (e.g. Mother: "She is afraid of Chucky" Child: "Yes").

Mother reporting and projecting. The next highest level of mother communicative functions correlating with four out of eight child communicative functions occurred with Mother Reporting and Mother Projecting, where these mother communicative functions shared two correlates with Child Responses and Child Total Communicative Functions. Clearly, Mother Reporting was also an influential function as it was highly correlated with Child Reporting and Child Imagining. The communicative function of Reporting manifested itself in a variety of ways during the play situation where the mother may have been referring to an activity when describing what the mother and/or child were doing during the play situation. Mother Reporting could also have been exemplary of a mother providing verbal stimulation and parallel play during the dramatic play context, so not only was Reporting useful in learning contexts, but it was useful during play and related to the production of Child Reporting. An abundance of labeling of and reference to detail about the animal puppets also occurred while the child and mother were Imagining. Mother Reporting and Mother Total Communicative Functions were both correlated to the identical child communicative functions of Child Reporting, Child Imagining, Child Responses, and Child Total Communicative Functions. Thus, a mother's talkativeness may operate in tandem with Mother Reporting. When considering the predictive power of Mother Reporting, it, along with Mother Imagining, was a highly significant predictor of Child Total Communicative Functions.

So increased provision of information (i.e. Reporting), as well as Imagining during pretend contexts might predict general child talkativeness. Mother Projecting was a higher level communicative function that was linked with higher level child communicative functions like Predicting and Projecting, making this an important mother communicative function that may foster an environment in which children produce these higher-level communicative functions as well.

The findings of the current study established a relationship between Mother Predicting and Projecting and several child communicative functions. Beyond a correlation with child communicative functions though, Mother Predicting and Mother Projecting combined were significant predictors of Child Predicting. Thus, the regressions show that it is possible that the mother's modeling of these high-level communicative functions can predict a higher frequency of high-level communicative functions like Predicting in children. The same explanation can be used for the data where Mother Predicting and Mother Projecting together were significant predictors of Child Projecting.

Mother imagining. Next, Mother Imagining's correlation with the three communicative functions of Child Projecting, Child Imagining and Child Total Communicative Functions is worthy of discussion as it adds support to the idea that when mothers model higher-level communicative functions, they may facilitate the production of higher-level communicative functions in their children. Mother Imagining occurred during the play context where the child and mother imagined together. In essence, these higher-level child communicative functions (Predicting, Projecting, Imagining) and the child's overall talkativeness were associated with the mother's use of higher-level

communicative functions. Mother Imagining was also a highly significant predictor,

accounting for 65% of variance in Child Imagining. This finding provides additional

evidence for the idea that mothers can promote the development of certain

communicative functions either by modeling or, at the least, indirect exposure to the

communicative function (Becker, 1994).

Mother directing and reasoning. The fact that Mother Directing and Mother

Reasoning were both significantly correlated with Child Reporting and Child Responses

may be explained in the following ways. First, the Directive subcode of Collaboration

with the child, especially when the mother was negotiating her presence with

communicative functions like "Can I play?" would most often result in a Response from

the child. Secondly, the correlation with Child Reporting and Child Response could be

attributed to the fact that a common type of Mother Directing was a Request for

Information. Mothers often asked children questions, which resulted in Responses from

the children, but many of the responses were in the form of Reporting (e.g. labeling,

reference to detail, reference to an incident, activity, event, or reference to sequence).

When considering the correlation between Mother Reasoning and Child Reporting and

Child Responses, as discussed before, Mother Reasoning occurred frequently during the

teaching context, prompting the child to Respond and Report. Another explanation for

both of these mother communicative functions correlating to the same child ones is that

Mother Reasoning and Mother Directing often hung together in one of the only two

situations during the interactions where double coding was allowed. Specifically,

although several mothers were frequently being Directive during teaching tasks, the

author still wanted to capture any Reasoning that occurred via a directive statement (e.g.

Mother Directive-directing actions of others: "Then you turn the knob to the right"

simultaneously coded as Mother Reasoning-explaining a process). As a result, these two

communicative functions were often linked to children Responding and Reporting, which

is expected during a learning task.

Mother self maintaining. Last, the one significant correlation between Mother Self

Maintaining and Child Imagining can also be explained by a review of the transcripts.

The transcripts showed that Mother Self Maintaining comments such as, "I want to be the

lion." most often occurred during the play context where both Mother and Child

Imagining were prevalent. During the play context, Imagining was double coded with the

other communicative functions in order to also consider the types of communicative

functions used while Imagining. It was customary for the mothers to use these Self

Maintaining communicative functions to take on roles in order to prompt the children to

do the same and begin pretending with the animal puppets. Other types of Self

Maintaining were also present during Imagining when the mothers would have the

animals disagree. Self Maintaining comments such as, "You're mean!" (criticism) or

"This is my grass!" (protecting self interests) happened primarily during the play

sequence that included Imagining.

<div align="center">*Summary*</div>

The current study was designed to investigate the relationships between

demographic factors, communicative function use, and child social and language

outcomes. The relationships between mother's communicative functions and child

communicative functions were also examined. Overall, there were a number of

relationships among certain demographic factors, communicative functions, and

outcomes. From the myriad of significant data produced in the current study, two variable types were most remarkable, namely: a) demographics, and b) mother communicative functions.

First, child demographic factors of race/ethnicity, gender, and SES either individually or in combination impacted child outcomes and predicted lower language, vocabulary, and social competence. The current study illustrated the importance of controlling for each of these factors and then examining the factors individually and in combination with each other and their impact on child outcomes. For example, the only significant difference seen in teacher rating of social competence was between genders, but, interestingly, there were no gender differences in language scores, which contradicts previous data showing gender differences in language (Butterworth & Morissette, 1996; Haslett, 1983). Other child outcome results, however, such as low SES predicting lower vocabulary and language scores, paralleled previous research results (Campbell, et al., 1997; Craig & Washington, 2000; Craig et al., 1998; Fagundes et al., 1998; Washington & Craig, 1992). Demographics also affected communicative function use. For example, Poor status predicted lower frequency use of child Directing, Reporting, Reasoning, and the Total frequency of Communicative Functions, which are all fundamental to academic success. These child demographic factors and their influence are all too familiar, based on research and anecdotal data positing that; the larger the number of risk factors a child has, the worse their outcomes will be (Gutman, Sameroff, & Cole, 2003).

Secondly, particular mother communicative functions were related to child outcomes and child communicative functions. Interestingly, Mother Reasoning was a higher-level communicative function that negatively impacted child outcomes, especially

in combination with other demographic factors. This finding is in contrast to Kloth et al., (1998)'s research where Explaining (mother's goal is to provide information), which would be similar to Reasoning in the current study, corresponded with better child receptive language scores. In addition, as noted previously the current study differed somewhat from other studies (Crowley et al., 2001; Gleason and Schauble, 2000) in the way that Reasoning was defined and thus additional analyses of the subcodes of Reasoning may help explain this unexpected finding. Within the current study's regression model, however, Mother Reporting, which may also fall under Kloth's category of Explaining, positively predicted child outcomes. Therefore, differences between this study and others in coding definitions may account for some of the contrasting findings.

When considering child communicative functions, however, few child communicative functions predicted child outcomes. Nevertheless, it was notable that all children were capable of using many of the communicative functions; especially lower-level ones, despite lower language outcomes in AA children and those who were Poor. Specifically, all children demonstrated Predicting and Projecting which Hwa-Froelich, et al., (2007) did not find in their study of AA Head Start children. Some mother communicative functions correlated with child communicative functions on a wide scale. For example, Mother Responses correlated with almost all of the child's communicative functions. Mother Imagining also had the strongest power to predict a child communicative function of any of the regressions run, explaining the variance in Child Imagining at 65%.

By taking these key variables of demographics and mothers' language into consideration, further refinement of research in the area can guide teachers and parents on: a) how to reduce the effect that demographic factors a child enters school with has on academic and social outcomes, and b) how to enhance communicative functions in their children. In order to refine this research, limitations of the current study should be addressed.

Study Limitations and Future Directions

The following methodological limitations to the current study will be discussed: a) Analysis constraints, and b) Data constraints. Because coding of these communicative functions between mothers and children had not been examined before, only the eight major categories were analyzed in this preliminary, exploratory study. Although these major categories provided a wealth of information, not all of them were adequate predictors of variance in child outcomes. However, these data provide direction on subcategories to be considered in future research, in order to more closely examine the role communicative functions may play in outcomes. In addition, other variables in the NCEDL database that were not analyzed in this study such as teacher/preschool quality variables or family variables may have explained more variance in outcomes as well.

Other analysis constraints of the data included the fact that the overall sample was sizeable (N = 960) but the selected sub-sample of those children who participated in the Family component, spoke English, and had complete outcome and demographic data resulted in slightly uneven sizes of groups in the current study (N=95). Although this sample is larger than previous pragmatic studies and included different SES and racial/ethnic groups, it may not have been the ideal sample size. However, based on the

type of variables used in the study and the proposed research questions, regression was the best statistical method. In addition, the results from the regression analyses paralleled results of several previous studies that used other statistical methods, contributing to their validity. In the future, processing of additional NCEDL cases available can add more statistical power to future analyses.

When considering data constraints, the use of secondary data in the current study posed a few limitations. First, the particular measures of vocabulary skill (PPVT-III, Dunn & Dunn, 1997) and expressive and receptive language (OWLS, Carrow-Woolfolk, 1995) are not currently the ideal tools for use with children who are CLD, although the tools were considered a reasonable alternative at the time of the NCEDL study. For future study design, a more sensitive measure of language such as the *Diagnostic Evaluation of Language Variation Norm-Referenced Test (DELV-NR)* (Seymour, Roeper, & de Villiers, 2005) may provide a more accurate measure of language outcomes for these children. Second, the camera angles that were utilized during the mother-child interactions did not always allow visibility of facial expressions or the whole bodies of participants. Thus, videotaping of the interaction was not always conducive to coding for non-verbal communicative functions. Despite these limitations, however, the coders were able to be reliable with the codes and gathered tremendous information from the interactions.

Implications

Continued refinement of research in pragmatics has far reaching implications for preschool children. Aside from improving day-to-day socialization outside of school, this information can be used to promote understanding of different pragmatic communication styles in 4-year-olds and improve assessment and intervention practices for all children.

The gender difference found with the communicative function of Child Self Maintaining and the social competence measure shows that purposeful encouragement of this communicative function in boys may be indicated in order to increase the frequency of appropriate use of language to meet their needs during conflict and other interactive situations. The racial/ethnic differences in communicative functions demonstrated by the AA and L mothers, and their effect on their children's outcomes and communicative functions provide more data to support the thought that children come to school acculturated with certain language and social interactive characteristics. Hence, preschool teachers may need to adjust carefully to all of their students' needs with consideration for race/ethnicity, SES, and gender. In addition, the additive effects of two or more of these demographic factors along with specific mother communicative functions on children's communicative functions and outcomes, argues for extra vigilance when engaging with children and families who might share these factors or interactive styles.

Across groups, however, certain mother communicative functions, especially Mother Responses, were shown to correlate with many child communicative functions. The current finding that Mother Reporting predicted child vocabulary skill provides additional information to the literature on how adults can promote child vocabulary development. Furthermore, the finding that children's use of Predicting was related to their vocabulary skills might suggest that teachers encourage this skill in preschoolers in order to affect other language domains such as vocabulary. With its 65% explanation of variance in Child Imagining, Mother Imagining was another communicative function that had a direct, positive impact. In contrast, the negative effect of Mother Reasoning (as currently defined) on outcomes may indicate further investigation of this specific

communicative function at the sub-code level to determine how this higher-level communicative function had a negative effect on certain children's outcomes, especially those who were poor and/or boys.

Although further, more detailed analyses are needed in order to make conclusive statements about the current study's results, these findings add to the growing database of information on how 4-year-olds demonstrate communicative functions and the impact of their mothers on those functions and other child outcomes. The cognitive communicative functions in the current study can represent both behavior (e.g. Self-Maintaining, Directing) and academic (e.g. Reporting, Predicting) skills in preschoolers that teachers use in combination to refer children for special services. Hence, additional data such as these on how preschoolers and mothers use communicative functions might inform scientists and school personnel who study teacher's reasons for referral of particular students for special services. Once this research has been refined and translated to practice, teachers and parents can also model and facilitate children's language development, and a focus on pragmatic skills can prepare all children for successful learning interactions, conflict management, and peer interactions in mainstream classrooms.

Communicative Functions Code Book
 The following codes start at the lower level of communicative function skill and generally increase in complexity on the list. When it seems an utterance might fall under two different codes and it is not a situation where double coding is allowed (e.g. REASONING/DIRECTING or IMAGINING/any code), always default to the higher-level code on the list.

I. RES Responses

Examples of the different instances you would code RES:

A. RTQ = response to a question, statement, or request for action/object. For example, the child/mom verbally replies to a question or complies to a request for an action or object by performing the requested action or providing the requested object.

*Many times, the responses will actually be other communicative functions. For example, responses to questions may be in the form of Reporting. Therefore, default to any codes higher than this lowest level code of Response as this category is really only for simple responses and was designed to give credit when a speaker does not ignore the other participant and provides simple acknowledgement of another's statements.

Ex: "No, uh-uh, never, shakes head, yeah, uh-huh, mm-hmm, nods head yes

Ex: Mom: "Give me the puzzle" Child: "Okay" (Child gives puzzle to mom)

Ex: Child: "Can I play?" Mom: "Yeah".

Ex. Child: "Does it go in here?" Mom: "Yeah"

Ex: Mom: "That's the wrong way" Child: "Oh"

Ex: Child: "You be the giraffe" Mom: "Okay

Counter Ex: Child: "How about Rachelle's turn?" Mom: "No, Rachelle can't have a turn" REP-RINC *(Reporting-Reference to activity. Here, the mother's Response can also be considered Reporting that Rachelle can't have a turn even though it is in direct response to a question)*

Counter Ex: Child: "Can I play?" Mom: "Yeah you can play" REP-RINC

Counter Ex: Mom: "What's that?" Child: "It's a bunny" REP-LAB *(Reporting. Since in each of these instances, the child provided more than a simple response, default to the higher level of reporting)*

B. PRA = A praising response including positive reinforcement or encouragement. For example, someone praises the other or themselves for doing something well or provides positive or affirmative comments to help the other continue what they are doing.

Ex: "Great!"

Ex: "Good job."

Ex: "That's awesome!"

Ex: "That's right!" *This response could occur during a lot of praise and based on the context of the situation and the body language/vocal inflection you observe on the video, it could be coded as RES-PRA.*

Counter Ex: "Uh-huh" RES-MAI *(This is affirmative and may be used in order to keep the child going but it is not overt praise like the examples show)*

Counter Ex: "Okay" RES-MAI *(A filler word that doesn't necessarily praise the other person and is not used in response to a question)*
Counter Ex: "That's right." REP-RINC *(Here the mother is reporting that the child is doing an activity correctly. So if the mother seems to be simply providing the information to the child that they are doing something correctly, code it as REP-RINC.)*

C. **IMI = Imitation of an utterance. For example, child/mom verbally copies what the other participant says spontaneously or imitates the other participant when he is requested to imitate as in the second example.**
*Imitated utterances can be partial (e.g. Child: "It's a boy" Mom: "a boy")
Ex: Child: "Yippee!" Mom: "Yippee!"
Ex: Mom: "Say cheese!" Child: "Cheese!"
Counter Ex: Child: "Lion" Mom: "Lion?" Child: REP-LAB Mom: DIR-DIRO-RQI *(Mother says exactly what the child says but she is asking it as a clarifying question so it should be coded Requesting Information from Others)*
Counter Ex: "Say go go go!" Child: "Hey hey hey"

D. **MAI = Maintaining interaction utterances (fillers). For example, child/mom uses words to keep the conversation going or let the other participant know that he is still in the conversation and is following the speaker**
Ex: "Okay?, Yes?, See?, You know what I mean?"
Ex: "I hear you, Uh huh, Okay.
Ex: "Let's see"
Counter Ex: Mom: "Could you please stop that?" Child: "Okay" RES-RTQ *(This 'Okay' is a response to the mother's question, not an 'Okay' just used to keep the conversation going or to let the mom know he is still in the conversation and understands, or just as a filler)*

II. SELF Self Maintaining
*Any of these examples can seem at first like Reporting. Look specifically at what is being reported and look for SELF codes like expressing emotions, criticizing, or protection of self interest.
Examples of the different instances you would code SELF:

A. **PROT = Protection of self and self-interests. For example, child/mom expresses protection of his territory, property, or interests**
Ex: "This is my space"
Ex: "My puppet"
Counter Ex: "Give me that one" DIR-DIRO-RQOA *(Directing actions of others)*
Counter Ex: "We can share" DIR-COL-NGP *(He is not protecting himself/his items)*

B. **CRIT = Criticizing others or themselves. For example, child/mom criticizes someone else**
Ex: "You are bad"
Ex: "You always do that wrong"

Ex: "You're being silly" *(Although this may come across as joking or playful, still categorize it as criticism since the speaker is making a judgment about someone else's behavior that is not adhering to the norm).*
Counter Ex: "That's a good job!" RES-PRA *(Response-praise)*
Counter Ex: "That's the wrong way" REA-PR *(Reasoning/identifying that there is a problem because child is just noting a mistake in placement, not making a judgment about someone else)*

C. EMOT = Expressing emotions about self. For example, child/mom verbally expresses emotions about herself or alludes to their emotional state.

Ex. "That makes me mad"
Ex: "I don't like it when you do that"
Ex: "I'm tired of this game"
Counter Ex: "This is hard" REP-RINC *(Reporting-reflecting on action or incident since she is just reporting a characteristic of the activity and has not overtly expressed an emotion.*
Counter Ex: "Stop doing that!" DIR-DIRO-RQAC *(Directive)*
Counter Ex: "He is mad" PRO-FEO *(Projecting)*

III. DIR Directing (DOUBLE CODING)

Examples of the different instances you would code DIR:

A. DIRS = Directing actions of self. For example, child/mom verbalizes an action that she should do or will do in the immediate future.

*The key word here is "should" because the child/mother is essentially telling herself to do something, vs. "I can do it" which would be Reporting an activity.
*Whenever the mother uses the terms "we" or "let's", code it as directing others not self since her goal in this activity is usually to get the child to do something.
*Code statements of "I will…" as DIRS only if the action is currently happening or is about to happen in the next few seconds. For example, do not code "I will get the blocks" as Predicting/anticipating future event because the speaker is going to do it almost immediately and is just directing himself verbally. No extensive predicting skill went into that communicative function so we do not want to give credit for predicting in these types of cases:

Ex: "I should tie my shoe"
Ex: "I should do it"
Ex: "I will get this side"
Ex: "I will get some blocks"
Counter Ex: "I'm going to put these blocks away in a minute and then get out the puppets" PRE-ANTE *(Predicting/anticipating an event or activity. In this case, she is directing herself but default to the higher level code of Predicting because the speaker clearly demonstrates some forethought into two activities that will occur after some time)*
Counter Ex: "You can tie my shoes" DIR-DIRO-RQOA *(Requesting action from others)*
Counter Ex: "Go away, you bully!" DIR-DIRO-RQOA *(Requesting action from Others)*

Counter Ex: "We need to turn this way" DIR-DIRO-RQOA *(Speaker's goal is truly to get action from others even though she uses "we" which includes herself).*

B. DIRO = Directing actions of others

1. RQI = Requests information. For example, child/mom asks a question in order to gain information.

Ex: "What's that?"

Ex: "How much longer?"

Counter Ex: "Why don't you stop doing that?" DIR-DIRO-RQAC *(Requesting act cessation)*

Counter Ex: "Can you help me put these blocks away?" DIR-DIRO-RQOA *(Requesting action)*

2. RQOA = Requests object/action. For example, child/mom attempts to get someone else to do something, provide a service, or provide an object.

Ex: "Turn"

Ex: "Give me the lion"

Ex: "Now you gotta go down"

Ex: "Now get to the circle"

Ex: "Try to get this one to go there"

Ex: "Now use this one to go up"

Ex: "This one has to go down"

Counter Ex: "And this knob is used to go this way" REA-CADE *(Reasoning-Causal and Dependant Relationships) with no 2nd code for DIR. The mother is explaining about how the knob works in order to help the child complete the task but is not directly telling the child to turn the knob).*

Counter Ex: "I want the lion" SELF-PROT *(Self Maintaining/protecting one's interests). Although the goal of getting the lion is the same for this statement and "Give me the lion", the "I want" of this counter example presents a subtle difference and should be coded as SELF because she has not directly asked someone to get the lion for her. She has simply expressed that she wants the lion for herself).*

Counter Ex: "I'll turn it this way" DIR-DIRS *(Directing Self)*

Counter Ex: "What is that?" DIR-DIRO-RQI *(Requesting information)*

Counter Ex: "The maze sometimes goes sideways and then up" REA-EXP *(Reasoning-Explaining a Process) with no 2nd code for DIR. The mother is explaining what anyone would need to do to complete task but is not directly telling the child to turn sideways and up to complete the maze.*

3. RQAC = Requests act cessation. For example, child/mom tells someone to stop doing something or threatens them in order to get them to stop.

Ex: "Don't yell at me!"

Ex: "Quit that!"

Ex: "I'm gonna beat you <u>if you don't stop</u>!"

Counter Ex: "You do it" DIR-DIRO-RQOA *(Requesting action)*

Counter Ex: "Read it again!" DIR-DIRO-RQOA *(Requesting action)*

C. COL = Collaborating in actions with others.

*These Collaborating codes seem initially like Directing actions of others. Look for key words like "Look", "Watch", or any words that have to do with negotiating the presence in a situation like asking to play or share in order for the child/mom to get into the play situation.

Examples of the different instances you would code COL:

1. **NGP = Negotiates presence. For example, child/mom attempts to enter and/or organize a social situation or get someone else to participate with them in an activity.**

Ex: "Can I play?"

Ex: "You want a turn?"

Ex: "Let's share"

Ex: "Do you want to be the lion and I be the elephant?"

Counter Ex: "I want to do it by myself" SELF-PROT *(Child/mom not entering play group or social interaction and is protecting their right or is trying to be independent)*

Counter Ex: "Come play over here because the camera can't see you" DIR- DIRO-RQOA *(Directing actions of others. The speaker is negotiating presence here but with the goal of getting them physically situated correctly or out of danger, not the goal of simply trying to gain acceptance into play/social interaction)*

2. **NGA = Negotiates mutual attention. For example, child/mom attempts to get someone else's attention by drawing attention to the same act or object.**

Ex: "See elephant dance?"

Ex: "Look at this over here."

Ex: "Over here, look at mine!"

Counter Ex: "You have to look" REA-EXP/DIR-DIRO *(Reasoning/explaining a process. Here, the speaker already has the other's attention. The speaker is trying to get the other to look carefully during the process of explaining how to do something, not just trying to get the other person's attention with an object).*

Counter Ex: "Look for it, look, look, look" REA-EXP/DIR-DIRO *(Reasoning/explaining a process.)*

Counter Ex: *(Child/mom playing with toy without attempt to draw someone else's attention to it)*

Counter Ex: "Give me the toy" DIR-DIRO-RQOA *(This is simply requesting an object, not trying to get joint attention)*

Counter Ex: "I'm playing with the lion" (REP-RINC)

IV. REP Reporting

Examples of the different instances you would code REP:

Basic, implicit level of Reporting

A. LAB = Labeling items. For example, child/mom identifies an item by name

Ex: "Head, shoulders, knees and toes"

Ex: "This is a truck"

Ex: "Her name is Leo"

Counter Ex: "The fire truck is red" REP-RDET *(This is reference to detail of the truck, not simply naming it)*

B. RDET = Reference to detail (size, color, number, small component). For example, child/mom identifies an item by a detail or characteristic of the item.

Ex: "It's red and small"
Ex: "The car has wheels, a roof, and a horn"
Ex: "There are three of them"
Ex: "Those look different"
Ex: "Good thing I'm a righty"
Counter Ex: "Those look different from that one" REA-COMP *(Reasoning by making a comparison to something else)*
Counter Ex: "Three of them went to the market" REP-RINC *(Reference to an incident)*
Counter Ex: "That's a lion" REP-LAB *(Labeling)*
Counter Ex: "These are not the same size" REA-COMP *(Reasoning by making a comparison. Although she is reporting something, default to the higher level of Reasoning since she is making a comparison)*

C. RINC = Reference to an activity, incident, or reflection on event. For example, child/mom reports something she or someone else is doing, refers to an event or incident that happened or is happening. (Not to be confused with Predicting an event that will happen in the future). This is sort of a generic catch-all classification of reporting where the speaker is providing information that does not fall into the labeling, reference to detail, or sequencing categories.

Ex: "That's it"
Ex: "There it is"
Ex: "I put the blocks and it fell down"
Ex: "Mommy hurt her foot"
Ex: "Ah you tagged me!"
Ex: "Tag!" *(This is a shortened version of "I tagged you" so it is OK to imply that the speaker is reporting something they did)*
Counter Ex: "Mommy's foot" REP-LAB *(Labeling)*
Counter Ex: "We're going to do puppets later" PRE-ANTE *(Predicting, Anticipating event)*
Counter Ex: "You love lions" *PRO-FEO (Projecting)*

D. RSEQ = Reference to sequence of events. For example, child/mom demonstrates knowledge of a sequential pattern using temporal words like "First, Next", OR a sequential pattern like the order of two or more numbers, letters, or size. The sequence doesn't have to be correct.

Ex: "First I woke up then I brushed my teeth then went to school"
Ex: "I am turning left and then I turn right and then I'm at the end"
Ex: "One, two, three, four…"
Ex: "A, B, C, D, E, F…"
Ex: "This is the smallest, then bigger, then biggest"
Ex: "First the baby chick will grow in the mommy's belly then get a shell then

it will be laid and then come out of the mommy and then it will hatch"
Counter Ex: "I like to go to the river and the woods and my house" REP-RINC
(No indicators [e.g. first, then, next] of sequence)
Counter Ex: "I have a dog, cat, and gerbil at home" REP-LAB *(Labeling)*
Counter Ex: "We're going to go to do morning time." PRE-ANTE *(No sequence)*
Counter Ex: "There are three of those" REP-RDET *(Reporting detail)*

V. REA Reasoning-Helping the child/mom reach a level of understanding or child/mom demonstrating a level of understanding

Examples of the different instances you would code REA:

A. **EXP = Explaining a process or scaffolding. For example, child/mom expresses the process of how to do something or how they are doing something.**

Ex: "Go around and then down" *(Add 2nd code of DIR since she is telling other to do something)*

Ex: "Then the path goes sideways" *(This is also could be considered Reporting but use Reasoning since it is a higher level code)*

Ex: "To go down here"

Ex: "Then you bring it down to go sideways" *(Add 2nd code of DIR)*

Ex: "Turn turn" *(Add 2nd code of DIR)*

Ex: "(you stay) Right there" *(Add 2nd code of DIR)*

Ex: "(you go) That way" *(Add 2nd code of DIR)*

Ex: "Stop" *(Add 2nd code of DIR) [Mother is not telling child to stop the activity altogether (i.e. DIR-DIRO-RQAC). She is explaining to the child that he needs to stop in the maze in order to go onto the next step]*

Counter Ex: "This knob is to go right and this one to go up" REA-CADE *(causal dependant relationship)*

Counter Ex: "That's it" REP-RINC *(Reporting. Mother is just stating the status of where the child is in the puzzle. She is not directly telling the child an action to do to complete it or how to do it)*

Counter Ex: "I play soccer and baseball" REP-RINC *(Reporting, no process)*

Counter Ex: "Stop it" DIR-DIRO-RQAC *(Directing act cessation)*

Counter Ex: "See remember I told you?" REA-QUE *(Reasoning, Facilitating question to get child to recall and understand the steps to doing the puzzle)*

B. **QUE = Facilitating by asking questions. For example, mom asks a question in order to facilitate the understanding of a process.**

*This usually occurs in the midst of the mother explaining a process (REA-EXP but instead it is a question)

Ex: "Is that it?"

Ex: "Think that will work?"

Ex: "And what else do you think you can use on top of that?"

Ex: "There?"

Counter Ex: "See this shape?" DIR-DIRO-RQI *(mom is just trying to make sure the child sees the object she is talking about).*

Counter Ex: "Wanna try to make another one?" DIR-DIRO-RQI (*Simply requesting information that does not facilitate understanding of the process*)
Counter Ex: "What other kind do you like?" DIR-DIRO-RQI *(Simply requesting information that does not facilitate understanding of the process)*
Counter Ex: "You don't know?" DIR-DIRO-RQI *(Simply requesting information that does not facilitate understanding of the process)*

C. **CADE = Recognizing causal and dependent relationships. For example, child/mom demonstrates knowledge of the cause and effect of something.**
   Ex: "It gets erased whenever you shake it"
   Ex: "Because you hit that it fell"
   Ex: "If you push down on the teeter-totter I will go up"
   Ex: "This knob is to turn up"
   Counter Ex: "I watered the plant" REP-RINC (*Reporting, no effect explained*)
   Counter Ex: "It fell down" REP-RINC *(Reporting, no cause explained)*
   Counter Ex: "We go up and then down" REA-EXP *(Reasoning/explaining a process)*
   Counter Ex: "I put the blocks and it fell down" REP-RINC *(since the child/mom doesn't indicate that they know the reason why the blocks fell with a word like "because" or "since", or "whenever")*

D. **PR = Identifying a problem. For example, someone determines that there is currently a problem.**
   Ex: "It's not balancing"
   Ex: "This is the wrong shape"
   Counter Ex: "This is not the same as that one" REA-COMP *(Reasoning/making comparison. Although the blocks not being the same as the other might present a problem in solving the puzzle and the speaker is indeed Reporting this problem, default to the higher level of Reasoning since the speaker is making a comparison between two things)*
   Counter Ex: "Uh oh this puzzle doesn't fit so I need a different piece" REA-PRSO *(Identifying a problem AND a solution)*
   Counter Ex: "It's not balancing so let's do it a different way" REA-PRSO *(Identifying a problem AND a solution)*
   Counter Ex: "My hands are big" REP-RDET

E. **PRSO = Recognizing solutions to a problem. For example, when a problem has been previously identified and child/mom identifies a solution.**
   Ex: "You can't go like that so we have to try again"
   Ex: "Uh oh this puzzle doesn't fit so I need a different piece"
   Ex: "You might not listen well the first time so I'm gonna show you again"
   Ex: "It is cloudy so it might rain, so we'll take an umbrella to stay dry".
   Ex: "It's cloudy so we'll take an umbrella" *(Although the specific reason (problem) for an umbrella like rain or getting wet is not stated, it is OK to include implied problems like this example)*
   Counter Ex: "This puzzle doesn't fit!" REA-PR *(Problem, no solution)*
   Counter Ex: "You didn't listen" REP-RINC *(No solution)*

F. **JUAC = justifying judgments, actions, behaviors, claims. For example, child/mom explains why she did something or why something is happening.**

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*The key word *because* may make it initially seem like recognizing cause and effect but these aren't necessarily a true or scientific causal and dependant relationship situation like in previous examples of CADE. These specifically show the child/mom trying to justify why they did something.

        Ex: "I hid it because he keeps eating it all and I bought it."

        Ex: "I took it because I had it yesterday"

        Ex: "We have to do it again since we messed it up"

        Counter Ex: "I want that." SELF-PROT *(No justification)*

        Counter Ex: "I took it" REP-RINC *(No justification)*

    G. **COMP = Making comparisons or recognizing relationships. For example, child/mom demonstrates the ability to compare items by size, relationship, category, etc.**

        Ex: "The elephant is bigger than the sheep"

        Ex: "Cars and trucks both drive"

        Ex: "Grandma is mom's mommy"

        Ex: "Both the clock and watch tell time"

        Ex: "Make it the same as that block"

        Counter Ex: "The elephant is grey" REP-RDET *(This is reference to detail)*

        Counter Ex: "That's too big" REA-PR *(No comparison to another object)*

VI. IMA Imagining (DOUBLE CODING)

*Once any Imagining or Pretending occurs such as during puppet time, first code the utterance as IMA under the Code column. Then review the utterance to see if an additional code is needed. If so, put the second code into the Code2 column.

   Examples of the different instances you would code IMA:

        Ex: (child with puppet elephant using a squeaky voice to take on elephant character) "Do you like me?" IMA/DIR-DIRO-RQI

        Ex: "roar!" IMA

        Ex: (mom with puppet lion using different voice to take on lion character) "Come on, give me a hug." IMA/DIR-DIRO-RQOA"

        Ex: "This is the story of the elephant and the lion". IMA/REP-RINC

        Ex: "One day, elephant went on a walk by the lake and saw the lion." IMA/REP-RINC

        Ex: "Lion was lonely" IMA/PRO-FEO

        Ex: "So he asked elephant if he wanted to play and they did." IMA-REP-RINC

        Counter Ex: "I have the lion! You have the elephant." DIR-COL-NGP *(Setting up pretend/imagining situation to negotiate social interaction. Start coding once the characters have been set up and the pretend play has begun).*

VII. PRE Predicting

   Examples of the different instances you would code PRE:

    A. **ANTE = Anticipating/foreseeing events. For example, child/mom expresses what she thinks will happen in the future.**

        Ex: "In December we'll have Christmas"

        Ex: "The lion might get lost"

        Ex: "We're going to eat lunch at school Monday"

Counter Ex: "We had Christmas" REP-RINC *(Past event)*

Counter Ex: "I'll get the blocks" DIR-DIRS *(Directing one's self. In this case the action is going to occur within the next few seconds or could be happening as he says it. The speaker did not really use predicting skills to anticipate an event into the future. He is just verbally directing himself).*

Counter Ex: "Now we're going to do these blocks" REP-RINC *(this event is happening in the immediate future or currently as they take blocks out of the bucket. Mom is not predicting far into the future, she is just reporting what they are about to do)*

B. ELIC = Eliciting anticipation/foreseeing events. For example, child/mom tries to get the other to think about an event that will happen in the future.

Ex: "Let's see if I tell you what it is."

Ex: "What do you think will happen next?"

Counter Ex: "Where do you go next?" REA-QUE *(Reasoning/facilitating understanding of a process by asking questions. This is not PRE-ELIC because the speaker's goal is to get the child to learn how to make the correct move in the puzzle, not to get the other to anticipate a future event.)*

VIII. PRO Projecting into feelings and physical reactions of others including the reason for the reaction

*Again, these initially look like Reporting so whenever feelings or physical reactions are the core of what the child/mom is explaining, look closer to determine if the utterance should be coded as PRO instead of REP.

Examples of the instances you would code PRO:

A. FEO = Projecting into feelings, reactions/physical behavior of others. For example, child/mom expresses how someone else feels or why someone else reacts a certain way

Ex: "I bet she is happy"

Ex: "You look sad"

Ex: "When giraffe is bad lion turns scary and roars"

Ex: "My baby sister will stomp and cry if I don't give her my doll"

Ex: "You love that ice cream don't you?"

Counter Ex: "My big sister goes to that school every day and sings" REP-RINC *(Reporting, no overt feelings of other's mentioned)*

Counter Ex: "She cried" REP-RINC *(Reporting, No overt mention of other's feelings or why she reacted by crying)*

Counter Ex: "Blood goes to his face so it turns red" REA-CADE *(Not Projecting also because the child does not project into why his father reacted the way he did. He is simply stating the cause (blood) and effect (red face)*

Counter Ex: "She is having a tantrum" REP-RINC *(Not projecting into why there is the reaction to an event or an emotion. Simply reporting the action of others)*

Any utterances like greetings (e.g. "Hi", "Hey"), exclamations that are not necessarily praise (e.g. Wow!"), or other types of utterances not being analyzed in this study can be left blank.

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