THE DEVELOPMENT OF PRAGMATIC DIFFERENTIATION SKILLS IN
PRESCHOOL-AGED BILINGUAL CHILDREN

by

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DEDICATION

To my mother Neela and my sister Manisha (Tai) for all their love and support, and in

loving memory of my father, Prakash Tare, and my grandfather, Krishna Kagade

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ABSTRACT

This dissertation examined pragmatic differentiation, bilingual speakers' ability to use two languages appropriately with different speakers. Case studies of naturalistic interaction have shown that some sensitivity emerges in early childhood (by 2 years); however, the component skills of this pragmatic understanding and their relation to other developing metacognitive capacities have not been examined. In order to examine these issues, I compared the language use of 28 bilingual children (2;7 to 3;10 and 4;1 to 4;11) across three tasks, which varied in context and interlocutor. All children were bilingual in English and Marathi, an Indian language. I also included theory of mind measures to assess how developing cognitive capacities relate to pragmatic ability. In Study 1, each child participated in an Object Naming task, where he/she was asked to name familiar objects, and a Free Play task in which the child conversed with an adult. Both tasks were conducted twice, once with an English speaker and once with a Marathi speaker. In Study 2, the child and one of his/her bilingual parents discussed a picture book in three different sessions: one with the parent-child dyad alone, and one each where a third-person bystander was either an English speaker or a Marathi speaker.

Children performed very well in the Free Play task, using more of the appropriate language with each speaker. Furthermore, children switched languages between the two consecutive sessions. However, children had more difficulty with Object Naming, and used predominantly English labels with both speakers. There were developmental effects; older children were more responsive to prompts to switch languages. This responsiveness

was also highly related to children's theory of mind scores, even when controlling for their age. Finally, as predicted for the Picture Book task, parents were sensitive to the experimenter's presence and adjusted their language use accordingly; however, children did not follow their parents' model and adjust their language use between sessions.

These results demonstrate that pragmatic differentiation is not an all-or-none ability, but one which has component skills that develop over the preschool years. This protracted development is also related to metacognitive abilities which emerge during the preschool years.

CHAPTER 1: GENERAL INTRODUCTION

With an ever-growing bilingual population in the United States, the study of language awareness in young children is of increasing importance. How and when do children understand that other people may speak a different language? How and when do children become sensitive to the need to accommodate to other speakers? And how successfully do bilingual children vary their language use as a function of speaker and context? Although these questions have been the focus of much research, questions remain regarding the conditions and factors that affect bilingual children's language use over the preschool years. In the present dissertation, I examine young bilingual children's language choices as they occur across social contexts.

Many researchers have studied the nature of children's understanding of other people and their knowledge states, broadly framed within the context of children's theory of mind (Shatz, 1994; Wellman, 1992). This understanding affects children's interpretation of others' actions and intentions, including in the realm of language use. By two years of age, children are highly attuned to the intentions of their conversational partners and the people around them; in various studies, children have taken into account others' language knowledge when interpreting new information, such as object labels (Akhtar, 2005; Diesendruck, 2005; Jaswal, 2004; Sabbagh & Baldwin, 2001).

Studies have been conducted with both monolingual and bilingual children, because all children face the problem of determining speaker's intent and making choices in their language use. Nonetheless, bilingual children have a distinctive experience

because they are required, eventually, to use more than one language with various speakers and follow conversational norms in language use; that is, they develop pragmatic differentiation, defined here as "the ability of bilingual children to use their developing languages appropriately with interlocutors who speak different languages" (Nicoladis & Genesee, 1996, p. 440).

Much research has examined bilingual children's early differentiation of their languages and pragmatic use. The demonstration of early sensitivity, however, leaves open the question of how this ability unfolds, beyond children's initial attempts, into what is inevitably a multi-faceted skill which develops along with children's general cognitive and social skills. My main research questions, then, are: what component skills of pragmatic differentiation continue to develop in bilingual children during the preschool years and how do children demonstrate this competence? In addressing these questions, I examined these emerging capacities in bilingual children, including when and how they use language in pragmatically appropriate ways with different speakers and across contexts. In two studies, I examine a specific bilingual population, speakers of English and Marathi, an Indo-Aryan language primarily spoken in the Maharasthra state of India by nearly 96 million people (Wali, 2005).

Study 1 is an experimental study that examines the nature of pragmatic language use in preschool-aged children (2;7 to 3;10 and 4;1 to 4;11) in order to determine when and how they choose their language use as a function of their conversational partner (unfamiliar English or Marathi interlocutor) and context (Object Naming or Free Play). Case studies have demonstrated some capacity to switch language by 2;5 during a free play situation, however, it is unclear what contextual factors affect young children's

ability to succeed at this task as well as the developmental limitations to this pragmatic capacity. Therefore, I have included both a traditional free play task as well as a context (Object Naming) which provides minimal conversational feedback to the children and requires children to make a specific language choice.

Study 2 further examines the nature of pragmatic differentiation and language awareness in the same bilingual sample through an analysis of parent-child picture book reading, in which bilingual parents are free to talk in whichever language(s) they choose. This study also includes an experimental manipulation, in that the third person in the interaction is at times a monolingual speaker of either English or Marathi. Study 2 has two primary goals: (1) To examine language accommodation in a more subtle and demanding context: when a bystander who is listening to the conversation speaks one or another language, but does not actually actively participate, and (2) To examine parents' metalinguistic strategies for emphasizing language difference and language differentiation. In this context, children could make use of either of two sets of cues to accommodate: the language knowledge of the bystander, or the language model providing by a language-accommodating parent.

Together, these three contexts (Free Play, Object Naming, and Picture-Book Reading) provide increasingly demanding and complex contexts for children's language accommodation. Examining these developments in pragmatic skills, particularly in relation to other developing metacognitive skills, such as theory of mind, will provide a more complete picture of this complex understanding in bilingual children and will address the existing gap in the literature.

Literature Review

In this literature review, I plan to discuss several areas of research which are related to the development of pragmatic differentiation skills in bilingual children. I will begin by discussing some of the relevant literature on bilingual children's ability to differentiate their two languages from an early age. I will then discuss some of the literature looking at children's general development of pragmatic skills. While these two areas seem somewhat disparate, they are both very relevant to the present studies, examining pragmatic development in bilingual children. I will follow these discussions with a detailed examination of the studies that have been conducted with bilingual children examining their pragmatic development. These studies fall into three main areas of research, by which I will organize the related empirical evidence: the study of early emergence of pragmatic differentiation; the study of the influence of language socialization on these skills; and finally, the relationship between these skills and other metacognitive developments.

Bilingual Language Differentiation

Many researchers have addressed the question of whether and when bilingual children differentiate their two languages: syntactically, lexically, and phonologically. An often-cited perspective is Volterra and Taeschner's (1978) unitary language hypothesis, which argued that children start out with one (combined) language which gradually becomes separated, first in lexicon, then in syntax, into two language systems by the third year. This argument was made as a result of children's language mixing in the early one and two-word stages of language acquisition. Many researchers since have argued that children demonstrate differentiation earlier than this. Even in infancy,

children seem to treat different languages as distinct. Mehler et al. (1988) examined the ability to distinguish languages in 4-day-old French infants who listened to French and Russian language samples. The infants both discriminated between the two languages and preferred to listen to French.

Further evidence that children can differentiate languages from an early age comes from morpho-syntax acquisition in bilingual children, who develop increasing competence in each separate language, according to the same patterns as monolingual children (Genesee, 2006). Children also show evidence of learning two lexicons early on, contrary to Volterra and Taeschner's claim that bilingual children avoid translation equivalents. Pearson, Fernandez, and Oller (1995) found that 26 out of 27 bilingual children studied (ages 0;8 to 2;6) were reported to know translation equivalents, which constituted an average of 30% of their vocabularies (using the MacArthur CDI lexical inventory). The differentiation of bilingual children's two input languages is different, however, from *pragmatic* differentiation, or their ability to use their languages differently with different speakers. This ability is part of a more general set of social-pragmatic skills required for appropriate language use, and involves understanding the communicative intentions of the people in one's environment (Tomasello, 2001).

Pragmatic Language Use

Along with learning the phonological, semantic, and syntactic aspects of language, children must learn how to use their language appropriately. Overall, communicative competence develops throughout the early years with increasing social interactions and awareness of social norms. Children's understanding of their own communicative intentions increases and they use language to achieve different functions

(Ninio, 1995). They start to converse with one another by age 2, sometimes taking into account the other speaker's language knowledge, suggesting that the motivation for successful communication is present from an early age (Hoff, 2005).

One way that children's developing communicative competence has been examined is through analyses of linguistic registers, the varieties of language that are situationally-governed. Andersen (1990) writes that "registers typically vary with the changing roles of speakers, the characteristics of their addressees, and the situations in which they converse" (p. 48). This type of accommodation can be seen in very young children, monolingual and bilingual, who speak differently with teachers, parents, siblings, and friends. Andersen examined the use of different linguistic registers in children ages 4 to 7 by having them play act using puppets in three different contexts: family situation, doctor situation, and classroom situation. In examining how children took on the roles of parent/child, doctor/patient, and teacher/student in the respective sessions, she found that children used longer utterances as parents and doctors, and more group-directed terms ("hey, kids") as teacher. The results suggested that children are able to use different registers for the different roles, by varying their amount of speech, length of utterance, and phonological and lexical markers.

Shatz and Gelman (1973) examined the development of pragmatic understanding even earlier in their study of 4-year-olds' speech to adults and 2-year-olds. When describing a new toy to 2-year-olds, as opposed to adults, 4-year-olds used shorter utterances and more attentional directives, such as "hey" and "look." These results were found in 4-year-olds who had younger siblings, and were therefore familiar with 2-year-olds, as well as those who did not have siblings, and the results were replicated in

spontaneous conversations as well. While the same children did poorly on other traditional tests of "egocentrism," they successfully varied their language use based on their understanding of the different linguistic skills of their audiences.

More recently, Diesendruck (2005) examined children's developing pragmatic understanding and adherence to the pragmatic principle of conventionality in relation to their understanding of the speaker's language knowledge. Diesendruck found that both monolingual and bilingual children follow the principles of conventionality and contrast in word learning. In an experimental set-up designed to test children's understanding of the conventional use of common nouns, as opposed to proper nouns, children were asked to interpret a puppet's request for a picture of a novel creature. Monolingual children avoided assigning two names for an object based on their expectations of a puppet's knowledge of the words in a language; that is, the puppet should know common nouns but not necessarily proper nouns if he is absent from the labeling situation.

Diesendruck also found that when interpreting a novel label, bilingual children took into account not only the puppet's presence in or absence from the labeling situation, but also whether the puppet was monolingual or bilingual (English and Hebrew). The author predicted that if the puppet was bilingual and present when the experimenter introduced a novel English name for a novel object, then the children would interpret the puppet's later request using a novel Hebrew word as a request for a different object. Children did respond this way, suggesting that bilingual children are sensitive to the pragmatic implications of a speaker's language choice.

Together, these studies, and many others which have been conducted on children's development of pragmatic understanding, show that pragmatic skill underlies

everyday language use from a very early age. It is a complex set of skills which continues

to develop as children gain more understanding of the social world and different settings

and situations which require varying language use. There is a protracted development and

not all aspects of pragmatic understanding come online at the same time. As Siegal and

Surian (2007) write, "a number of mechanisms underwrite the development of

conversational understanding that involve an increasing sensitivity with age to

conversational conventions and to linguistic and extra-linguistic contexts for the

interpretation of meaning" (p. 306). These characteristics of general pragmatic

understanding, such as increasing pragmatic facility over time, which all children must

learn, also apply to the development of pragmatic differentiation skills in bilingual

children, as they learn to navigate two linguistic worlds.

Perspectives on Bilingual Pragmatic Differentiation

As discussed above, pragmatic language understanding has many different facets

even in monolingual development. In considering the bilingual experience, Grosjean

(2001) details his theory of how bilingual speakers have "language modes" which dictate

their language use in different situations. Grosjean describes his theory of bilingual

language modes in terms of a continuum. Given that one language is the base language

for a particular conversational context, the "activation" of the second language can range

from only slightly active to very active, resulting in an almost "monolingual" mode to a

fully "bilingual" mode. (Note that Grosjean does not suggest that bilingual speakers ever

use a wholly monolingual mode.) Grosjean argues that these language modes can occur

in different combinations depending on the base language and many other factors,

including the conversational participants and their language proficiency, the situation, the

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content of the message being relayed, and the function of the communicative act. The activation of various language modes may help to explain bilingual speakers' behavior in different linguistic contexts.

Many researchers have examined factors such as the ones Grosjean proposed when looking at pragmatic differentiation, or how young bilingual children who speak two languages simultaneously from a young age learn to differentiate and use those languages appropriately (Genesee & Nicoladis, 2007). Past researchers have tended to focus on one of three aspects of this issue: they have focused on language differentiation as an early-emerging skill, they have examined the influence of social and environmental influences on this capacity, or they have considered the relationship between general cognitive skills and this capacity. I turn next to a review of each of these perspectives.

Focus on Early Emergence

Much thoughtful research has demonstrated that children have an early capacity to engage in pragmatic differentiation (DeHouwer, 1990; Deuchar & Quay, 1999; Nicoladis, 1998; Nicoladis & Genesee, 1996; Quay, 2008). Nicoladis and Genesee (1996) conducted a longitudinal analysis of pragmatic differentiation in four bilingual children from age 1;7 to 3;0. The children were recorded interacting in free play with their parents, seven times over 1 ½ years. The parents each had a dominant language of either French or English and used that language primarily with the child. Nicoladis and Genesee analyzed each child's language use relative to his or her language proficiency in each language; that is, pragmatic differentiation was measured by examining how much children accommodated their language use to each parent, taking into account the child's own dominant language. The children showed early differentiation in this context, with

the first demonstration of this capacity ranging from 1;9 to 2;4 for the different children, none of whom differentiated with both parents in the first session. The analysis involved examining children's English-only and French-only utterances addressed to each parent. Looking at the utterances in this way showed that for two of the children, when they differentiated, they used more of the mother's language with the mother and more of the father's language with the father. For the other two, they used the mother's language more with both parents, but used more of the father's language with him than they did with the mother. Once they reached a point where they showed sensitivity in using their parents' languages, they also used translation equivalents (concepts for which there are words in both English and French) in the appropriate context over 80% of the time. That is, children used the English word for the concept with their English-speaking parent and the French word with their French-speaking parent.

Deuchar and Quay (1999) also analyzed early language choice through a case study of one bilingual child from 1;3 to 1;8, who was learning Spanish in the home from both parents and English outside the home at her daycare. The authors' analysis included recording the child's growing vocabulary and new words in different language contexts, with the monolingual English-speaking grandmother and the native-Spanish speaking father. Even with only one-word and two-word utterances, the child in this study showed the ability to use the appropriate translation equivalent statistically more in the appropriate context by 1;7 years.

Quay (2008) examined this type of sensitivity in her study of the pragmatic understanding of a trilingual two-year-old. Using a social-pragmatic approach, she examined the way that the child used English, Japanese, and Chinese and how she used

and mixed the languages depending on whether she was talking to her trilingual mother or her English-Japanese bilingual father. Quay argues that language mixing can be seen as a way to extend communication while learning to code-switch, or switch between languages, rather than as a sign of confusion in language use, suggesting that the pragmatic goal of communicating an idea in the best way possible may affect language use. As noted earlier, other factors, such as knowledge about the other person's language ability, or the languages that are activated in a given situation, can also affect a bilingual speaker's language mode (Grosjean, 2001). Indeed, when analyzing dinner conversations in this family, Quay found that the young girl spoke mostly Chinese to her mother, mostly English to her father, and mostly Japanese, the majority and common language, when speaking to both parents. The child also differentiated in her mixed utterances, using all three languages in different combinations when mixing with her trilingual mother and mostly using just English and Japanese when mixing with her bilingual father.

These studies provide important evidence about bilingual children's early sensitivity to language context, but are limited in their focus on children's performance with their own parents, therefore making it difficult to generalize the findings to how children would perform with unfamiliar interlocutors. A child may learn, for example, that she should speak one language with one particular individual and another language with another particular individual, but not yet have figured out which language to use in a novel situation. As evidenced by Quay (2008), children develop communication patterns with familiar interlocutors very early on which may influence their language behavior as

older children. The use of unfamiliar interlocutors is an important methodological tool that I will employ in Study 1.

A few studies have examined children's pragmatic differentiation with unfamiliar others. Genesee, Boivin, and Nicoladis (1996) studied four English-French bilingual children's language accommodation to strangers, relative to the children's language dominance. The children were not provided with information about the strangers, which meant that the situation was more experimentally controlled and not influenced by children's prior knowledge of the person's language preferences. The experimenters used the child's less dominant language in order to provide a stronger test of the children's accommodation. In this study, three of the four children (M age = 2;2) made accommodations to the stranger by using relatively more of the stranger's language during the free play sessions than they would normally; however, only one of the children used a majority of the stranger's language during her free play session. These results suggest that children at this age are capable of accommodating their language use relative to their normal production, although they leave open the question of the age at which children are consistently able to produce the "appropriate" language the majority of the time.

Although this study provides valuable insights into how bilingual children might deal with an unfamiliar interlocutor, the research procedure, similar to the studies described above, involved a free play session where conversational feedback varied greatly. The cues that children might have used in determining the language knowledge of the conversational partner were not constrained, making it difficult to know how children knew which language to use or that they should correct themselves by

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translating. For many of the studies, we do not know what the children were specifically responding to when they used the appropriate language, how often part or all of their utterances were cued by the partner's preceding utterance (e.g., "Do you like strawberries?" "Yes, I like strawberries"), how often they used simple words repeatedly during the session (e.g., "yes", "okay"), and how often the repeated feedback trained children to avoid errors. Therefore, it is unclear how children would perform in a context without the scaffolding provided by this conversational feedback.

It is also important to note that all of the studies discussed above included children who came from one-parent/one-language homes, which may play a role in their early ability to differentiate languages. The children have experience in the home accommodating to their conversational partners and this experience may change their expectations regarding new interlocutors. However, a large number of bilingual children are raised in environments in which there is no clear correspondence between language and speaker. Often, both parents are bilingual and accept children's use of both languages. Hakuta and D'Andrea (1992) presented data on immigrant families in the U.S. and showed that the participant groups who had the most balanced and strong bilingual language proficiency in English and Spanish were those who were born in Mexico and moved to the U.S. before the age of 5 and those who were born in the U.S. and had both parents born in Mexico. According to Pearson (2007), having two parents in the home who speak the minority language is an important factor in raising a bilingual child in the U.S. Examining pragmatic abilities within such a population would be a good starting point to determining the general pragmatic capacities of developing bilingual children.

The studies reviewed above demonstrate that bilingual children display a consistent early emergence of some pragmatic understanding and successful attempts to make language accommodations by 2 years of age, in the context of free play sessions. However, I propose that this understanding should not be characterized as a single insight, but rather a developing set of skills that will continue to be affected by the general cognitive and social developments of the preschool years. Examining the age group of 2;6 to 5;0 is vital to determining what the next steps are in children's ability to differentiate and use their languages. While researchers who have documented early pragmatic differentiation certainly have not argued that this skill is complete by 2 years of age, there has been little evidence of what component skills continue to emerge after initial sensitivity is demonstrated around 2;0.

Focus on Language Socialization

Another body of work has examined how pragmatic differentiation skills develop through language socialization and parents' discourse strategies (Lanza, 2001). While many studies have relied on completely naturalistic conversations, other researchers have created more controlled or experimental contexts which involve conversational feedback intended to mirror an everyday social situation. Comeau and Genesee (2001) examined what happened when there was a communication breakdown between a bilingual child and a monolingual interlocutor. In their study of English-French bilingual children (twelve 3-year-olds and six 5-year-olds), an unfamiliar interlocutor engaged in a free-play session with each child in the child's non-dominant language. The procedure entailed a series of clarification requests made by the research assistant when the child used the "wrong" language. The researcher asked, in this order, 1) "What?"; 2) "I don't

understand"; 3) "Can you tell me that so I can understand?"; 4) "I don't speak French"; and 5) "Can you tell me that in English?" (p. 242). The number of language-based breakdowns varied greatly between children, ranging from 0 to 36, with an average of 7, during the hour-long session.

In examining the language breakdowns, Comeau and Genesee (2001) found that 90% of these occurred with the 3-year-old participants. The children attempted different repair strategies, but they all eventually translated their utterances, with 88% of the 3-year-olds' translations occurring after one of the first three clarification requests, which are implicit in that they do not cite language as the cause of the breakdown. Children also differentiated language-based breakdowns from other types, such as if they were mumbling and needed to speak louder. This analysis provides insight into how young bilingual children fare in conversations where they need to use their languages appropriately in order to continue a conversation. It is interesting, however, that most children made more than one "error", and some made many, suggesting that even corrective feedback is insufficient in stopping children from selecting the inappropriate language.

Other studies also examined the nature of the relationship between child and adult language use. Comeau, Genesee, and Lapaquette (2003) examined how adult and child code-mixing are related and whether young bilingual children are sensitive to the amount of code-mixing that is occurring during a free play session. For this study, code-mixing was defined as using the non-target language for the session and also mixing the two languages within an utterance. The authors proposed that "child bilingual code-mixing is directly related to the bilingual code-mixing in the input" (p. 114). They tested this

"modeling hypothesis" by varying the experimenter's rate of code-mixing with the child and examining children's sensitivity and response. The study included six English-French bilingual children whose average age was 2;4 (range: 2;0 to 2;7). They were recorded during three separate interactions with a research assistant who spoke their less dominant language. During the first session, the researcher code-mixed at a low rate of around 15%, followed by a second session one week later where the researcher increased her rate of code-mixing to about 40%. Finally, a third session had the researcher decrease her rate again to the original level of 15% of utterances. Comeau et al. found that all of the children significantly increased their own rates of code-mixing from the first to the second session, and four out of the six significantly decreased their rates from the second to the third session. Further analyses of how children accomplished this on-line matching of their interlocutors' code-mixing revealed that children matched mixed/non-mixed utterances turn-to-turn, though none of their mixed utterances were exact repetitions of what had just been said to them, and very few (5.8%) of their non-mixed utterances were exact repetitions. This study revealed that children can be very sensitive to how their adult conversational partners are using language and what amount of code-mixing is permissible.

Paradis and Nicoladis (2007) also examined bilingual children's language use with respect to the way that the languages are used in their environment. This study examined eight English-French bilingual children (3;6 to 4;11) who lived in Alberta, Canada, where French is a minority language and English is the majority language. The authors examined how children used their languages with different speakers (a mix of parents and researchers) with respect to the children's language dominance and the

sociolinguistic environment. Using a criterion of 90% of children's utterances being in the adult's language of choice for the English or French free play sessions (tested on different days), they found that all of the children were able to use English appropriately. However, only those children who were dominant in French were able to reach this criterion for the French language session. The authors concluded that these preschool aged children were able to achieve separation better than younger children in prior research, however, language dominance still influenced their language use. Also, in this community where French speakers are likely to be bilingual, children may be adopting the language use patterns of the larger community.

Lanza (2001) has also employed a language socialization framework in her discourse analysis of parents' strategies for dealing with child code-mixing. This framework contends that, "the processing of linguistic knowledge occurs simultaneously with the processing of social knowledge, with language socialization beginning as soon as the infant has social contact" (p. 202). Lanza specifically examined conversations in order to find ways in which parents might try to adjust their child's language use. The analysis revealed several strategies that seem to socialize the child linguistically, depending on the parents' personal or community attitudes regarding language mixing. Lanza found that parental reactions seemed to range on a continuum of maintaining a monolingual context to engaging in a bilingual context. If a child spoke to the parent in the non-preferred language (assuming that one language is preferred), then the parent's response to the child may indicate their language preference in various ways. For example, some parents showed no understanding of what the child said in the non-preferred language, indicating that they preferred a monolingual context. Parents

sometimes repeated the child's utterance using the preferred language, a somewhat intermediate strategy indicating that there was a preferred language. In contrast, the parents sometimes code-switched themselves, indicating that a bilingual context was permissible. I will return to examine bilingual parent-child interactions in the introduction to Study 2.

Focus on Pragmatic Differentiation in Relationship to Developing Cognitive Capacities

As we have seen, pragmatic differentiation skills involve: (1) an understanding of others' linguistic knowledge, (2) motivation to and understanding of how to accommodate one's language in order to communicate successfully, and (3) the planning and executive control skills to produce the appropriate language in the appropriate context. In my dissertation, I will adopt a developmental perspective to examine how bilingual children's developing cognitive resources (including theory of mind and metacognition) relate to their pragmatic differentiation skills. In this section I review research that has examined developmental changes that might contribute to pragmatic differentiation.

Some researchers have hypothesized that children mix languages more when using their weaker language because they may not have the language resources necessary to make a complete switch (Genesee, Nicoladis & Paradis, 1995). Certainly, as Nicoladis and Secco (2000) have noted, children must know the translation equivalents, or two words that refer to the same thing in the world, in order to use the words in language-appropriate contexts. Accordingly, Nicoladis and Secco have suggested that code-mixing occurs as a result of lexical gaps.

In an analysis of the various pragmatic skills which children develop, Koppe and Meisel (1995) demonstrated that there are many levels to children's learning to navigate and use their two languages in appropriate situations and that not all of these abilities necessarily come online at the same time. They are skills that develop. They conducted a longitudinal study of two children learning German and French, each of whom had one parent who was a native speaker of each language. The children played with initially unfamiliar research assistants who spoke either French or German with them. The study took a more fine-grained approach than other studies in describing the children's various milestones that demonstrated their pragmatic competence in different conversational contexts. By 1;4 and 1;5, the children used the appropriate language with each research assistant. By 2;0 and 2;5, the children showed the ability to switch languages when responding to a person in the language in which they were addressed, and by 2;0 and 2;8, the children demonstrated that they could initiate these language switches themselves, where they addressed someone in a different language without being asked. The authors note that these self-initiated switches often had fewer errors than those initiated by the experimenters and that switches between languages often involved simple utterances such as proper names or deictics (p. 287). More sophisticated language uses were demonstrated in the children's use of both languages during role-play (2;3 and 2;6) and their explicit metalinguistic comments, such as asking for translations (3;5 and 3;8). Finally, one child used the two languages to make a joke and even to exclude a person from the conversation at 4;4. Although these findings provide valuable insights, they are also limited in that they are from just two children and may not be representative. The

authors also do not discuss other measures of children's developing understanding of other people which might be related to the emergence of these component skills.

Another cognitive resource related to pragmatic ability is metalinguistic understanding, which many researchers have discussed. Bialystok (2001) discusses this set of skills as encompassing the knowledge, ability, and awareness that allow one to attend to the abstract nature of language while also relating it to actual language use. Metalinguistic skills, such as comments on others' language use and requests for translations, have been demonstrated in bilingual children as young as age 2;5 (Kapetangianni & Shatz, in prep.). One important metalinguistic component that is required in pragmatic differentiation is an understanding of others' language knowledge; this may be related to a widely-studied aspect of social cognition called theory of mind, or our understanding of ourselves and others as having internal psychological states consisting of intentions, beliefs, and desires (Wellman, 2002).

Indeed, many researchers have examined how bilingual experience might enhance children's metalinguistic abilities compared to monolingual children. Bilingual children have been found to be better than monolingual children at tasks that require awareness of the arbitrary nature of words, such as Piaget's sun-moon task (Cummins, 1978; Rosenblum & Pinker, 1983). Bilingual children have shown enhanced metalinguistic skills on many different tasks (Bialystok, 1988, Galambos & Goldin-Meadow, 1990) as well as enhanced theory of mind performance on some tasks, compared to monolingual children (Goetz, 2003).

Carlson and Meltzoff (2008) recently examined another important cognitive capacity, executive function, and found that English-Spanish bilingual kindergarteners

performed better than monolingual children on a battery of executive function tasks, when controlling for their verbal ability and socioeconomic status. In particular, the bilingual children performed better on tasks of conflicting attention, such as the game Simon Says. Thus, the authors conclude that despite potential limiting factors to the bilingual children's performance, such as lower parent education levels, children may be performing better because they are "honing the cognitive operations involved in language switching" (p 293).

Although these studies suggest that the bilingual experience may affect performance on various metalinguistic, theory of mind, and executive control tasks, the causal influence may also go the other direction. That is, preschool-aged bilingual children's developing metalinguistic, executive control, and theory of mind capacities might also affect their capacity to engage in pragmatic differentiation. Assessing children's theory of mind in comparison to their pragmatic differentiation skills, such as responsiveness to pragmatic cues, might illuminate the relationship between these two capacities. Indeed, developing metacognitive capacities such as theory of mind and language awareness might have a positive influence on bilingual children's ability to perform well on language-switching tasks.

The Present Studies

The present studies examine how the multi-faceted skill of pragmatic differentiation develops through the preschool years. By including two age groups, I examined developmental aspects of this skill. Study 1 examines children's pragmatic differentiation in two contexts, Free Play and Object Naming. The Free Play task is designed to replicate the methodology of previous studies, in which children converse

with an unfamiliar adult speaker of either of two languages (English and Marathi), with otherwise no constraints on the conversation. In contrast to prior studies, the task involves interactions with speakers of both languages, thus enabling me to examine children's ability to switch languages from one speaker to the next. Based on past research findings demonstrating an early capacity to differentiate languages in natural conversation, I hypothesized that children would successfully differentiate their languages (use more of the appropriate language with each speaker) on this task.

The Object Naming task is designed to provide a more demanding test of pragmatic differentiation, in three respects: (a) minimal cues are provided as to the experimenter's language background, in contrast to the Free Play task, in which children hear continuous conversation from the experimenter as well as implicit and explicit cues of non-comprehension, (b) correct performance requires that children come up with particular target words in the appropriate language (i.e., labels for the objects that are presented), and are not merely to produce *any* conversational turn in the appropriate language, and (c) as in the Free Play task, children receive the task twice, once each with a speaker of English and Marathi, so that that the second session requires actively *switching* from one language to another. This task controlled for children's knowledge of translation equivalents (i.e., children know translation equivalents for every word tested). Thus, if Nicoladis and Secco (2000) are correct in their assumption that children can select languages appropriately as long as they know the words in both languages, children should be able to do this very well. However, I predicted that the additional demands of this task would lead to worse performance as compared to the Free Play task. I also

predicted that there would be age differences in children's sensitivity to the speaker's language as well as age differences in their responsiveness to the prompts provided.

Study 2 examines children's developing differentiation abilities through a more subtle task (Parent-Child Picture Book), in which they speak with a familiar interlocutor (a parent), but in the presence of a 3rd person who has established a clear language preference, and who does not actively participate in the conversation. This is a particularly demanding context in which to study children's language differentiation, because successful performance rests almost wholly on either of two subtle cues: (a) knowledge of the bystander's language (without any face-to-face cues or feedback from the bystander), and/or (b) parental variation in language choice (with a parent who is known to readily speak both languages). For this study, I hypothesize that parents would differentiate in their language use, therefore validating this task as an appropriate measure of subtle pragmatic differentiation, as well as providing a language model for their children. However, I predicted that children would have great difficulty differentiating language in this context. Finally, these parent-child conversations permit an examination of the sorts of metalinguistic cues parents provide that might help focus children on language differentiation.

In order to consider the relationship between these pragmatic differentiation skills and other developing capacities, I have included measures of social cognition (Theory of Mind scale), metalinguistic awareness (Language Check), and bilingual vocabulary (MacArthur CDI). The Theory of Mind and Language Check measures will specifically allow me to test the hypothesis that children's pragmatic differentiation in the primary tasks correlates with their developing metacognitive capacities.

CHAPTER 2: STUDY ONE

Prior work examining young bilingual children's pragmatic differentiation has provided valuable information regarding when this ability emerges, but has focused less on the questions of why children respond appropriately, how social cues affect their performance, and what developmental changes are taking place throughout the preschool years. Specifically, prior work has been limited in three respects. First, typically a single type of pragmatic differentiation task has been included, thus not easily permitting an examination of different levels of ability. Second, children's pragmatic differentiation was examined in contexts where conversation was freely varying. In such contexts, the adult speaker likely provided multiple, redundant cues regarding which language they spoke, as well as extensive feedback (e.g., non-comprehension or unresponsiveness when the child used the "wrong" language; comprehension and follow-through when the child used the "right" language). Children are sensitive to such cues in communication, as evidenced by research with monolingual children (Shatz & Ebeling, 1991; Shwe & Markman, 1997). Third and finally, the bilingual children studied were from one parent-one language homes where children may have had extensive experience accommodating to their parents' language use (e.g., after not being understood when speaking the "wrong" language to one parent). It is important to examine this ability in a population where each parent is bilingual and thus there is no clear identification of one language with one person, because many children in the U.S. experience such a bilingual home environment and yet learn to successfully accommodate different speakers.

Thus, there are both theoretical and methodological gaps in the research literature that motivate the present set of studies. The theoretical gap concerns the question of how pragmatic differentiation develops, that is, some of the multiple skills that unfold gradually over the preschool years (rather than all at once). Genesee (2006), noting that pragmatic differentiation is apparent in early childhood, proposed that once this ability emerges, children will accommodate to the extent that their linguistic abilities permit: "Basic pragmatic skills involving language choice develop at an early age in BFL [Bilingual First Language] learners. Even bilingual children in the one- and early two-word stages of development usually use their interlocutor's language as much as their linguistic proficiency allows" (p. 58). This position implies that there is what one might call a "pragmatic insight" that emerges early and continues to be the basis for continuing pragmatic language differentiation. However, it is also possible that children's understanding of pragmatic language use may develop over the preschool years as other cognitive understandings come on-line, showing increasing awareness and appropriate language use over time. Genesee and Nicoladis (2007) also note that more research is necessary to examine bilingual first language acquisition through the preschool years.

The methodological gap in the literature follows from the use of studies focused on naturalistic, free play contexts. Because the naturalistic contexts in prior work have generally provided little control over the situation that permitted or encouraged appropriate code-switching, it is unclear whether conversational scaffolding which led to the children's ability to switch appropriately was provided. I will therefore include relevant analyses in this study. For example, by looking at whether children repeat words or phrases in the experimenter's prior utterance, I can examine a mechanism of how a

child might be successful in a differentiation task. This type of conversational analysis may be very important in understanding how performance on this task relates to prior research in naturalistic contexts.

Therefore, a primary motivation for the present study was to devise a language choice task where low-level strategies can be ruled out and children's increasing competence at different types of pragmatic language use can be examined. In this way I can examine language differentiation as a complex task that entails multiple levels of skill and social understanding.

<center>Present Study</center>

The present study builds upon past work demonstrating that bilingual children can pragmatically differentiate languages at an early age. However, prior studies have not shown a clear and consistent ability in the children to switch between their languages without at least some conversational feedback. Providing an experimental setting, where the amount and type of language input is consistent across participants, will provide a more controlled context in which to examine children's developing pragmatic differentiation ability. In the present study, children (2;7 to 3;10 and 4;1 to 4;11) were asked to complete an Object Naming task and a Free Play task, first with a speaker of one of their languages, followed immediately by a speaker of their second language. The Free Play task in the present study was similar to prior research which does not constrain the conversation between the child and the research assistant, and allows for natural language feedback. During the Object Naming task, the speaker's language was established during the session, but the child did not freely converse with the speaker. Thus, children were expected to select the appropriate object labels from their lexicon in the appropriate

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language, with minimal conversational scaffolding and prompts. The objects were chosen based on parental report of children's knowledge of both English and Marathi labels for the item. This is an important control as previous researchers have suggested that children code-switch because they are motivated to use the only label they know for an object, even if it is in the pragmatically inappropriate language (Nicoladis & Genesee, 1996). By providing objects for which children knew both labels, I examined which label children chose to use.

I compare children's performance on the Object Naming and Free Play tasks in order to assess whether the context and cues provided affect children's ability to differentiate their languages. The coding involves analyses of children's use of English and Marathi across contexts, and examines whether they differentiated by using more English in the English context *and* more Marathi in the Marathi context. Two age groups were tested in order to examine the development of these skills; the two groups were chosen because they were expected to differ on their vocabulary scores and other cognitive measures, specifically theory of mind and metalinguistic awareness.

Therefore, this study tests, in two age groups, (a) children's ability to use the appropriate language with each speaker during a free play task, (b) their ability to use object labels in the appropriate language with the appropriate speaker given minimal language feedback, and (c) their ability to switch between languages when required. Results from these analyses will provide a more nuanced picture of young children's developing pragmatic differentiation skills, and will therefore provide insight into what cues might allow them to respond appropriately. I expect to replicate prior findings regarding the Free Play task; that is, that children will successfully accommodate to the

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different language speakers. However, their performance on the Object Naming task will be a stronger test of children's pragmatic differentiation. If these young children are successful in using the appropriate language in this context, it will demonstrate their developing pragmatic differentiation beyond that shown in prior work, and will rule out lower-level explanations of such a capacity (e.g., that children are repeating words or phrases from the adult speaker). If, as I predict, they do not show this ability it would suggest either that children require more conversational context or prompts before they respond pragmatically, or that there is still more for them to learn regarding pragmatic language use. It is also possible that children will succeed with the first speaker on each task, but fail to switch when talking with the second speaker, suggesting that the act of switching languages poses particular difficulties. Finally, children's performance on these tasks is hypothesized to relate to measures of metacognitive ability, including the Theory of Mind scale and a language check task, which measures children's metalinguistic awareness of the researchers' language knowledge.

Method

Participants

Participants for this study were young bilingual children who speak English and Marathi. The younger age group had 14 children (9 female) and ranged from 2;7 to 3;10 (M = 3;2). The older age group had 14 children (4 female) and ranged from 4;1 to 4;11 (M = 4;6). The average ratio of reported English:Marathi vocabulary knowledge for the younger age group was 1.19:1 words. The average ratio of reported English:Marathi vocabulary knowledge for the older age group was 1.37:1 words. Additionally, three children were not included in the study. Two children (in the younger age group) were

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not included because they did not meet my criteria for bilingual ability; one child (in the older age group) was not included because she refused to participate. Twenty-six of the children were tested in a Marathi household; two were tested in a research lab.

The mothers' average age was 33.37 years and 92% had at least a college education. The fathers' average age was 37.08 years and 92% had at least a college education. The parents immigrated to the U.S. an average of 6.86 years ago. Fifty percent of the children had siblings. Seventy-one percent of children in the older age group and 43% of children in the younger age group attended some amount of English-speaking daycare during the week. All of the parents who participated in the study reported language knowledge of English and Marathi; 39% of these parents reported knowledge of English, Marathi, and at least one other Indian language, most often Hindi. All of the parent participants endorsed that it was very important to them for their children to know Marathi.

Design

This study was designed to assess how young bilingual children are able to differentiate and use their two languages across different contexts when interacting with an unfamiliar speaker of each of their languages. In order to assess this, children engaged in two different tasks in each of their two languages, English and Marathi. The tasks were Object Naming and Free Play. The primary within-subject factors are language used (English or Marathi) and session (English or Marathi) for each task. The primary between-subjects factor is Age Group (Older or Younger).

Materials & Procedure

The procedure for the study was that children first received both tasks in one language, followed by both tasks in the other language. Whether the children experienced the English tasks first or the Marathi tasks first was counterbalanced across children, such that half of the children in each age group experienced each language first. Children always received the Object Naming task before the Free Play task. I used this order for all children in order to minimize order effects. Object Naming was intended to be a more constrained task in which children were asked to make a language choice with each experimenter without the advantage of having conversational feedback; this aspect of the task may have been affected if children experienced the unconstrained Free Play task first.

Object Naming. The items for the Object Naming task were chosen because the names for these objects are all early acquired based on the American English MacArthur Communicative Development Inventory (Fenson et al., 1994). Parents completed a short assessment of their children's productive vocabulary for a larger set of 30 items in both English and Marathi (Vocabulary Checklist, see Appendix A). Based on this parent report, twelve objects for which children knew both translation equivalents were used in the task so that children did indeed have a language choice to make when labeling.

Children were asked to name objects with each of two research assistants. One set of six pre-screened objects was used with the first research assistant and a different set of six objects was used with the second research assistant. Both research assistants were female. The English-speaking research assistant was a Caucasian monolingual English speaker. The Marathi-speaking research assistant was an Indian bilingual Marathi/English

speaker but only spoke Marathi throughout the research session (i.e., she acted as if she was a monolingual Marathi speaker).

The procedure for the Object Naming task was very constrained, with each research assistant following a script in her respective language. The first research assistant entered the room and said in her language, "Hi, my name is [experimenter's name]. What's your name? We're going to play a game today. I'm going to show you some things and I need you to help me by telling me what they are. Ready?" The purpose of this introduction was to establish the language of this speaker and provide positive evidence of the speaker's language. I avoided telling children explicitly what the researcher's language knowledge was or what language they should use in order to maintain a naturalistic introduction: new conversational partners do not usually say what their language proficiency or preference is.

The first research assistant then went through each object one by one, asking first, "What is this?" If the child used the wrong language in labeling, the researcher responded with the *first prompt* indicating that she didn't understand, "What?" If the child again responded with the wrong language, the researcher responded with the *second prompt*, "I don't know that word." If after waiting for a response, the child used the wrong language, the researcher responded with the *third prompt*, "Can you say it another way?" Again, all of the researcher's language use, including these prompts, was in the appropriate language for that speaker (English or Marathi). These prompts were intended to provide some feedback to the child regarding his or her response without explicitly stating language as the cause of the misunderstanding. After these three prompts, regardless of the child's response (correct/incorrect word or language), the experimenter responded,

"OK, let's see what's next. I'm going to take out the next one." In this way, the child

received more positive language feedback between items. At the completion of these first

six objects, the research assistant began the Free Play task with the child.

Free Play. The Free Play task followed the Object Naming task in each language.

For the Free Play task, the research assistant began the session by saying (in her

appropriate language), "Now we can play together for a few minutes. I have a new toy

here that I just got. Can you tell me how to play with it?" She then introduced one of two

toy playsets: a Fisher Price airplane set with three toy people or a Dora the Explorer

shopping market. Assignment of playset to language was counterbalanced across

participants, such that each participant saw both playsets, one for the English session and

one for the Marathi session. After the introduction, there were no further constraints on

what the researcher would say, other than using the intended language exclusively, while

engaging the child during the 3-minute task. At the end of the first language session, the

researcher told the child that another friend was coming to play. The first researcher then

exited the room. The second research assistant then entered the room and followed the

same script for her Object Naming and Free Play sessions. The entire research session

was videotaped and transcribed for later analysis.

Additional Measures

MacArthur Communicative Development Inventory. The MacArthur CDI for

preschoolers (Fenson et al., 1994) was originally developed in English. I translated this

measure into Marathi for use in this study, with the help of a native Marathi speaker who

was raised in India and educated in Marathi. As many items as possible have been

translated into Marathi, and items have been added to account for Marathi and Indian

culture, such as names of foods, clothing, and kinship terms. The measure has 630 vocabulary items in English and 452 vocabulary items in Marathi as well as general questions regarding how children use words and word endings, and the longest utterances that the parents have heard them say in each language. This measure was used to assess children's language ability in the two languages.

Because there are different numbers of items for each language, I calculated how many items children knew in each language using just the items which have translation equivalents on the measure (442 items). Using this measure of the two languages I established a criterion that children had to meet in order to be included in the study. Specifically, I required that the ratio of one language to the other (in terms of number of words on the MacArthur CDI) could not be greater than 3:1; that is, at least ¼ of their total vocabulary was required to be in their less-favored language. Two children who participated in this study were not included in the final sample because they did not meet these criteria. Using this measure, I also determined the number of nouns and verbs children knew in each language. See Appendix B for the complete CDI measure.

Parent Background Questionnaire. A parent questionnaire was created to assess the child's language environment at home and at child care. Parent background variables such as age, education, and language use were assessed. Also, attitudes toward raising a child bilingually were assessed. A self-report measure of parents' language knowledge of English and Marathi grammar, vocabulary, and pronunciation was included. See Appendix C for the questionnaire.

Language Check. The language check measure was created to assess children's language awareness and understanding of the research assistants' language knowledge. It

was administered by a 3rd person, and occurred after the children's interaction with the research assistants was complete. For this task, the child was shown a photograph of each research assistant, one at a time, and was asked of each, "What language did [experimenter's name] speak?" If the child responded with one language, the follow-up question, "Can she also speak [the language not mentioned]?" was asked. If the child gave no response or said "I don't know" to the initial open-ended question, the forced-choice question, "Did she speak [English or Marathi, counterbalanced order]?" was asked, followed by, "Can she also speak [the language not mentioned]?" after the child answered. Finally, the child was shown, one at a time, two pictures of familiar objects for which the child knew the label in both languages (based on the Vocabulary Checklist pretest for the Object Naming task; Appendix A) and was asked which label each speaker would use to name it (e.g., for a picture of a hat, "Would she call it *hat* or *topee*?"). Using the first response given for each question, each child was given a language check score of 0-4 based on how many appropriate matches they made between language and speaker. See Appendix D for the complete protocol.

Theory of Mind Scale Tasks. The first three tasks from Wellman and Liu's (2004) theory of mind scale were administered at the end of the research session. *Diverse Desire* assesses whether children understand that other people might have desires opposite from their own, *Diverse Belief* assesses whether children understand that other people might have beliefs opposite from their own, and *Knowledge Access* assesses whether children understand that other people might not have access to the same information as they do. See Appendix E for protocols for the three tasks. Tasks were coded as pass or fail

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according to the scale, and children received a score from 0-3 based on how many tasks they passed.

Coding

Several sets of coding were used in Study 1. Reliability for the different coding schemes was completed by two bilingual coders and was calculated using 20% of the data across both age groups.

Object Naming Codes. The primary goal of this coding was to capture the language of the label that the child provided during each language session, initially and after all prompts were provided.

Number of Prompts Given: the number of prompts that were provided beyond the initial question (0-3 per trial)

Label in Correct Language: whether or not the label was provided in the appropriate language initially and after prompts (1 = yes, 0 = no)

Ambient Language: whether there was ambient language (all language except label, such as quantifiers, "a", "the" and any other language used in response) used and whether it was in the correct language (no ambient language, incorrect ambient language, correct ambient language, or both incorrect and correct ambient language). Kappa = 0.74; Percent agreement = 86%.

Other Pragmatic Modification: note if/when child changes word (but not language)

Free Play Language Use Codes. The primary goal of this coding scheme was to capture the nature of the language used by children with the research assistants during the two Free Play sessions. This coding scheme is based in part on Muysken's (2000) coding

of bilingual code-mixing. Kappa = 0.93; Percent agreement = 96%. In the examples

below, Marathi words are italicized and the utterance is translated in the next line.

Complete English: Utterance is fully in English, with no Marathi (though proper names

can be in either language).

*ADULT: Look at the picture.

*CHILD: You put that in here.

Complete Marathi: Utterance is fully in Marathi, with no English (though proper names

can be in either language)

*ADULT: *Mala pun maithe nahe hecha nauv kai eh*

%eng: I don't even know what the name of this is

*CHILD: Courtney *eh*

%eng: It's Courtney

Neutral: Utterance includes only neutral utterances that are not identifiable as belonging

to either language (e.g., "hmm", "umm", "oops", "wow", "uh-huh", proper nouns, or

parents providing the initial sound of intended label [e.g., "ddd"]). Note that if these

items are combined with identifiably English or Marathi speech, then the utterance would

be coded with respect to the identifiable language.

English with Marathi Insertion: Insertion of Marathi material (lexical items) from one

language into an English structure (i.e., word order).

*ADULT: You can say *Marathit*, the *maushi* will understand

%eng: You can say it in Marathi, the auntie will understand.

*ADULT: *Ani* what is this?

%eng: And what is this?

Marathi with English Insertion: Insertion of English material (lexical items) into Marathi structure (i.e., word order) These instances were sub-coded for the part of speech which was inserted (i.e., noun, verb, other).

*ADULT: Toy *eh ha*?

%eng: Is it a toy?

*CHILD: *Thena sangoon yetho ke maza* done *zala*.

%eng: I'll go tell them that I'm done.

Marathi with English Borrowing: Insertion of English words without translation equivalents in Marathi (e.g., camera, chocolate, ice-cream). These instances were sub-coded for the part of speech which was inserted (i.e., noun, verb, other).

*ADULT: *Thu oothaza nahe, thu* camera *mudhe disla paije burobar*.

%eng: You don't get up, you have to be seen properly in the camera.

*Note***:** For any Marathi utterance with English Insertion or Borrowing, the insertion was coded as noun, verb, or other. There may be more than one instance of a type of insertion in an utterance, but it was only coded once. Codes were not mutually exclusive (one utterance may have more than one type of insertion). Reliability for Insertion Coding: Kappa = 0.93, Percent Agreement = 98%

English with Marathi Grammatical Marker: using a Marathi grammatical marker on an English word (usually open class). This code is not mutually exclusive from the others; the following examples would also be coded as Marathi with English Insertion.

*ADULT: *He* wooden*che* doll *eth*

%eng: These are wooden dolls.

*CHILD: *Ha* doll*la hela gatho ani ha* doll*la hela gatho*.

%eng: This doll takes this one and this doll takes this one.

Alternation: Alternation between structures from languages in one utterance; adjacent

clauses in Marathi and English

*ADULT: *Apan thena sangooya* we are done with this book.

%eng: Let's tell them we are done with this book.

*ADULT: *Pudza bhugooya atha kai eh apan*, next page.

%eng: Let's see what's next now, next page.

Marathi with English quoting: Quoting of English lexical item in a Marathi utterance,

usually when requesting a translation for a label first given in English

*CHILD: *Muli latz Englishmudhe* girl *munthat*.

%eng: "Muli" is called girl in English.

*ADULT: Grapes*la kai munthat*?

%eng: What is "grapes" called?

Uncodable: Utterances which could not be transcribed ("xxx") were coded as

uncodable. Also, a few children spoke to their parents during the Free Play sessions.

Because these utterances were not directed to the experimenter, they were coded as

uncodable.

  Additional Coding. Additional coding of children's language use during Free Play

included a count of how many of their language appropriate utterances in each of the two

sessions were "stock" phrases, including "yes" "no" and "yeah" in English and "ho"

"nahi" and "huh" in Marathi. I also counted how many of the children's utterances were

direct repetitions, or a subset, of the experimenter's utterance just prior.

Results

Background Language Measures

The background language and demographic measures completed by the parents are summarized in Table 1. All of the child and adult participants were bilingual, and all of the parents reported using both English and Marathi with their children. The children's average ratio of Marathi to English vocabulary knowledge was 1:1.28. As predicted, there were significant age group differences in knowledge of vocabulary items reported on the CDI; older children knew more English vocabulary items overall, t (26) = 3.77, p = .001, more English nouns, t (26) = 4.18, p < .01, and more English verbs, t (26) = 3.10, p < .01, than younger children. There were no age differences in children's reported knowledge of Marathi vocabulary. However, older children knew more sets of translation equivalents in English and Marathi, t (26) = 2.72, p < .05, than younger children.

Regarding parents' estimates of their own percentage of talk to their children in English and Marathi, mothers of older children reported a higher percentage of English speech to their children than mothers of younger children, t (24) = 2.36, p < .05.

Language Check

Children's language awareness was measured by the Language Check at the end of the session. This measure assessed children's knowledge of the experimenters' language knowledge (i.e., whether each experimenter spoke English and/or Marathi). Out of a total possible score of 4 points for each main test question, older children scored significantly higher (M = 3.21, SD = 1.12) than younger children (M = 1.79, SD = 1.37)

on this measure, $t(26) = 3.02$, $p < .01$. Further, the older children scored significantly above chance (2.0), $p = .001$, whereas the younger children's scores were not significantly different from chance.

Theory of Mind

Children's social cognition was measured by three tasks from Wellman and Liu's (2004) theory of mind scale. As expected, older children passed significantly more of the three tasks ($M = 2.29$, $SD = 0.73$) than younger children ($M = 0.79$, $SD = 0.58$), $t(26) = 6.04$, $p < .01$. Children's theory of mind scores were also significantly positively correlated with their age in months, $r = .62$, $p < .01$, and their Language Check scores, $r = .48$, $p = .01$. Theory of mind scores were not significantly correlated with any of the CDI scores, including a measure of how balanced children were in their English and Marathi vocabularies. Thus, increased theory of mind was not associated with increased knowledge of both languages.

Object Naming

Initial Sensitivity in Labeling. In order to assess whether children used their languages differentially across the two language sessions (English vs. Marathi), I first focused on initial responses (before prompts): the number of English labels provided (out of 6 trials) in the two sessions and the number of Marathi labels provided (out of 6 trials) in the two sessions. The dependent variables of English and Marathi labels provided are not independent of one other since children always provided one or the other language on each of the 6 trials. Therefore, for the purposes of the analyses, I focused on one language only, keeping in mind that the results for the other language are identical

(but inversely). Thus, the dependent variable in the analyses is the number of Marathi

labels provided initially in the two sessions. (Using the English labels would yield the

same results.) I conducted an ANOVA with the factors of language session (English,

Marathi), age group (Older, Younger), and order of presentation (English → Marathi,

Marathi → English). There was a significant main effect of session, $F(1, 24) = 10.50$, $p <$

.01, with children using more Marathi labels initially in the Marathi session ($M = 1.29$,

$SD = 1.63$) than in the English session ($M = 0.25$, $SD = 0.97$). There were no significant

effects of age group or order on children's performance in the two sessions; see Table 2.

Nonetheless, in order to determine whether children in both age groups were sensitive to

language context, I also examined the effects of session within each age group separately.

This analysis revealed that there was a significant main effect of session for both the

younger and older age groups, $ps < .05$.

   Although children responded significantly differently across sessions (more

Marathi with the Marathi speaker than with the English speaker), these differences were

slight, due to children's overall preference for English. Moreover, although children

were appropriately below-chance in using Marathi in the English session ($p < .01$), they

were also significantly below-chance in using Marathi in the Marathi session ($p < .01$).

Thus, while children did show some initial sensitivity in their use of English and Marathi,

there were strong differences in their performance in the two language sessions.

Children's performance in the English session was almost at ceiling, with 25/28 children

providing all six English labels after the first request. However, children's initial

responses in the Marathi session were more variable, resulting in more prompts being

provided in the Marathi session ($M = 1.96$, $SD = 0.86$) than in the English session ($M =$

0.11, $SD = 0.42$), $t(27) = 9.51$, $p < .01$. I turn next to children's responsiveness to the prompts.

Responsiveness to Prompts and Age Group. Here I report children's labeling after as many prompts as necessary were provided. This was done for the Marathi session only, given children's near-ceiling performance in the English session (see above). In the Marathi session, children's total number of Marathi labels was significantly higher after prompting ($M = 2.90$, $SD = 1.96$) than initially ($M = 1.29$, $SD = 1.63$), $t(27) = -4.95$, $p < .01$. However, even after prompts, children's performance on Marathi was still not significantly different from chance. This was true for children as a whole, as well as for each age group considered individually. In order to assess how responsive children were to the prompts in the Marathi Object Naming session, I calculated a Responsiveness Score for each child that tallied the number of trials on which children switched from English (incorrect) to Marathi (correct) after prompts were provided. Older children switched languages on significantly more trials ($M = 2.37$, $SD = 1.81$) than younger children ($M = 0.86$, $SD = 1.29$), $t(26) = 2.55$, $p < .05$.

Thus, despite some initial sensitivity to the language session, children have difficulty accommodating fully to the experimenter's language, even after a series of increasingly specific prompts. This difficulty did not reflect an unwillingness to help, but rather seemed to reflect a lack of understanding of what sort of modification was required. As further evidence of children's difficulty, I found that some children attempted to modify their language by providing a different English label in the Marathi session, instead of switching their language to Marathi (e.g., changing their response from "horse" to "pony" when asked "Can you say it another way?" in the Marathi

session). Eight children in the older age group and 3 children in the younger age group used this strategy in response to the experimenter's prompts (on an average of 1.36 trials for these children).

Individual Response Patterns – Object Naming. I further characterized children's individual response patterns using a measure of how many children used more labels in English (than Marathi) in the English session as well as more labels in Marathi (than English) in the Marathi session. Using this method, four children out of 28 (14%) were found to use this differentiating pattern in their initial labeling. After all prompts, twelve children (43%) were found to use this pattern. None of the children showed the reverse pattern (more Marathi in English session and more English in Marathi session) either initially or after prompts.

Further, in order to examine whether children had abrupt "insight" into the appropriate response in Object Naming (perhaps as the result of extensive experimenter feedback), I examined if, once children used their first Marathi label in the Marathi session, they continued to do so for the remaining trials. The patterns showed that 18/28 children provided their first Marathi label in the first or second trial of the Object Naming task, thus revealing that most children did not require extensive experimenter feedback in order to respond correctly. Only 6 of the 28 children consistently provided Marathi labels on every item following their first Marathi label usage, and of these children half (3) still needed prompts. Thus, there was no evidence at any point in the task of children gaining some insight that would lead to appropriate responses.

Ambient Language Use. In order to examine children's non-labeling speech, I analyzed the ambient language they produced in each session and whether it was in

Marathi or in English. Of the trials in the Marathi naming session which included

ambient language, the majority (71%) involved Marathi use. Note that this is in contrast

to their labeling responses, in which the majority of labels were in English, even after

prompting. In their ambient language use, children never produced Marathi nouns, but

rather typically produced verbs, pronouns, and other closed-class items, such as in the

utterance "cat *eh*" which means "it's a cat," or phrases such as "*mala maith nahe*" which

means "I don't know." The number of trials with any Marathi use in the Marathi session,

including ambient language ($M = 4.00$, $SD = 2.13$) was significantly higher than the

number of trials in which children provided Marathi labels even after prompting ($M =$

2.91, $SD = 1.96$), $t (27) = -4.77$, $p < .01$. Interestingly, for the children who used any

ambient language ($N = 22$), the number of Marathi labels that they provided in the object

naming task was significantly correlated to the percentage of their total ambient language

in Marathi (vs. English), $r = .69$, $p < .01$. This last result implies that appropriate ambient

language use is tapping into the same understanding that yields correct object labeling.

In the English naming sessions, 98% of the trials that included ambient language were in

English. This high rate is consistent with children's overall preference for English, as

shown in their object labeling.

Correlations between Object Naming and Other Cognitive Variables. In order to

assess how children's sensitivity in the Object Naming task related to their performance

on vocabulary and metacognitive measures, I correlated their scores from the Marathi

language session with their Vocabulary Checklist, CDI, Theory of Mind, and Language

Check scores; see Table 3. (I used the Marathi language session only, because children

displayed more variability here than in the English language session, which was near

ceiling.) The English:Marathi Vocabulary Checklist ratio and the English:Marathi CDI ratio scores were calculated by dividing the number of children's English items from the checklists by their Marathi items, so that a higher score means that they are more English-biased in their vocabulary knowledge.

The main findings from this analysis were that, as predicted, children's responsiveness to prompts when labeling was positively correlated with their metalinguistic awareness, as measured by the Language Check, and their social cognition, as measured by the theory of mind scale. Thus, increasing capacity to reason about others' language and mental state is predictive of bilingual children's capacity to engage in pragmatic differentiation. Children's labeling in the Marathi session was significantly related to their parental report on the 30-item Vocabulary Checklist used to determine which objects were used in the task. Children's English:Marathi Vocabulary checklist ratio was positively correlated with their use of English in the Marathi naming session after prompts and was negatively correlated with their use of Marathi in the naming session after prompts. Furthermore, as predicted, children's overall command of the two languages they are learning is related to their ability to come up with the appropriate language in the naming task: children's CDI ratios were significantly correlated with their performance on the Marathi naming session in the predicted directions, with more English bias associated with less Marathi use. Children's overall CDI and verb ratios were positively correlated with children's provision of English labels (in the Marathi session) both before and after prompts, and negatively correlated with children's provision of Marathi labels (in the Marathi session) both before and after prompts. Children's noun ratios were positively correlated with children's provision of

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English labels and negatively correlated with children's provision of Marathi labels only initially.

Responsiveness to Prompts and Language Check. As noted above, children's responsiveness score (on the Object Naming task) correlated significantly and positively with their performance on the Language Check measure (assessing their knowledge of the experimenters' languages). In order to further assess whether children's responsiveness to the prompts in the Marathi session related to their performance on the Language Check task, when controlling for their age, I conducted a regression analysis. In a step-wise regression, Model 1 containing Age in Months as the predictor variable for the Responsiveness Score was not a significant predictor of the variance, whereas Model 2, which also contained the predictor variable of Language Check score, explained a significant amount of the variance, $F(2,25) = 4.57, p < .05$, with a significant change in R square, $p < .05$. Thus, increased metalinguistic awareness of the experimenters' language knowledge was significantly associated with an increase in children's responsiveness to prompts to switch languages during Object Naming, even when controlling for age.

Responsiveness to Prompts and Theory of Mind. Also as noted above, children's responsiveness score correlated significantly and positively with their performance on the theory of mind task. In order to assess further whether children's responsiveness to the prompts in the Marathi session related to their performance on the theory of mind tasks, when controlling for their age, I conducted a regression analysis. In a step-wise regression, Model 1 containing Age in Months as the predictor variable for the Responsiveness Score was not a significant predictor of the variance; whereas, Model 2

which also contained the predictor variable of theory of mind score explained a significant amount of the variance, $F(2,25) = 14.66$, $p < .01$, with a significant change in R square, $p < .01$. Thus, even when controlling for age effects, increased theory of mind was significantly associated with an increase in children's responsiveness to prompts to switch languages during Object Naming. This significant association indicates that children who demonstrate higher theory of mind also demonstrate an increased ability to notice that a language switch was necessary in order to communicate effectively, and that this effect was not reducible to age.

Free Play

   Sensitivity in Conversational Language Use.   Children's language use during each Free Play session (with English and Marathi interlocutors) was coded as described earlier. My primary hypothesis was that children would accommodate to the language of their interlocutor, using English with the English speaker and Marathi with the Marathi speaker. For the language factor, I used the Marathi Plus language category, which included complete Marathi utterances as well as those utterances which were coded as Marathi with English insertions. I used the Marathi Plus language in order to be inclusive of all utterances with a Marathi structure. Further, I characterized the nature of the insertions below. (I also conducted the analyses with only children's complete Marathi utterances, in order to provide a more conservative test, and they resulted in the same effects.) I also used only complete English utterances, as children did not produce any English with Marathi insertions.

   In order to test my hypothesis, as well as the potential effects of the order of presentation and age group, an overall ANOVA with the four factors of language used

(English, Marathi Plus), session (English, Marathi), order (English → Marathi, Marathi → English), and age group (Older, Younger), was conducted. There was a significant main effect of language, $F(1,24) = 4.87$, $p < .05$, with children producing more English utterances ($M = 10.41$) on average than Marathi Plus utterances ($M = 7.77$). In support of my primary hypothesis, there was a significant Session X Language used interaction, $F(1,24) = 54.54$, $p < .01$, with children using more English utterances ($M = 16.61$, $SD = 10.24$) than Marathi Plus ($M = 0.04$, $SD = 0.19$) in the English session, $p < .01$, and more Marathi Plus utterances ($M = 15.50$, $SD = 10.51$) than English ($M = 4.21$, $SD = 4.60$) in the Marathi session, $p < .01$, demonstrating a complete switch in their predominant language. There were no significant effects of age group or order of presentation; see Table 4.

Individual Response Patterns – Free Play. Using a similar measure as for the Object Naming task, I characterized children's response patterns based on whether they produced more English utterances (than Marathi Plus) in the English as well as more Marathi Plus utterances (than English) in the Marathi session. Using this measure, 22 children out of 28 (79%) used their languages differentially. None of the children produced the reverse pattern.

The children also demonstrated no difficulty in switching from one language to the next between sessions. Among the older children, all of the children who had the English Free Play session second and all of the children who had the Marathi Free Play session second performed well, using the correct language a majority of the time. Among the younger children, all of the children who had the English session second used

predominantly English, and all but one who had Marathi second used predominantly Marathi.

I also examined children's language use during each Free Play session for when in the session the children started using the appropriate language, i.e., which utterance in the sequence of all codable language utterances (not including neutral or uncodable utterances) was first in the relevant language. All of the children in both age groups used English in their first utterance during the English session. For the Marathi session, 7/14 of the older children used Marathi in their first utterance and 4/14 in their second utterance; one other child never used Marathi during this session and the other two used it some time after their second utterance. For the younger children, 9/14 children used Marathi in their first utterance during the session; two children never used Marathi during the session and the other three used it some time after the second utterance.

In order to determine the extent to which children's talk during the Free Play sessions was original, I also analyzed how many of their utterances could be classified as direct repetitions of a prior utterance by the experimenter and or stock phrases in the language. For the older children, 16.82% of their English utterances in the English session were stock phrases and 18.95% of their Marathi utterances in the Marathi session were stock phrases. For the younger children, 20.16% of their English utterances in the English session were stock phrases and 10.68% of their Marathi utterances in the Marathi session were stock phrases. Regarding repetitions in the older children, 1.15% of their English utterances and 1.82% of their Marathi utterances were direct repetitions. Regarding repetitions in the younger children, 7.39% of their English utterances and 1.89% of their Marathi utterances were direct repetitions. Therefore, very little of the

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children's conversation in the appropriate language could be accounted for by their use of stock phrases and repetitions; the majority of their language use involved original statements.

If the child used the inappropriate language in the Free Play task, the research assistants in the Free Play task did not respond in any scripted way. In analyzing the transcripts afterward, I noted that the research assistants rarely if ever provided implicit prompts of the sorts used in Object Naming (e.g., "What?" "I don't understand"). Therefore, it was not possible to code the conversation exactly as the Object Naming task was coded. However, I aimed to capture the children's responsiveness to the language context through the above means of looking at their language use across the two sessions and the immediacy with which they started using the appropriate language.

Insertion Coding. Children's Marathi Plus utterances included two kinds of utterances: those that were wholly Marathi (81%), and those that were Marathi with English insertions (19%). (None of the children used English with Marathi Insertions.) Marathi Plus utterances occurred only in the Marathi session of the Free Play task, suggesting that children mixed languages when the context called for use of their weaker language, Marathi. Strikingly, the coding of these utterances revealed that 95.06% had Noun insertions and 9.88% of the utterances had Verb insertions. I return to this noun/verb asymmetry, and what it might mean, in the General Discussion (Chapter 4).

Correlations between Free Play and Other Cognitive Variables. In order to assess how children's language use in the Free Play task related to their performance on vocabulary and metacognitive measures, I correlated their language use totals in the two language sessions with their CDI, Theory of Mind, and Language Check scores; see

Table 5. The CDI ratio score was calculated by dividing children's total English items from the CDI by their total Marathi items, so that a higher score means that they are more English biased in their vocabulary knowledge. The Free Play Accommodation score was calculated by subtracting their percentage of Marathi Plus use in the English session from their percentage of Marathi Plus use in the Marathi session, so that the higher the value, the greater the language switch between the two sessions.

The effects which were found occurred in the predicted directions, with more English bias associated with less Marathi use. Children's English:Marathi Total, English:Marathi Noun, and English:Marathi Verb ratios were significantly negatively correlated with their use of complete Marathi utterances. Children's English:Marathi Noun ratios were negatively correlated with their use of Marathi Plus utterances. We also correlated children's language use and accommodation score with the metacognitive measures of Theory of Mind and Language Check. However, given the ease with which children engaged in pragmatic differentiation during Free Play (as opposed to Object Naming), I did not predict significant correlations with these measures. As expected, children's language use and accommodation score were not significantly correlated with their Language Check or Theory of Mind scores.

Comparison of Performance on Object Naming and Free Play

In order to compare children's performance on the Object Naming and Free Play tasks directly, I compared individual children's response patterns on the two tasks. Specifically, as presented previously, children were classified as either "differentiating" (using more Marathi than English in the Marathi session, and more English than Marathi in the English session) or "non-differentiating" (all other patterns). When focusing on

children's *initial* naming on the Object Naming task, 18/28 children showed the predicted pattern of differentiating on the Free Play task but not the Object Naming task, 0 showed the reverse pattern (differentiating on Object Naming but not Free Play), 4 differentiated on both tasks, and 6 differentiated on neither task. A comparison of the number of children following the expected pattern to those showing the reverse pattern using a Sign Test reveals a significant difference, $p < .01$.

For children's naming following the researcher's prompts in Object Naming, we found that 11 followed the expected pattern (differentiating on Free Play but not Object Naming), 1 followed the reverse pattern, 11 differentiated on both tasks, and 5 differentiated on neither task. A comparison of the number of children following the expected pattern to those showing the reverse pattern using a Sign Test reveals a significant difference, $p < .01$. Thus, as predicted, children performed better on the Free Play task than on Object Naming overall.

One additional issue that I examined was that four of the children (3 younger, 1 older) did not use any Marathi labels in the Object Naming session. However, three of these children did go on to produce at least one Marathi utterance in the Free Play session, showing that they were capable and willing to use Marathi.

Correlations between Performance on Object Naming and Free Play

Children's performance on the Object Naming and Free Play tasks was predicted to be related, even if Object Naming posed more difficulty overall. In order to test this hypothesis, I correlated language use in the Marathi session of the Object Naming task with language use in the Free Play task; see Table 6. The results were in the predicted direction, with more Marathi use in Free Play being associated with less English use in

Object Naming. Children's use of complete Marathi utterances in the Marathi Free Play session was negatively correlated with their use of English labels in the Object Naming task initially and after prompts, as well as positively correlated with their use of Marathi labels after prompts. Children's use of Marathi Plus utterances in the Marathi Free Play session was negatively correlated with use of English labels in Object Naming after prompts and positively correlated with Marathi use after prompts. The Free Play Accommodation score (percentage of language switch between English and Marathi Free Play sessions) was negatively correlated with children's use of English labels in the Marathi session of the Object Naming task after prompts. Children's responsiveness score (language switches in response to prompts) in the Marathi Object Naming session was not significantly correlated with their Free Play Accommodation score.

<div align="center">Discussion</div>

Overall, the results of Study 1 support my hypotheses that children would be capable of using the appropriate language with the appropriate speaker during the Free Play session. Indeed, they used a majority of the correct language and demonstrated that they could switch languages in this way, regardless of the order in which the languages were presented. These results add to previous research which had shown younger children accommodating by using *relatively* more of a speaker's language when in conversation (though not necessarily using the speaker's language the majority of the time). In the present sample of preschool aged children, we can see that this ability has become more sophisticated. First, children used the speaker's language the majority of the time (not just relatively more often)—that is, they spoke primarily English with the English speaker and primarily Marathi with the Marathi speaker. Second, children used

their languages differentially with two *novel* interlocutors (not just familiar speakers with whom they had previously developed particular expectations), thereby revealing the breadth and generality of their understanding. Finally, the two Free Play tasks (English, Marathi) occurred within just a few minutes of each other, demonstrating that the children had a strong command of their conversational abilities and could switch from one language to the other within a matter of moments.

The data also revealed that children generated original statements in both languages, rarely simply repeating a phrase originally produced by the researcher, and rarely just relying on a small set of stock phrases (such as "yes" or "no"). There were no age differences between the two groups, suggesting that these language differentiation skills are mostly in place by 3 years of age.

In contrast to the results of the Free Play session, we see a different pattern for the Object Naming task. For the Object Naming task, children followed a predominant pattern of using English appropriately but having difficulty with using Marathi labels during the Marathi session, requiring that more prompts be provided. A few children did use Marathi labels and require prompts when naming the objects in English, showing that it was possible for children to have difficulty realizing that a switch to English use was appropriate in that session. However, the overwhelming majority of trials which required further prompts were in the Marathi session.

Children showed sensitivity in their language use in the Marathi session when they used the correct ambient language, even when they gave the label in English, suggesting that they recognized that Marathi was an appropriate language to use, but had difficulty with using it for the label. Ultimately, however, a comparison of the two tasks

shows that success in one context (Free Play) does not ensure success in another, more constrained context (Object Naming).

One important question is why children had difficulty in the Marathi session, even though parents reported that children knew the Marathi labels for the items used. The interpretation I favor is that this task requires a more difficult metalinguistic understanding, because children need to realize not only that a language choice needs to be made, but also that a particular word is required (i.e., a label in either Marathi or English). These increased demands, beyond that of generating any talk in Marathi (which led to success in Free Play), might result in children's ability to use the correct ambient language but failure to produce the correct label. There is evidence that some children may have realized the language choice that was required but had difficulty retrieving the appropriate label. Four children (3 in the older group) responded to the naming question in the Marathi session with "Mala maith nahe," which means "I don't know" in Marathi. Three of them had switched or used Marathi on at least one trial before that (the fourth said "I don't know" on the first trial), suggesting that perhaps they had realized what language choice needed to be made, but that other factors were interfering in their retrieval of the Marathi label. These increased demands, over the Free Play task, may help explain why children had difficulty differentiating in the Object Naming task.

However, there are at least a couple of alternative interpretations that are also important to consider. One issue is how accurate the Vocabulary Checklist was in reflecting children's knowledge of Marathi labels. Recall that parents were asked to indicate ahead of time which words (in English and Marathi) their children knew, for a

range of common objects, in order to ensure that the Object Naming task included only those objects for which children knew *both* English and Marathi labels. If parents overestimated their children's ability to produce the Marathi labels on the Vocabulary Checklist, then children's relatively poor performance on the Marathi session of the Object Naming task could reflect a gap in their lexical knowledge. Simply put, if children did not know the Marathi names for these objects, then they could not have produced them appropriately on this task. However, there are several points suggesting that parents' reporting of children's knowledge was accurate. One is that the items on this checklist were very simple, common words (e.g., hat, keys), and normed (on the American English CDI norms) to be early acquired. Therefore, these words are likely to be among the most familiar and earliest learned words in both languages. Second, parents' report of items on the short Vocabulary Checklist was related to children's labeling after prompts in the Marathi session, validating this measure as an accurate assessment of children's vocabulary knowledge. Further, mothers' report of children's vocabulary knowledge on the extensive bilingual MacArthur CDI correlated with children's performance on both tasks in Study 1, suggesting that the parents were well-attuned to their children's competence in both languages and provided valid judgments when asked to report on their children's speech.

Another issue that might be raised is whether children had more difficulty with Object Naming simply because it occurred first (before the Free Play task) and so they had minimal experience with the experimenter. It seems unlikely that is the case because children did use the appropriate ambient language throughout the Object Naming task; their difficulty was specifically with using Marathi labels. Further, even when they did

not realize that Marathi labels were appropriate by the end of the Object Naming task, they used the appropriate language within the first few utterances of Free Play, suggesting that the tasks did tap into different aspects of pragmatic differentiation understanding.

Finally, it is possible that children have come to believe that labels are most appropriately provided in English, because this pattern (Marathi utterance with English noun insertions) is a common and acceptable way of combining the two languages in speech with other bilingual people in this community. This interpretation is unlikely because children's performance in naming in Marathi improved with age and was positively related to increases in Theory of Mind. If the "correct" response were to provide English labels, then the children would have been doing this more as they got older, not less. Further, anecdotally, the parents and older siblings who were watching the task knew that the experimenter was requesting a language switch and were surprised when the children did not realize this, suggesting that the appropriate response was to label in Marathi. I will return to this issue in Chapter 4.

There may of course be other factors which influenced children's performance in Object Naming. For example, they were not completely balanced in their language knowledge and as a group, appear to have been biased toward using more English. There may also have been sociolinguistic reasons for this bias, including an unwillingness to use the minority language, as well as an awareness that English is the appropriate language for didactic and/or school-related contexts (which book-reading and object labeling may be considered to be).

The finding of children's difficulty with Marathi labeling suggests that simply knowing both words does not ensure that children will use the pragmatically appropriate label, as Nicoladis and Secco (2000) proposed. One explanation may be that their general bias toward English, as demonstrated by their reported vocabulary knowledge on the MacArthur CDI, influenced their initial responses to the request for a label. Certainly, children knew more English words than Marathi overall, which is not surprising given that English is the societal language and children often need little encouragement to learn and use English in the U.S. (Pearson, 2007). Children's English:Marathi Noun ratio was positively correlated with their English use initially in the Marathi labeling session and negatively correlated with their Marathi use initially. However, it was not correlated with their use of the two languages after prompts were provided, suggesting that global biases in children's vocabulary cannot wholly account for their task performance.

What did relate to higher responsiveness to prompts were children's scores on the theory of mind scale, regardless of age, suggesting that these capabilities are connected. Therefore, children's initial responses may have been related to their slight biases toward English, but the ability to switch languages seems to relate more to a pragmatic understanding undergirded by children's developing theory of mind. The question of the causal direction of this relationship is an important one. From the present study, it seems that theory of mind development positively influences bilingual children's pragmatic skills rather than the other way around. We did not find a significant correlation between theory of mind score and the score of how balanced children were in their two vocabularies, suggesting that being bilingual per se did not account for their theory of mind abilities. Thus, based on these results and studies which find that bilingual children

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perform better on some Theory of Mind tasks compared to monolingual children (e.g., Goetz, 2003), I speculate that the relationship between pragmatic ability and social cognition is bi-directional. Looking both across monolingual/bilingual populations and within bilingual populations allows researchers to see the different mechanisms which are at play, with theory of mind possibly influencing bilingual children's ability to switch languages and this experience influencing their theory of mind ability, as compared to monolingual children who do not switch languages.

The Language Check measure also correlated with children's responsiveness, suggesting that children's metalinguistic understanding of the experimenters' language knowledge (and perhaps their metacognitive capacities more generally) might have influenced their ability to switch languages appropriately. Older children scored higher on the language check measure and were also more responsive to prompts, suggesting that developing capacities affect success in pragmatic differentiation tasks.

The results in the Marathi session of the Object Naming task are somewhat contrary to the results of Comeau and Genesee (2001), who found that children would reformulate language breakdowns during conversation when prompted. One possible reason for the difference is that children in their study were in a free play situation where they were switching the language of self-generated talk rather than being prompted to use a specific word in the appropriate language. Indeed, Koppe and Meisel (1995) noted in their case study data that children's self-initiated language switches had fewer errors than when the language switch was initiated by an experimenter. Once again, these results suggest that language differentiation requires multiple levels of skills, and different tasks and situations vary in how challenging they are.

The nature of the insertions in code-mixed utterances in the Free Play task may also provide some understanding of children's varying use of English and Marathi. Similar to previous studies such as Genesee, Nicoladis, and Paradis (1995), I found that children mixed languages more when using their weaker language. Vihman (1985) has suggested that the motivation for language mixing is to extend communication. While the children in this study were relatively balanced in their language knowledge, as a group they were biased toward English. Their language use during the Free Play task reflected this bias in their use of Marathi utterances with English insertions, thus mixing more of their dominant language English into their weaker language, Marathi. Further analysis of these utterances showed that 90% of the insertions were nouns, which is not uncommon for preschool-aged bilingual children and on into adulthood (Vihman, 1985). If this type of insertional pattern is common for English-Marathi speakers, children who hear code-mixing within an utterance may have difficulty considering how language choice in the Object Naming would affect the words that they are choosing. That is, perhaps English nouns are equally likely options in a Marathi context as Marathi nouns. This mechanism may also help to explain the difficulty children demonstrated in the Object Naming task.

In sum, children do not have complete facility with pragmatic differentiation of their two languages. Even when they know the labels that the experimenter wants them to use, they may not realize that a language switch is necessary. Further, children who switched on one trial of Object Naming did not necessarily switch on the next one, suggesting that children did not come to a complete realization that a language switch was necessary. As mentioned above, all of the parents who were watching the task understood that the experimenter was requesting a label in Marathi. Thus, the study

demonstrates the nuances of children's developing skills and the state of their understanding after the initial emergence but before they reach adult bilingual competence.

Finally, these children were not from one-parent/one-language homes, in contrast to much previous research. One important question is how the nature of input influences children's pragmatic differentiation skills. At the very least, the results of Study 1 suggest that pragmatic differentiation emerges at a young age, even without an explicit model of one-parent/one-language in the home. Whereas children who are raised in one-parent/one-language homes would always be talking with and learning to accommodate to someone who has established a clear language preference, children from homes with bilingual parents would not experience this divide. Moreover, children in one-parent/one-language homes typically experience each language as distinct, whereas children in the current study may have experienced more language mixing. Nonetheless, despite the input potentially being less clearcut regarding language differentiation, children are also learning to use their languages in distinct ways. An important step in understanding how children's language input might relate to their pragmatic understanding is to examine parental language use. Thus, in Study 2, I will directly examine interactions between bilingual parents and their children in order to better understand the nature of children's experience.

CHAPTER 3: STUDY TWO

In prior research examining pragmatic differentiation, the primary measure of interest has been the child's performance in appropriate selection of one or another language. If children show sensitivity to their interlocuter's language, a key unanswered question is how their experience with other speakers might help shape this capacity. Genesee and Nicoladis (2007) suggest that parents' language socialization is a possible mechanism for how children learn to accommodate languages. Parents might provide cues (explicit or implicit) to help children differentiate languages and they might contribute to children's sensitivity to others' language through their own demonstration of sensitivity to a 3rd person. Thus, one goal of Study 2 was to examine parents' strategies for emphasizing language differences. Other researchers have certainly examined parental input to bilingual children; however, examining how parents discuss the labels of the pictured objects and introduce translations in both languages may provide insight into the types of metalinguistic input which is available to children.

Furthermore, Study 2 was designed to address a second goal as well, to examine parents' and children's language accommodation in a more subtle and demanding interactional context: when a bystander who is listening to the conversation speaks one or another language, but does not actually actively participate. The context is considered to be more subtle for two reasons: first, the primary addressee is bilingual and therefore can respond to either language, and second, the 3rd person does not provide continuous feedback of their language knowledge and preference during the conversation. How parents themselves would accommodate to an unfamiliar speaker in such a situation and

potentially act as a model has not been examined, nor have children's reactions. Knowing what the adult norms for pragmatic behavior are in this situation will provide insight into what children in this community are expected to learn in terms of their own pragmatic differentiation skills.

Together, answers to these questions will help us to determine what information is available in the environment to children regarding language use, when two languages are being learned, and to examine children's pragmatic differentiation skills in a context that is hypothesized to be even more demanding than either of the tasks examined in Study 1.

<div align="center">Literature Review</div>

Parental Role in Bilingual Acquisition

Many studies have analyzed how parents talk to their young children, particularly in monolingual contexts (Snow & Ferguson, 1997; Snow & Goldfield, 1983; Callanan & Sabbagh, 2004; Gelman et al., 1998; Huttenlocher, Vasilyeva, Waterfall, Vevea & Hedges, 2007). Some have found important links between parental language and children's developing language use (e.g., Hart & Risley, 1992; Huttenlocher, Vasilyeva, Cymerman, & Levine, 2002). At the same time, it is unclear the extent to which variation in parental language predicts children's language learning (Hoff-Ginsberg & Shatz, 1982). The present study represents a first step in examining the nature of the input to bilingual children. Importantly, even if parents modify their speech when talking with children, this does not necessarily mean that children make use of such modifications in the process of language learning. Nonetheless, this study and others aim to characterize the input that is available to bilingual children so that future work may examine the relationship between input and learning in more detail.

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Perez-Bazan (2002) examined early bilingual acquisition longitudinally in six children from ages 1;8 to 3;3 learning English and Spanish. She also collected information on parental characteristics such as competence in both languages, attitudes toward child bilingualism, child's language exposure, and time with each parent. In examining children's bilingual competence and their availability of language choice, Perez-Bazan found that the most powerful predictors were the amount of Spanish language input children received from their mothers, and whether fathers also knew and used Spanish with their children. This study took place in the U.S., where Spanish is a minority language, and implies that parents must make a concerted effort to provide non-English language input in the home if they want their child to learn a language in addition to English. These findings underscore the importance of parental input in bilingual acquisition.

Bilingual parental input has also been shown to relate to children's production in terms of the code-mixing of the two languages. Parents may model language use that they feel is appropriate or acceptable, with different parents demonstrating varying rates of mixing the two languages. Children's rates of language mixing have also been found to correlate with their parents' mixing (Goodz, 1989; Nicoladis & Genesee, 1997).

Particularly relevant to the present study, Lanza (2001) examined triadic interactions of a Norwegian/English bilingual child who was living in a primarily one-parent/one-language home. These situations were examined through a "participation framework," in which participants could have the role of primary addressee or the role of "auditor," someone who was still part of the interaction in a particular conversational exchange but not spoken to directly (p. 222). One example of this situation was that the

child's mother used her less-dominant language to encourage the daughter to tell the father about her day in *his* language. Lanza proposed that these various strategies, and others, which she characterizes as negotiations, socialize children to understand how languages are used in their household or community.

Analyses of Parent-Child Book Reading

Many researchers have examined what parents say during picture-book reading as an indication of the language input that is available to children. In a classic paper, Ninio and Bruner (1977) examined very early joint picture-book reading in a monolingual family of a child 0;8 to 1;6. They found that the parent was very responsive to the child's vocalizations and provided four major types of speech in this context: 1) "Look" commands in order to direct attention; 2) What-questions; 3) Labels; and 4) Feedback. Parents of a slightly older group of children (1;7) were found to provide these and other forms of input, such as "Where-questions" which required comprehension, and "Imitation-eliciting requests" which required the child to repeat back a word (Ninio, 1983). These practices are presumed to focus children's attention and are examples of strategies that parents use in object labeling.

Lanza (2001) notes, "some discourse strategies may in fact constitute a conscious plan for communication; however, not all discourse strategies are always consciously used" (p. 208). Thus, while parents use these strategies in conversation, they may not be explicitly aware of all that they are doing. That does not mean that these strategies are unimportant, however. As Callanan and Sabbagh (2004) discuss, these general patterns might also account for later learning strategies used by young children. Callanan and Sabbagh examined how parents' labeling practices, in particular whether they provided

multiple labels for objects, might relate to children's developing expectations for word meanings in a monolingual context. Parents of children 1;0 to 2;0 generally provided only one label for an object in free play sessions, and when they provided a second label, they clarified their intent by explaining the relationship between the two labels. The authors argue that such a practice might lead young children to develop a mutual exclusivity bias, one of the most researched word learning strategies found in young children.

Bilingual Parent-Child Book Reading Contexts

Although we do not know the effects of parental input, studying early interactions could be informative regarding how children organize their understanding of language. Prior studies have primarily examined picture-book reading in monolingual contexts, although some researchers have studied language use in bilingual families.

Pan (1995) examined 10 Mandarin Chinese-English speaking families with children ages 4-6 years in the U.S. during picture book reading and dinner conversations. The analyses focused on the parents' and children's use of English, the societal language, and Chinese, the home minority language. Pan primarily examined code-switching (language shifts between utterances) and code-mixing (language shifts within an utterance) and the direction of the switches. In general, parents' code-switches moved the conversation in the direction of the home language, Chinese, and children's utterances moved more in the direction of the societal language, English. Children were found to code-switch more in the Chinese-to-English direction than either parent; that is, they followed a Chinese utterance with an English utterance. All speakers were more likely to code-switch from Chinese to English in the book-reading context than in the dinner-table conversation. Further, in an examination of how persistent the speakers were in

continuing in the language of their own code-switch or how compliant they were in continuing in the language of another speaker's code-switch, Pan found that both parents were less likely to continue with English utterances than Chinese, and children were less likely to continue with Chinese utterances than English. Children were also less likely than parents to comply with a code-switch, regardless of the direction.

Using a similar sociolinguistic perspective, Vedder, Kook, and Muysken (1996) examined parent-child book reading in Papiamento-Dutch bilingual families in the Netherlands who had children ages 4-7 years. The study included 25 mother-child dyads who read three different books in any order they chose: a wordless picture book that focused on numbers, a storybook with Dutch text, and a storybook with Papiamento text. In analyzing the mothers' and children's language use, Vedder et al. found that mothers spoke more than children overall and that mothers tended to use their native language, Papiamento, more than the societal language, Dutch. In addition to the language of the text of the book affecting the language choice, the authors also found that certain lexical categories, such as numbers, tended to be in Dutch, which is the language of schooling for the children. This result supported their hypothesis that families have a functional differentiation, or "language use connected with particular socialization settings (e.g., the school)," and that parents use their two languages differently according to their perception of what is associated with academic knowledge (p. 464).

In further analyses of these data, Muysken, Kook, and Vedder (1996) examined the nature of code-mixing during the book reading task. A predominant pattern involved Dutch nouns and numerals inserted into otherwise Papiamento utterances. The authors suggest that the motivation for this code-switching during bilingual parent-child

conversation may be to maintain the efficacy of the interaction, with parents possibly deeming it more important or appropriate for the child to learn a particular concept in one of the languages, most likely the majority language (p. 503).

Prior work in this area has shown that parents provide rich language input to children whether looking at picture-books in a monolingual context or navigating home and societal languages in a bilingual context. Parental input in a bilingual home seems to be very important for children's language development, and some relationships between parents' and children's use of code-mixing have been demonstrated. However, there is relatively little work on the nature of parental input in bilingual families and I am not aware of any work which specifically examines parents' language behavior with strangers as a possible source of pragmatic input to children, or that examines the metalinguistic prompts that parents might provide to discuss language differences. Importantly, our sample is ideally suited for examining this latter issue because we have bilingual parents who regularly use both languages both with their children and in everyday life (in contrast to one-parent/one-language families).

Present Study

When learning language, bilingual children must learn to accommodate their conversational partners in their language use, which may range from the direct addressee to a 3rd person auditor who is not directly addressed but who is nonetheless part of the interaction (Bell, 1984). Bilingual parents may provide feedback to children, both implicitly and explicitly, on how to organize and use their languages. In order to examine this possibility, the present study asked bilingual parents and children to look through wordless picture-books: first with the parent-child dyad alone, and then in two separate

sub-sessions with a third person who had established a language preference in one of their two languages. I have varied the 3rd person with two goals in mind: (1) to encourage parents to modify their language use and to provide cues regarding appropriate language choice and (2) to test whether children would also adjust their language use. By comparing the three sub-sessions, the study can provide information regarding how bilingual parents and bilingual children code-switch when in conversation with one another, and also how they adjust their language use in the context of a monolingual speaker.

The analyses examine parents' and children's sensitivity in language use and the relationship between their English and Marathi utterances in the three sub-sessions. Importantly, the child was interacting with his/her parent, a very familiar interlocutor, and therefore may have some of the conversational scaffolding found in previous naturalistic work. The presence of the 3rd party person is hypothesized to affect how parents use their languages, with parents' accommodation potentially acting as a model for children. If children show some differentiation in the sub-sessions of this study, it may be that they are sensitive to the presence of the 3rd party or that they are sensitive to their parent's code-switching. Still, this would be a different kind of demonstration of pragmatic differentiation than in Study 1, where the child was interacting directly with a monolingual speaker. This more subtle type of language socialization, which Lanza addressed, may be more demanding and require greater development of pragmatic differentiation ability.

Method

Participants

The child participants for this study were the same as for Study 1. The two studies took place during the same research session, always with Study 1 before Study 2. One bilingual parent of each child participated in the picture-book task with the child. For 27 dyads, the mother participated; for one dyad, the father participated (I will refer to the parents in the dyad as "mothers" since all but one were.)

Design

The picture book task was designed to be a quasi-naturalistic situation where the parent engages in everyday talk with the child. In order to assess the parent's and child's sensitivity and language accommodation to another person's language ability, I varied which 3rd person was present in the interaction. The picture-book session was divided into three sub-sessions: (a) mother and child alone, (b) mother and child with English-speaking researcher, and (c) mother and child with Marathi-speaking researcher. Thus, the primary within-subject variables were language used (English or Marathi) and sub-session (Mother-Child alone, Mother-Child-English speaker, Mother-Child-Marathi speaker). The primary between-subjects variables are Speaker (Mother or Child) and Age Group (Older or Younger).

Procedure

Parents and children were provided with three different binders that contained pages from the book *Of Colors and Things* (Hoban, 1996), a mass-market children's book which contains brightly colored photographs of everyday objects and no written

text. Each binder depicted 16 objects on 8 pages (different across the 3 binders), intended to be fairly familiar to the children. There were a few objects (car, bucket, apple) which were featured in more than one binder. One binder was used for each sub-session, with the order of the binders counterbalanced between subjects, such that all three binders occurred roughly equally with the three different language sub-sessions, across participants.

The researchers were the same two research assistants from Study 1 whose language ability had already been established as English or Marathi for the children who had participated. The parents had observed the Object Naming and Free Play sessions and so also knew the language ability of the experimenters.

The first sub-session always included the mother and child dyad alone. The order of the English and Marathi sub-sessions was the same as for Study 1 for that child, and therefore counterbalanced between subjects. At the start of this first sub-session, the mother was given the following instructions: "We're interested in how you ordinarily talk in this context. Take as much time as you need. You can use both languages as you normally would. A helper will come in with the next book when you're finished." Mothers could take as much time as they wanted going through each binder. When they were finished with the first binder, the first research assistant from Study 1 entered and provided them with a second binder, saying in her respective language, "Hi, remember me? Do you remember my name? I'm [experimenter's name]. Here's another book. I'm going to sit here with you and your mom and look at the pictures with you." Following the completion of this binder, the second research assistant from Study 1 entered, provided the mother with the third binder, and introduced herself in her respective

language, using the same introduction as the first research assistant. Research assistants were instructed to sit nearby and look engaged in the discussion, but not to participate unless spoken to. The entire task was videotaped and transcribed for analysis.

Measures

The additional measures collected for Study 1 were also used in some analyses of this study: MacArthur CDI in English and Marathi, Parent Background Questionnaire, Language Check, and Theory of Mind tasks. The transcripts for this study were created in CLAN, the software program used for the CHILDES database (MacWhinney & Snow, 1990).

Coding

Several coding schemes were used in the analysis for Study 2, in order to examine different aspects of the parent-child conversation. Reliability was calculated for the different coding schemes using 20% of the data across both age groups. See Appendix F for sample coding of parent-child conversation in Study 2.

Picture-Book Language Use Coding. The coding of language use for this study was the same as for the Free Play task in Study 1. For this study, I analyzed parent and child language use during the three sub-sessions: Mother-Child; Mother-Child-Marathi Speaker; and Mother-Child-English Speaker.

Conversational Patterns Coding. Much of the conversation during the picture-book sessions focused on parents asking children to label the pictured items. The goal of this coding was to examine the conversational patterns for parents' requests for labels and children's responses, focusing on children's first labels. The "first label" refers to the

language that the child uses to label the item for the first time (i.e., excluding any further reference to that item using the second language). Coding included whether the request for label was in English or Marathi, and whether the child's first label was in English or Marathi. Kappa = 0.92; Percent agreement = 99%.

Request for Label – English: parent asks "what is this?" or similar question in English requesting a basic-level first label for an object (not property or numbers)

*MOT: Well, and what is this?

*MOT: *Ani* who is this?

%eng: And who is this?

Request for Label – Marathi: parent asks "he kai eh?" or similar question in Marathi requesting a basic-level first label for an object (not property or numbers)

*MOT: *He kai, maitheka thula*?

%eng: What's this, do you know?

*MOT: Alright, *ani hai*?

%eng: Alright, and this?

Label – English response: child responds with first label in English to parent's request

Label – Marathi response: child responds with first label in Marathi to parent's request

Translation Strategies Coding. The goal of this coding was to examine ways in which the parent or child discussed translation equivalents, that is, lexical items in English and Marathi that refer to the same object (e.g., key, *killi*). Primarily, I examined parents' strategies for encouraging children to focus on language. Reliability was calculated for each code considered individually. All of the Kappas for this coding fall

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within substantial (.60 to .79) levels of inter-rater reliability and 90% fall within near perfect (.80 and above) levels (Landis & Koch, 1977).

Requests Translation: speaker requests a translation for a label that has already been provided. Kappa = 0.90; Percent Agreement = 99%.

*MOT:	*Ani Marathit kai munthat*?
%eng:	And what is it called in Marathi?
*MOT:	Potatoes*la kai mhantow apan*?
%eng:	What do we call "potatoes"?

Provides Translation Equivalent: speaker provides a translation for an item that has already been labeled. Kappa = .86; Percent Agreement = 99%.

*CHI:	Keys
*MOT:	**Keys *mhanje killi***
%eng:	"Keys" means keys

Suggests Translation: Parent suggests possible translations for an item already labeled in one language. Kappa = .79; Percent Agreement = 99%.

*MOT:	*Bedook munthat ka*?
%eng:	Is it called "frog"?

Requests Repetition of Translation: parent requests that the child repeat the translation equivalent that was provided. Percent Agreement = 100%,

*MOT:	Safarchand
%eng:	Apple
*MOT:	**Kai mhanaych?**
%eng:	What is it called?

Repeats Translation Equivalent: speaker repeats a translation equivalent that was provided in a previous utterance (coded for each repetition after the first time translation is stated). Kappa = .81 Percent; Agreement = 99%.

*MOT: Huh, phooga

%eng: Yeah, balloon

*MOT: Kai mhanaych?

%eng: What is it called?

*CHI: Phooga

 %eng: Balloon

Uses Name of Language: speaker uses name of language (English, Marathi). Kappa = .80; Percent Agreement = 99%.

*MOT: *Ani Marathit kai munthat*?

%eng: And what is it called in Marathi?

I also examined the language of children's first labels for a picture in order to determine how that related to whether parents followed up with a translation strategy from the coding scheme described above. This coding takes into account all first labels provided by the child, regardless of whether they were in response to a request for a label by the parent. Kappa = 0.95; Percent agreement = 99%.

Child's first label in English – the first label for a picture is provided by the child and is in English

Child's first label in Marathi – the first label for a picture is provided by the child and is in Marathi

Results

Mother-Child Language Use across Sub-Sessions

The primary hypotheses for this study concerned mothers' and children's language use during the three sub-sessions, including the two where the 3rd party experimenters were present. I predicted that mothers would show sensitivity in their language use, using relatively more of the experimenter's language (English or Marathi Plus) when she was present. However, I predicted that children would not show this sensitivity because it was a subtle manipulation and their pragmatic differentiation skills are still developing. The Marathi Plus language category included complete Marathi utterances, as well as those utterances which were coded as Marathi with English insertions, or Marathi with English borrowing. I decided to use the Marathi Plus coding rather than complete Marathi as the dependent measure, because many of the speakers' utterances were primarily Marathi except for one word (over 20%, as characterized below) and I wanted to be inclusive of these data. In order to provide a more conservative test, I also conducted the following analysis with complete Marathi utterances (not Marathi Plus), and with just one exception (noted below), the results were comparable. Although I did code English with Marathi Insertion utterances, these utterances made up less than 1% of the total utterances. They were so atypical that I did not include them in either the English or the Marathi utterances. (Had they been included, the results would have remained wholly unchanged.)

In order to test my hypothesis, I conducted an ANOVA with a 3 (language sub-session: Mother-Child Alone; Mother-Child-Marathi Speaker, Mother-Child-English Speaker) x 2 (language use: Marathi Plus, English) x 2 (age category: Older, Younger) x

2 (speaker: Mother, Child) design; see Table 7. There was a significant Sub-Session X Language interaction, $F(2, 51) = 19.15$, $p < .01$, which is more easily interpreted by examining the significant Sub-Session X Language X Speaker interaction, $F(2, 51) = 7.15$, $p < .01$, see Figure 1a and 1b. This 3-way interaction supports my primary hypothesis. Pairwise comparisons revealed that there were no significant differences in children's use of English or Marathi Plus across the three sub-sessions; however, there were significant differences across sub-sessions in mothers' language use. Mothers used significantly more English in the Mother-Child alone session than when the Marathi speaker was present, $p < .05$, and they also used significantly more English with the English speaker present than with the Marathi speaker present, $p < .01$. Mothers also used significantly more Marathi in the Mother-Child alone session than when the English speaker was present, $p < .01$, and they also used significantly more Marathi when the Marathi speaker was present than when the English speaker was present, $p < .01$.

Several other significant results were also found which help to characterize the nature of children's and parents' language use. There was a main effect of language, $F(1, 52) = 8.06$, $p < .01$, such that overall more utterances were spoken in Marathi Plus ($M = 25.20$) than in English ($M = 16.80$). (This was the only effect that was not significant when the ANOVA was run with only complete Marathi utterances, rather than Marathi Plus.) However, this main effect must be interpreted within the significant Language X Speaker interaction, $F(1, 52) = 44.22$, $p < .01$, with children using significantly more English utterances ($M = 21.74$) than Marathi Plus ($M = 10.48$) and parents using significantly more Marathi Plus ($M = 39.92$) than English ($M = 11.87$). Thus, as other researchers have found (Pan, 1995; Vedder, Kook, & Muysken, 1996), parents tend to

emphasize the minority language (i.e., their native language), whereas children tend to emphasize the majority language (which many of them are also hearing in preschool). There was also a main effect of sub-session, $F(2, 51) = 5.95$, $p < .01$, such that there was significantly less talk overall in the English session than in the Mother-Child alone session, probably reflecting parents' overall tendency to produce fewer English utterances. There was a main effect of age category, $F(1, 52) = 8.92$, $p < .01$, with more utterances spoken in the younger children's sessions than in the older children's sessions. There was also a main effect of speaker, $F(1, 52) = 11.75$, $p < .01$, with mothers talking more than children. There was a Language X Age Category interaction, $F(1, 52) = 6.06$, $p < .05$, such that more Marathi Plus was spoken overall in the younger children's sessions, suggesting that parents may be accommodating to the greater exposure to English among the older children. There was also a Language x Age Category X Speaker interaction, $F(1, 52) = 4.85$, $p < .05$, which generally showed the same pattern as the Language X Speaker interaction, except that mothers of the older children used significantly less Marathi Plus than mothers of the younger children.

Picture-Book Individual Response Patterns and Comparisons to Study 1

Using a similar measure as in Study 1, I characterized children's response patterns based on whether they produced more English utterances (than Marathi Plus) in the English sub-session as well as more Marathi Plus utterances (than English) in the Marathi sub-session. Using this measure, the analysis showed that 7 children used their languages differentially in this way; none of the children showed the reverse pattern of using more Marathi in the English session and more English in the Marathi session.

I also used these data to compare performance on the Picture Book task to performance on Object Naming (after prompts) and Free Play. I predicted that children would more often show the differentiated pattern on the Free Play task than on the Picture Book task. Of the 28 children, 15 children demonstrated this pattern (differentiation in Free Play only), 0 demonstrated the opposite pattern (differentiation in Picture Book only), 7 showed the differentiated pattern on both tasks, and 6 showed the differentiated pattern on neither task. I used a Sign Test to compare the number of children demonstrating the predicted and opposite patterns and found a significant difference, $p < .01$, between the two.

When comparing individual response patterns on the Object Naming task (after prompts) and the Picture Book task, we obtained no significant differences. Of the 28 children, 8 showed differentiation on Object Naming only, 3 showed differentiation on the Picture Book task only, 4 differentiated on both tasks, and 13 differentiated on neither task. These results suggest that Object Naming and the Picture Book task pose similar degrees of difficulty for young children.

I further correlated the measures of children's responsiveness to the language context that were used in the three tasks: Responsiveness Score in Object Naming, Free Play Language Accommodation Score, and Picture Book Language Accommodation Score and found that the Free Play Accommodation Score and Picture Book Language Accommodation Score were significantly positively correlated, $r = .48$, $p = .01$. The children's Picture Book Language Accommodation Score was not significantly correlated with children's Theory of Mind or Language Check scores from Study 1.

Language Use Correlations

In order to assess whether mothers' and children's language use was related, I ran a correlation analysis on the number of mothers' and children's utterances (across sub-sessions) which were coded as English, Marathi, and Marathi with English Insertion, see Table 8. In support of my predictions based on previous studies, I found that mothers' and children's utterances were significantly positively correlated, when focused on use of English, use of Marathi, and use of Marathi with English Insertions. Thus, as Nicoladis and Genesee (1997) found previously, children tend to mirror the nature of the language they are hearing. Mothers' Marathi and Marathi with English Insertion utterances were also positively correlated with children's English utterances, suggesting that those mothers who spoke more in general, and more in Marathi, had children who spoke more in English.

Insertions

The Marathi Plus language category included complete Marathi utterances, plus those utterances which were coded as Marathi with English Insertions and Marathi with English Borrowing. For children, 16.10% of Marathi Plus utterances included English insertions; for mothers, 27.79% of Marathi Plus utterances included English insertions. The insertions in these utterances were coded as Noun, Verb, or Other. One striking aspect of these insertions was that the vast majority, for both mothers and children, were nouns. For children's utterances, 76.15% of utterances with English insertions had nouns, 2.31% had verbs, and 33.85% had other parts of speech. All of children's Marathi with English borrowing utterances had Noun insertions and no other part of speech. For mothers' utterances, 86.17% of utterances with English insertions had nouns, 4.10% had

verbs, and 22.16% had other parts of speech. For mothers' Marathi with English

borrowing utterances, 91.11% had Noun insertions and 8.89% had Other insertions.

Further, speakers sometimes integrated the English insertions into the Marathi syntactic

structure by adding Marathi grammatical markers to the English words; 11.5% of

children's and 23% of mothers' Marathi with English Insertion utterances were also

coded for English words with Marathi grammatical markers.

Conversational Patterns

In order to determine the nature of the conversational patterns produced by

mothers and children as they went through the picture books, I coded the language of

label requests by the mother and the language of labeling responses by the child. Mothers

made more label requests in Marathi ($M = 36.89$, $SD = 20.19$) than in English ($M = 8.85$,

$SD = 10.72$), $t(27) = 5.73$, $p < .01$, across age groups. Also, mothers of younger children

made label requests more often in Marathi ($M = 45.79$, $SD = 20.19$) than mothers of older

children ($M = 28.00$, $SD = 17.12$), $t(26) = -2.56$, $p < .05$, again suggesting

accommodation to the older children's greater use of English. Children's most frequent

response patterns were providing an English label in response to a Marathi question ($M =$

20.36, $SD = 10.95$), followed by providing an English label in response to an English

question ($M = 6.07$, $SD = 7.72$), providing a Marathi label in response to a Marathi

question ($M = 4.00$, $SD = 4.23$), and providing a Marathi label in response to an English

question ($M = 0.68$, $SD = 1.02$). Younger children ($M = 5.93$, $SD = 5.06$) provided

significantly more Marathi responses to Marathi questions than older children ($M = 2.07$,

$SD = 1.86$), $t(26) = -2.68$, $p < .05$.

Across all sub-sessions, children provided more first labels in English ($M = 37.64$, $SD = 8.87$) than in Marathi ($M = 5.43$, $SD = 4.38$), $t (27) = 14.43$, $p < .01$. There were age differences in the number of first labels provided in English and Marathi; older children ($M = 41.07$, $SD = 7.99$) provided significantly more first labels in English than younger children ($M = 34.21$, $SD = 8.61$), $t (26) = 2.18$, $p < .05$, and younger children ($M = 7.21$, $SD = 5.38$) provided significantly more first labels in Marathi than older children ($M = 3.64$, $SD = 2.02$), $t (26) = -2.33$, $p < .05$.

Metalinguistic Strategies

Mothers' and children's mean use of the various metalinguistic strategies is presented in Table 9. There was individual variation in mothers' use of metalinguistic talk, in requesting or providing translations. Six of the 28 mothers did not use any of the strategies coded, whereas 12 mothers used this talk on at least 10% of utterances and the other 10 had less than 10% of metalinguistic talk. There were no significant correlations between mothers' use of translation strategies and percentage that either mothers or children accommodated in their language use across the sub-sessions. There were also no significant correlations between parents' total strategy use in Study 2 and children's performance on the Study 1 measures of language use in Object Naming, language use in Free Play, Theory of Mind, or Language Check. Parents did not use prompts like the ones used in Object Naming in Study 1. The strategies they used to elicit translations were more explicit in nature, in that they stated that they wanted to know the object's label in the other language. The most frequently used metalinguistic strategy was the mother requesting a translation equivalent from the child. Mothers also often used the names of the two languages, and provided translations themselves. They also repeated translations

themselves, and rarely, parents requested that the child repeat a translation. Finally, a few parents occasionally suggested translations to the child when the child was trying to remember one, as a sort of hint.

I next turned to an analysis of whether metalinguistic strategies differed by sub-session or child's age group. I conducted an ANOVA with the factors of sub-session and age group, using a dependent variable which was a composite score of mothers' total use of translation strategies per sub-session. There were no significant effects of either factor on this composite score. I also conducted an ANOVA comparing the use of the individual metalinguistic strategies by age group. The only age difference was that younger children ($M = 4.36$, $SD = 6.32$) repeated translation equivalents more often than older children ($M = 0.86$, $SD = 0.77$), $t(26) = -2.06$, $p = .05$.

In terms of raw frequencies, mothers used a translation strategy more often after the child provided an English label ($M = 4.78$, $SD = 6.41$) than after the child provided a Marathi label ($M = 1.25$, $SD = 1.69$), $t(27) = 3.01$, $p < .01$, which is not surprising given that most of children's first labels were in English. However, I predicted that the *percentage* of trials on which mothers used a translation strategy would be higher for Marathi first labels than English first labels, as mothers would have a bias toward ensuring that children knew the English label for an object (given the status of English as the majority language). Thus, I predicted that they would be particularly likely to use some sort of translation strategy to elicit the English label if the child provided the Marathi label first. As predicted, the percentage of Marathi first labels provided by the child that were followed by a translation strategy ($M = 21.43$, $SD = 26.16$) was higher

than the percentage of English labels that were followed by a translation strategy ($M = 11.89$, $SD = 14.23$), $t (27) = -1.83$, $p < .05$, one-tailed.

Discussion

Overall, the results of Study 2 support the hypothesis that bilingual parents would adjust their language use when each of the two "bystander" experimenters was present for the interaction. Thus, mothers made an attempt to ensure that the experimenters could follow the conversation, even though neither experimenter participated directly in the conversation. This was not done explicitly; that is, none of the parents said, "Let's use English because [experimenter's name] is in the room," but rather they used relatively more of her language than they did in the session where they were alone or with the other speaker. In contrast, children showed no sensitivity to the presence of the third person. Although children could have responded to parents' accommodation as a form of scaffolding, they did not match their parents' language use in this respect. In comparison to the Free Play task in Study 1, children had much greater difficulty accommodating in their conversational language use.

One possible reason for children's lack of sensitivity might be that without the direct feedback from the conversational partner, children were either unaware of the language needs of the third party, or unable to accommodate successfully in the situation. Much as in the Object Naming task of Study 1, children's performance in this situation suggests another context in which pragmatic differentiation skills emerge gradually.

Another important finding of Study 2 was that parents provided metalinguistic feedback and translation equivalents for the object labels. Further, although the majority of parents' translation efforts followed children's English labels, mostly because

children's first labels were primarily English, the percentage of Marathi first labels that were followed by translation strategies was higher than the percentage of English first labels that were followed by translation strategies. This finding suggests that parents were particularly eager to ensure that children knew the English label for an object. This bias might result from their desire that their children become skilled in the majority language of English.

There was also an age effect, with fewer utterances being spoken in the session with the older children. One source of this difference may be that because the older children knew all of the items in the picture book, they moved through it more quickly and with less discussion. The mothers of the younger children also used more Marathi than the mothers of the older children, so perhaps they were more focused on using both Marathi and English with their children, resulting in more talk overall. However, this result means that we must be cautious in interpreting the lack of age effects in pragmatic differentiation, because the older children and their parents may have been approaching the task differently than the younger children.

The conversations also showed a distinct pattern, with children providing mostly English responses to parents' Marathi questions. Parents never told children to use one language or another, except when explicitly seeking a translation equivalent. These are presumably the same patterns that they engage in during picture book reading at home, which by Lanza's classification seems to permit a bilingual context. Parents also demonstrated some preference for children knowing at least the English label, supporting the idea that parents place some value on children knowing the majority language, or language of instruction at school.

Also supporting a bilingual context is evidence of the numerous English insertions made by both parents and children into their Marathi utterances. Koppe (1996) stresses that language mixing within an utterance should not be considered an immature characteristic of bilingual children's speech but rather an accepted form of language use in many bilingual communities, so that the parents' code-mixing within an utterance in the present study is not necessarily unusual for a bilingual household. Nicoladis and Secco (2000) suggest that the parents of the one-year-old bilingual child they examined code-mixed with their son in order to use words in the other language that they knew he knew in order to display sensitivity and make their meaning clear. Muysken et al. (1996) also suggest that parents' motivation is one of ensuring effective communication and wanting children to learn new information well, at least in one language.

In line with previous studies of older children and adults, I found that by far the most commonly inserted part of speech was nouns (Lindholm & Padilla, 1978; Muysken, Kook, & Vedder, 1996; Quay, 2008; Vihman, 1985). Although this pattern has been noted previously, there is little consensus as to why it appears. One possibility is that nouns are inserted more than verbs because they are more easily interchangeable between languages, either because nouns are conceptually more similar across languages or because nouns generally have fewer inflections than verbs (Gentner, 1981). A classic example of the substantial variation in verbs between languages comes from the comparison of the English and Spanish sentences, "The bottle *floated into* the cave" and "La botella entro a la cueve, flotando" (Gentner, p. 166). Both sentences treat the nouns, "bottle" and "botella," the same in terms of the information that is conveyed, whereas the verbs differ. The Spanish verb does not include the manner of the bottle's motion as does

the English verb, "floated," and the English verb does not include the direction of the motion as does the Spanish verb, "entro." Thus, bilingual speakers' increased insertions of nouns rather than verbs may result from the ease with which nouns can be interchanged without affecting the rest of the sentence (either semantically or structurally).

In sum, parents in our study did show sensitivity in their language use across the three sub-sessions. Although they did not switch languages completely, they did use English and Marathi relatively more or less depending on whether the 3rd person present spoke English or Marathi. We found this effect with a very subtle manipulation where parents were not even told to include the experimenter in conversation. Parents' accommodation might have been even stronger if we had asked them to make sure that the experimenter could understand what was going on. It would be interesting in future research to test whether parents would also have used explicit cues with their children to effect a change in their language use and if children would follow language instructions, rather than implicit modeling.

CHAPTER 4: GENERAL DISCUSSION

Summary of Findings

Taken together, children's performance on the pragmatic differentiation tasks in Studies 1 and 2 shows that children do demonstrate much competence in accommodating their language use to unfamiliar interlocutors, but that they still have more to learn. Across the three contexts examined, children demonstrated varying facility with realizing and using the pragmatically appropriate language. They performed very well in the Free Play task which required using the appropriate language in conversation; children made a complete switch between sessions, and generated original statements in each language. In Object Naming, they labeled appropriately in the English session but had more difficulty using Marathi labels. Thus, with regard to pragmatic differentiation, they showed only partial sensitivity. Interestingly, when examining children's ambient talk (rather than labeling per se), they again tended to use the appropriate language in the appropriate context. Thus, in the Free Play task, children apparently noted and responded to the experimenter's own language choice, but had difficulty doing this when asked to come up with the appropriate labels in the Object Naming context. Object Naming was more demanding than Free Play in that it required use of a particular word in each language and the unfamiliar interlocutors provided minimal feedback.

Finally, children also did not differentiate in their use of either language during the more subtle Picture-Book sessions, despite their parents' sensitivity to the 3rd person. These results again support the perspective that pragmatic differentiation has a protracted

development over the preschool years, suggesting that pragmatic differentiation is not a single insight but rather a composite and integration of multiple skills. I also demonstrated that parents implicitly provide a model of pragmatic language use to their children in addition to taking the opportunity to point out multiple labels for objects and engage in some metalinguistic conversation. We have no evidence that parents' metalinguistic input is effective, though this question would be important to address in future research.

Relationships between Study 1 and Study 2

Task Differences

Because the same sample was included in both studies, I was able to compare children's behavior in the first two pragmatic differentiation settings with unfamiliar interlocutors with their accommodations in the picture book task with a parent. Several different patterns of response could have been observed in these two studies. Based on findings from prior research that children showed early sensitivity in free play situations when speaking directly with a monolingual experimenter, I hypothesized that children would show pragmatic differentiation in Study 1 when interacting with the experimenter (especially in the Free Play task), but not in Study 2 when they were talking with their bilingual parent throughout the session. There are two issues that I proposed would make the Picture Book task more difficult: the fact that the child was addressing a bilingual speaker rather than someone indicating a clear language preference and the fact that the 3rd party experimenter was a bystander and therefore did not provide conversational feedback.

Children could have shown other alternative patterns. They could have demonstrated pragmatic differentiation in both Studies 1 and 2, reflecting a broad capacity to engage in pragmatic differentiation regardless of context. Or, the conversational scaffolding from the parent in Study 2 might have led children to show greater sensitivity in that context, but not yet in the situations in Study 1. Certainly children have much greater familiarity and comfort with the parent than with a previously unknown researcher. However, in contrast to either of these alternatives, the results supported my hypothesis that speaking directly with a monolingual (or monolingual-behaving) experimenter was very helpful in the Free Play task in Study 1 and led children to use at least the appropriate ambient language in the Object Naming task.

Children's performance in Study 2 suggests that they might not have realized that they should adjust their language to the third person. (Of course one cannot be certain that the parents *consciously* realized that they should adjust their language either, although by their behavior we see that they have noted this on some level.) Understanding of this type of social norm might again require advanced metacognitive and pragmatic skills. Such abilities may develop as children experience more social situations and understand that their actions affect whether others feel included in an interaction, and specifically that their language use allows others to have access to the conversation. Even if children had some sense of this "polite" behavior, without the constant feedback regarding the experimenter's language through conversational turns, they might have had difficulty accommodating to her language preference. Further, the fact that they were conversing with a bilingual speaker, their parent, who would

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understand them regardless of the language they used might have obscured their awareness of the 3rd person's language preference.

Language Use Patterns

Another relationship between the two studies that was observed was that the conversational patterns demonstrated in Study 2 could shed light on children's responses in the Object Naming task in Study 1. The predominant pattern of mothers asking "What is this?" in Marathi and children responding in English, without parents necessarily commenting or expecting a Marathi response, might have led children to reproduce that conversational pattern in the Object Naming task with the Marathi experimenter if that is what they are accustomed to at home.

In the same vein, the pull of the majority language of English can also be seen throughout the two studies, despite parents' report of their high rates of Marathi use with their children. Children showed a bias toward labeling in English in the Object Naming task. Further, children used more English than Marathi in the Picture Book task, despite mothers' continued use of Marathi when requesting labels. Mothers also showed some bias toward English (despite their overall preference for using Marathi), in that they did not expect children to label pictures in Marathi and even seemed to prefer that children know the labels in English. There also may be some influence of children's increasing experience with English-speaking preschools; more older children attended preschool than younger children. Older children also provided more first labels in English than younger and mothers of older children made fewer label requests in Marathi than mothers of younger children, suggesting that both older children and their mothers accepted more English into their conversational patterns.

Both parents and children also code-mixed, frequently using Marathi utterances with English nouns inserted. There are several possible implications of this code-mixing. It may be that after children experience this pattern often in the input, they come to think that English is the most appropriate language for labels. The seamless blending of the languages might also result in children not realizing that these English labels inserted into Marathi grammatical structures are from a different language. The English labels might essentially become common to both languages. Ultimately, it seems that in terms of Grosjean's (2001) language modes, children, and adults, operate in primarily monolingual terms when speaking English, but that when using Marathi, their English knowledge is also highly activated, making it very accessible and likely to be used.

Age Group Differences

We might also have expected age differences in children's performance on these tasks across the board with older children out-performing younger children in each context. I found that both age groups performed similarly (well) when accommodating during the Free Play and similarly (poorly) when accommodating during the Picture Book session. I did, however, find age group differences in the Object Naming task, with older children being more responsive to prompts to switch languages. By examining an age group that was slightly older than those included in previous case studies, I was able to see which abilities are in place by the preschool years and which are not.

One pragmatic insight that the older group may have had was more of an understanding of conventionality in language use. Diesendruck (2005) showed that preschool-aged children, whose mean age was 3;11, understood that speakers of a language generally know the common nouns used in that language. In my study, when

the Marathi experimenter said she did not know the (English) word for the familiar object she was displaying, it may have acted as a clue to the child about her language knowledge, namely that she probably did not know English. Older children may be more capable of making such inferences. Other developments are also occurring at this age including increases in theory of mind and metacognitive understanding, discussed below.

Relationship between Pragmatic and Metacognitive Skills

One of the most important findings from this dissertation was that children's pragmatic understanding is related to their metacognitive understanding. First, older children (who scored more highly on the metacognitive tasks) were more responsive to experimenter prompts in the Object Naming task than younger children. Second, children who were more responsive to experimenter prompts in the Object Naming task scored higher on both the Theory of Mind tasks and the Language Check task (assessing children's knowledge of the experimenter's language). Finally, this last result was upheld even when controlling for participant age.

As discussed in Chapter 2, I propose that the causal direction of these results is that increased metacognitive understanding affects children's ability to use their languages appropriately in order to communicate successfully. Thus, individual and/or developmental differences in bilingual children's theory of mind relate to their ability to respond appropriately when a communication breakdown occurs. Further, while the long-term implications of this relationship have not been examined, it may be that just as theory of mind understanding can be measured at varying levels of complexity and skill (see Wellman & Liu, 2004, for clear demonstration), there may be varying levels of pragmatic differentiation abilities that would develop as children's metacognitive

understanding increases. For example, researchers have examined elementary school-aged children's theory of mind skills through tasks where they must keep track of two different characters' knowledge states and respond to a question asking what one character expects the other to do (Perner & Wimmer, 1985). While pragmatic differentiation may not have a directly parallel task, it seems plausible that children's ability to pass this kind of theory of mind task at 6 or 7 years old might be related to their ability to keep track of and respond appropriately to two different speakers' language knowledge, such as in our Picture Book task.

The finding of a relationship between theory of mind and pragmatic differentiation in bilingual children might also help to interpret other work on bilingual children's metalinguistic understanding. Perhaps studies which examine their enhanced understanding of, for example, the word-referent relationship, would benefit from including theory of mind tasks as well. It may be that children who make more insightful comments on why we can change the name of an object as long as everyone agrees also have higher theory of mind understanding.

It seems that the direction of influence between bilingualism and other cognitive capacities has traditionally been described as bilingualism affecting other understandings (e.g., theory of mind, executive function, metalinguistic awareness). The mechanism that has been suggested by others is that bilingual children's experience of having to switch between languages leads to enhancements in these understandings, beyond that of monolingual children who do not have to switch languages (Carlson & Meltzoff, 2008). While prior studies certainly help to broaden our understanding of the differences between monolingual and bilingual development, it might also be a fruitful area of

research to examine how these cognitive developments occurring within bilingual children affect their ability to accomplish bilingual tasks. As we have seen from the present studies, there are very interesting relationships and individual differences which illuminate how bilingual children learn to successfully communicate with others.

Limitations and Future Work

There are still many questions remaining to be examined, some of which may improve on limitations in the present study. One limitation is that the children in our study generally do not encounter monolingual Marathi speakers; most of the young Marathi speakers that they encounter in everyday life also know English. Our Marathi experimenter also knew English, although she did not use or respond to English during the tasks. Thus, children might have assumed based on their experience that she, like others, knew English as well, similar to the minority/majority language knowledge demonstrated by the children in Paradis and Nicoladis (2007). Nonetheless, children did appropriately accommodate to her in the Free Play session, using primarily Marathi with the Marathi speaker. Children might have accommodated even more in Free Play or Object Naming if the experimenter fit the demographic of someone who might truly only know Marathi, such as a grandparent from India.

This also brings up the question of how appearances might play into children's assumptions about language knowledge. In our study, the English speaker was Caucasian and the Marathi speaker was Indian, which may have provided an additional visual cue regarding their language use. (This is in contrast to other bilingual situations, such as English and French, where physical appearances would not usually provide cues about language knowledge.) It seems that even if children used appearance as an initial cue,

they mainly responded to the language used by the experimenter, based on their response to prompts in Object Naming and conversational feedback in Free Play. .

In addition to the metacognitive tasks that we included, Theory of Mind and Language Check, it would be very informative and interesting to include other measures of cognitive capacity, such as those assessing executive function or memory, in order to relate these to pragmatic differentiation abilities. Executive function has been examined in relation to how bilingual children fare on these tasks in comparison to monolingual children (Bialystok & Martin, 2004; Carlson & Meltzoff, 2008). Bilingual children have shown advantages on some executive function tasks, such as those which have conflicting attentional demands, possibly as a result of having to use and switch between two languages, inhibiting one when speaking the other. However, children's ability to differentiate their languages and choose the appropriate one, in a context such as the Object Naming task, may require some executive function ability and may vary according to individual bilingual children's executive function skills such as attention and verbal control.

Examining bilingual children's memory capacities for both languages in relation to their pragmatic differentiation skills would also provide important evidence of the mechanisms by which children are successful on these tasks. If their ability to recall vocabulary is better in one language or another, it would affect their responses in a task such as Object Naming, where a specific label is being requested. Therefore, a test of memory in each language may be an important control measure to add into future work looking at pragmatic differentiation.

Our tasks were somewhat skewed toward the use of nouns in both the Object Naming task and when looking at pictures of objects in the Picture Book session. It would be very interesting to see if children's performance in the two languages would be different if our stimuli also included labeling actions, thereby eliciting verbs in both languages. Researchers have proposed that for various reasons, nouns tend to be earlier acquired than verbs across languages (Gentner, 1978; but see Tardif, 1996). However, as discussed above, bilingual children may have difficulty separating Marathi nouns from English nouns if they are the most commonly code-mixed part of speech. Thus, tasks which ask children to make a language choice should test children's use of nouns and verbs. This would help distinguish children's competencies in using nouns and verbs in both languages and may help to disentangle whether the potential privileging of English nouns that I found was a reflection of children's pragmatic differentiation ability or more basic language differentiation ability. In the same vein, because we found that many children used English labels in the Marathi Object Naming session it would also be interesting and important to conduct the task with older children or adults from this community to ensure that the pragmatically appropriate response is indeed to provide the Marathi label in the Marathi language session.

In considering the age effects that I found regarding older children's increased responsiveness to prompts, the 4-year-old group might have been demonstrating an understanding that developed from having more experience with communication breakdowns. It is possible that because they attend English-speaking preschool more than the younger group, they have experienced more communication breakdowns which were caused by using a language (Marathi) that others would not understand. This may have

led them to realize that the language they were using might be why the experimenter continued to prompt them, particularly after the experimenter says that she does not know the word they are using. Thus, it would be very interesting to examine whether and how bilingual children might experience language breakdowns in preschool settings and if this contributes to their understanding of language switching. It would also be very interesting to examine how school experience affects their understanding of the societal dominance of one language over another.

Finally, as discussed above, the experience of children in a one-parent/one-language home versus a home with two bilingual parents may be very different in terms of the language input and children's experience making language choices. It would therefore be interesting to directly examine the development of pragmatic differentiation in both contexts. Children's language input seems to be related to their language use, as we saw in the strong correlations between mother and child code-mixing in Study 2. These differences in the amount of language mixing or different language competencies of the household members might also affect children's expectations of unfamiliar speakers. If a child is in a home with a high amount of language mixing, he/she might not have as much experience speaking with monolingual speakers of each of their languages. The present studies show that children in two-parent bilingual homes are adept in Free Play situations, but they may not have performed as well on Object Naming as a child from a one-parent/one-language home who may have more experience making language choices in both languages.

Conclusions

The results of these studies show that pragmatic differentiation is not an all-or-none ability which is completely in place after early sensitivity is demonstrated, but rather it is one which has component skills which develop over the preschool years. This protracted development is also related to bilingual children's metacognitive abilities, such as theory of mind, which emerge during the preschool years. These studies provide a more complete picture of the component skills which preschool-aged bilingual children have in place and which they may continue on to develop. Further, bilingual parents in these households do demonstrate pragmatic sensitivity, despite the fact that they do not follow strict language use rules in their homes, so that children have a model of sensitivity to follow and do have the opportunity to engage in metalinguistic conversation about language differences.

Table 1. Background language variables by age group for Studies 1 and 2

Mean (SD)	Younger Age Group	Older Age Group
Study 1 Vocabulary Checklist (x/30)		
Marathi	22.57 (4.73)	24.43 (4.77)
English	26.43 (3.94)	27.07 (4.21)
English & Marathi both	20.71 (4.86)	23.50 (4.42)
CDI – Total (x/442)		
Marathi	261.93 (95.74)	307.00 (48.67)
English	310.64 (105.06)	419.29 (24.00)
English & Marathi both	203.21 (97.89)	284.14 (53.30)
CDI – Nouns only (x/214)		
Marathi	124.21 (40.60)	127.00 (32.92)
English	152.86 (44.80)	204.43 (10.95)
CDI – Verbs only (x/92)		
Marathi	57.93 (28.18)	66.79 (13.16)
English	62.79 (29.51)	87.64 (5.54)
Parent report of child's fluency (1-5)		

Marathi	4.21 (.97)	4.29 (.61)
English	3.29 (1.26)	3.93 (1.07)
Percentage of Mother's Talk to Child		
Marathi	75.08 (24.82)	68.08 (14.36)
English	22.15 (17.91)	38.08 (16.53)
Percentage of Father's Talk to Child		
Marathi	77.69 (24.88)	73.46 (14.91)
English	19.54 (17.55)	32.69 (19.00)
Percentage of Parent's Talk Overall		
Marathi	62.67 (20.20)	61.67 (15.72)
English	39.83 (19.71)	38.33 (15.72)
Parent Self-Report of Language Ability (1-5)		
Marathi grammar	4.57 (.65)	4.5 (.94)
Marathi vocabulary	4.43 (.76)	4.29 (.73)
Marathi pronunciation	4.79 (.43)	4.57 (.76)
English grammar	4.43 (.76)	4.00 (.96)
English vocabulary	3.79 (.89)	3.36 (1.08)
English pronunciation	3.79 (.89)	3.36 (.75)

Table 2. Mean number of labels provided by language and language session in Object

Naming

Mean (SD)	Younger Age Group	Older Age Group
Marathi Language Session		
Marathi Labels (initial)	1.87 (1.99)	0.71 (0.91)
Marathi Labels (after prompts)	2.73 (2.19)	3.09 (1.76)
English Labels (initial)	4.13 (1.99)	5.14 (1.23)
English Labels (after prompts)	3.27 (2.19)	2.77 (1.83)
English Language Session		
English Labels (initial)	5.57 (1.34)	5.93 (0.27)
English Labels (after prompts)	5.64 (1.08)	5.93 (0.27)
Marathi Labels (initial)	0.43 (1.34)	0.07 (0.27)
Marathi Labels (after prompts)	0.36 (1.08)	0.07 (0.27)

Table 3. Correlations between Object Naming performance in Marathi session and

Vocabulary Check, CDI, Language Check, and Theory of Mind scores

	English Labels provided Initially	Marathi Labels provided Initially	English Labels provided after Prompts	Marathi Labels provided after Prompts	Responsiveness Score
English:Marathi Vocabulary Check ratio	n.s.	n.s.	.43*	-.41*	n.s.
English:Marathi CDI ratio – Total	.51**	-.52**	.46*	-.46*	n.s.
English:Marathi CDI ratio – Nouns	.55**	-.57**	n.s.	n.s.	n.s.
English:Marathi CDI ratio – Verbs	.49**	-.50**	.59**	-.59**	n.s.
Language Check	n.s.	n.s.	n.s.	n.s.	.51**
Theory of Mind	n.s.	n.s.	n.s.	n.s.	.60**

*p<.05, two-tailed; **p<.01, two-tailed.

Table 4. Mean number of utterances by language and language session in Free Play

Mean (SD)	Younger Age Group	Older Age Group
Marathi Language Session		
Complete Marathi	11.36 (9.48)	13.07 (8.42)
Marathi Plus	13.50 (10.28)	17.50 (10.73)
English	5.14 (5.46)	3.29 (3.50)
English Language Session		
English	15.29 (9.10)	17.93 (11.46)
Complete Marathi	0.07 (0.27)	0.00 (0.00)
Marathi Plus	0.07 (0.27)	0.00 (0.00)

Table 5. Correlations between Free Play performance and CDI, Language Check, and

Theory of Mind scores

| | Marathi Language Session | | | English Language Session | | | |
	English Utterances	Complete Marathi Utterances	Marathi Plus	English Utterances	Complete Marathi Utterances	Marathi Plus	Free Play Acc. Score
English: Marathi CDI ratio – Total	*n.s.*	-.37*	*n.s.*	*n.s.*	*n.s.*	*n.s.*	*n.s.*
English: Marathi CDI ratio – Nouns	*n.s.*	-.43*	*n.s.*	*n.s.*	*n.s.*	*n.s.*	*n.s.*
English: Marathi CDI ratio – Verbs	*n.s.*	-.44*	-.40*	*n.s.*	*n.s.*	*n.s.*	*n.s.*
Language Check	*n.s.*	*n.s.*	*n.s.*	*n.s.*	*n.s.*	*n.s.*	*n.s.*
Theory of Mind	*n.s.*	*n.s.*	*n.s.*	*n.s.*	*n.s.*	*n.s.*	*n.s.*

*p<.05, two-tailed; **p<.01, two-tailed.

Table 6. Correlations between children's performance in Marathi session of Object

Naming and Free Play

	Marathi Language Session			English Language Session			
	English Utterances	Complete Marathi Utterances	Marathi Plus	English Utterances	Complete Marathi Utterances	Marathi Plus	Free Play Acc. Score
English Initially	*n.s.*	-.39*	*n.s.*	*n.s.*	*n.s.*	*n.s.*	*n.s.*
Marathi Initially	*n.s.*	*n.s.*	*n.s.*	*n.s.*	*n.s.*	*n.s.*	*n.s.*
English after Prompts	*n.s.*	-.53**	-.53**	*n.s.*	*n.s.*	*n.s.*	-.40*
Marathi after Prompts	*n.s.*	.51**	.52**	*n.s.*	*n.s.*	*n.s.*	*n.s.*
Responsive-ness Score	*n.s.*	*n.s.*	*n.s.*	*n.s.*	*n.s.*	*n.s.*	*n.s.*

[*]*p*<.05, two-tailed; [**]*p*<.01, two-tailed.

Table 7. Mean number of utterances by language across Picture Book sub-sessions

Session	Younger Children		Older Children	
Languages	Child	Mother	Child	Mother
Mother-Child Alone				
English	23.71 (5.25)	12.21 (8.31)	20.86 (7.76)	11.57 (5.63)
Marathi Plus	13.07 (10.23)	55.71 (30.83)	9.14 (8.20)	33.50 (24.64)
Mother-Child-English Speaker				
English	23.57 (6.49)	14.64 (9.62)	20.07 (9.29)	16.21 (13.19)
Marathi Plus	10.79 (8.79)	45.29 (34.08)	4.64 (4.58)	17.64 (17.93)
Mother-Child-Marathi Speaker				
English	23.21 (7.24)	7.21 (5.83)	19.00 (8.20)	9.36 (7.72)
Marathi Plus	15.14 (13.90)	58.57 (43.49)	10.07 (10.34)	28.79 (20.37)

Table 8. Correlations between mother and child's overall language use in Study 2

	Mother's English Utterances	Mother's Marathi Utterances	Mother's Marathi with English Insertion Utterances
Child's English Utterances	.38*	.44*	.42*
Child's Marathi Utterances	*n.s.*	.78**	.71**
Child's Marathi with English Insertion Utterances	*n.s.*	*n.s.*	.42*

*p<.05, two-tailed; **p<.01, two-tailed.

Table 9. Metalinguistic strategies used by mothers and children in Study 2

Mean (SD)	Child	Mother
Translation Question	0.00 (0.00)	8.54 (11.34)
Provides Translation Equivalent	2.96 (4.28)	5.21 (5.42)
Request for Repetition of Translation	0.00 (0.00)	0.29 (0.81)
Repetition of Translation	2.60 (4.76)	2.39 (4.00)
Uses Name of Language	0.25 (0.97)	6.25 (10.41)
Translation Suggestion	0.00 (0.00)	0.82 (1.66)

Figures 1a and 1b. Parents' and children's language use in Picture Book sub-sessions

Parents' Language Use Across Sessions

(Number of Utterances)

| | PC English | PCE English | PCM English | PC Marathi Plus | PCE Marathi Plus | PCM Marathi Plus |

Children's Language Use Across Sessions

(Number of Utterances)

| | PC English | PCE English | PCM English | PC Marathi Plus | PCE Marathi Plus | PCM Marathi Plus |
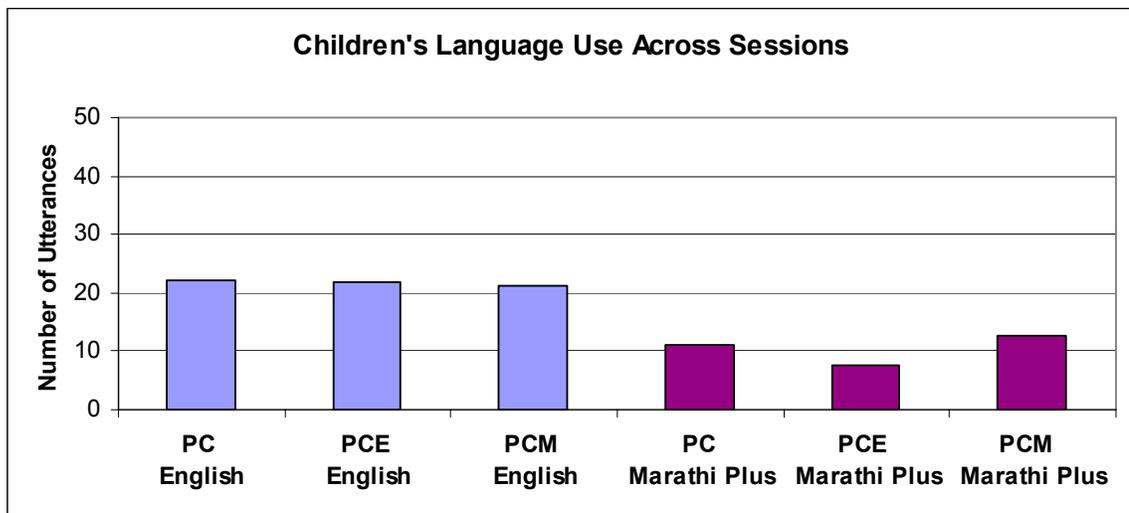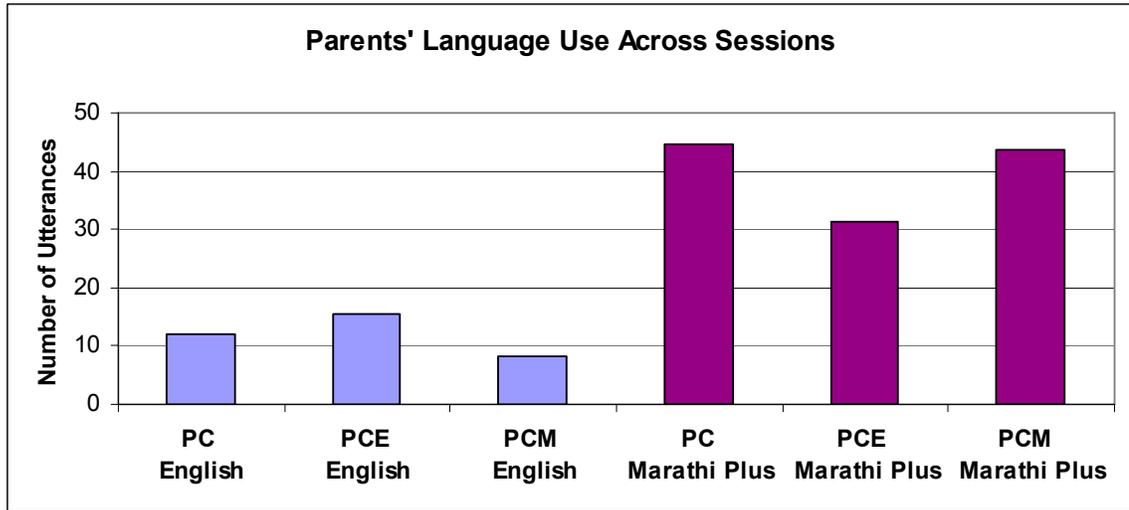
Note: PC = Parent-Child Alone sub-session; PCE = Parent-Child-English Speaker sub-session; PCM = Parent-Child-Marathi Speaker sub-session. English = All complete English utterances; Marathi Plus = All complete Marathi utterances plus Marathi utterances with English insertions

APPENDIX A – Parent Vocabulary Checklist

> **Please mark whether your child has produced each word in English and/or Marathi.**

ENGLISH

- ☐ TREE
- ☐ GIRL
- ☐ HOUSE
- ☐ HAT
- ☐ DOG (DOGGIE)
- ☐ HORSE
- ☐ CAR
- ☐ SPOON
- ☐ MILK
- ☐ BOOK
- ☐ SOCKS
- ☐ EAR
- ☐ PILLOW
- ☐ CHAIR
- ☐ DOOR
- ☐ COUCH
- ☐ BABY
- ☐ BOTTLE
- ☐ KEYS
- ☐ LIGHT
- ☐ AIRPLANE
- ☐ NOSE
- ☐ EGG
- ☐ WATER
- ☐ CAT
- ☐ BIRD
- ☐ BANANA
- ☐ PLATE
- ☐ FLOWER
- ☐ SUN

MARATHI

- ☐ ZHAD
- ☐ MULGI
- ☐ GHAR
- ☐ TOPEE
- ☐ KUTHRA (BHOO-BHOO)
- ☐ GHODA
- ☐ GADEE
- ☐ CHUMCHA
- ☐ DHUD
- ☐ PUSTAK
- ☐ MOZE
- ☐ KAHN
- ☐ USHI
- ☐ KURCHEE
- ☐ DAAR
- ☐ KOZ
- ☐ BAL
- ☐ BATLEE
- ☐ KILYA
- ☐ DIWA
- ☐ WIMAN
- ☐ NAK
- ☐ UNDA
- ☐ PANEE
- ☐ MANZAR (MOW)
- ☐ CHIMNEE/PAKSHEE
- ☐ KAYLA
- ☐ TATLEE
- ☐ PHOOL
- ☐ SURYA

APPENDIX B – MacArthur Communicative Development Inventory

Children understand many more words than they say. We are particularly interested in the words your child SAYS. Please go through the list and mark the words you have heard your child use in English and Marathi. If your child uses a different pronunciation of a word, mark the word anyway. Remember that this is a "catalogue" of all the words that are used by many different children. Don't worry if your child knows only a few of these right now.

		Says in English	**Says in Marathi**
Sound Effects and Animal Sounds			
baa baa			
choo choo			
cockadoodledoo			
grr			
meow			
moo			
ouch	bow		
quack quack	chew chew		
uh oh			
vroom			
woof woof	bhoo bhoo		
yum yum			
Animals			
Alligator	Magar		
Animal	Prani		
Ant	Mungi		
Bear	Asaval		
Bee	Mudhukara		
Bird	Pakshi		
Bug	Kidda		
Bunny	Sassa		
Butterfly	Phulapankharu		
Cat	Manjar		
Chicken			
Cow	Gai		
Deer	Harin		
Dog	Kutra		

English	Translation		
Donkey	Gadhav		
Duck	Badak		
Elephant	Hatti		
Fish	Masa		
Frog	Beduk		
Giraffe			
Goose			
Hen	Kombadi		
Horse	Ghoda		
Kitty	Mow		
Lamb			
Lion	Simha		
Monkey	Makad		
Mouse	Undir		
Owl	Ghubad		
Penguin			
Pig	Dukkar		
Pony			
Puppy			
Rooster	Kombada		
Sheep	Mendha		
Squirrel	Khar		
Teddybear			
Tiger	Vagh		
Turtle	Kasav		
Wolf	Landaga		
Zebra			

Vehicles

English	Translation		
Airplane	Viman		
Bicycle	Cycle		
Boat	Hodi		
Car	Gadi		
Firetruck	Ageecha Bumb		
Helicopter			
Motorcycle	Phatphatee		
Sled			
Stroller	Babagadi		
Tractor			

Train	Aagadi		
Tricycle			
Truck	Lorry		
	Ricksha		

Toys

Ball	Chendoo		
Balloon	Phuga		
Bat			
Block			
Book	Pustak		
Bubbles	Sabnache Phuge		
Chalk	Khadoo		
Crayon			
Doll	Bahule		
Game	Khela		
Glue	Gum		
Pen			
Pencil			
Playdough			
Present	Bheta		
Puzzle	Kode		
Story	Goshta		
Toy	Khelane		

Food and Drink

Apple	Safarchanda		
Applesauce			
Banana	Keyla		
Beans	Mugh		
Bread	Pav		
Cake			
Candy	Golee		
Carrots	Gajar		
Cereal			
Cheerios			
Cheese			
Chicken			
Chocolate			

Coffee			
Coke			
Cookie	Biscuit		
Corn	Maka		
Cracker			
Donut			
Drink			
Egg	Ande		
Fish	Masa		
Food	Kahne		
French fries			
Grapes	Draksha		
Green Beans	Farasbee		
Gum			
Hamburger			
Ice	Burfa		
Ice cream			
Jello			
Jelly			
Juice			
Lollipop			
Meat	Mas		
Watermelon	Kalingad		
Milk	Dudh		
Muffin			
Noodles			
Nuts	Dane		
Orange	Mosambi		
Pancakes			
Peanut butter			
Peas	Matar		
Pickle	Lonche		
Pizza			
Popcorn	Lahya		
Popsicle			
Potato	Batata		
Potato chip			
Pretzel			
Pudding			

English	Marathi		
Pumpkin	Bhopla		
Raisin	Manuka		
Salt	Mith		
Sandwich			
Sauce			
Soda/pop			
Soup	Sar		
Spaghetti			
Strawberry			
Toast			
Tuna			
Vanilla			
Vitamins			
Water	Pani		
Yogurt	Dahi		
	Bath		
	Poli		
	Amba		
	Aamti		
	Usal		

Clothing

English	Marathi		
Beads	Mani		
Belt	Patta		
Bib			
Boots			
Button			
Coat			
Diaper			
Dress			
Gloves			
Hat	Topi		
Jacket			
Jeans			
Mittens	Hathmoze		
Necklace			
Pajamas	Pyjama		
Pants			
Scarf			

Shirt			
Shoe	Boot		
Shorts			
Slipper	Sapata		
Sneaker			
Snowsuit			
Sock	Moja		
Sweater	Lokrichapolke		
Tights			
Underpants	Chuddee		
Zipper			
	Parkar		
	Blouse		
	Sari		
	Zubba		
	Punjabidress		

Body Parts

Ankle			
Arm	Dunda		
Bottom	Dhungan		
Bellybutton	Bembi		
Cheek	Gal		
Chin	Hanuvati		
Ear	Kana		
Eye	Dolya		
Face	Chehra		
Feet	Pavale		
Finger	Bot		
Hair	Kes		
Hand	Hat		
Head	Doke		
Knee	Gudhaga		
Leg	Pai		
Lips	Oth		
Mouth	Tond		
Nose	Nak		
Owie/boo boo	Bau		
Shoulder	Khanda		

Toe	Angatha		
Tooth	Dat		
Tongue	Jibh		
Tummy	Pot		

Small Household Items

Basket			
Blanket	Panghroon		
Bottle	Batlee		
Box	Khoka		
Bowl	Wati		
Broom	Zadu		
Brush			
Bucket	Badlee		
Can	Daba		
Clock	Ghadyal		
Comb	Kangava		
Cup			
Dish			
Fork			
Garbage	Kachra		
Glass	Bhande		
Glasses	Chushma		
Hammer	Hatodi		
Jar	Batlee		
Keys	Killya		
Knife	Suri		
Lamp	Diwa		
Light			
Medicine	Aushadh		
Money	Paise		
Mop			
Nail	Khila		
Paper	Kagad		
Penny			
Picture	Chitra		
Pillow	Ooshee		
Plant	Zhad		
Plate	Tatlee		

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Purse			
Radio			
Scissors	Katree		
Soap	Saban		
Spoon	Chumcha		
Tape			
Telephone			
Tissue			
Toothbrush			
Towel	Puncha		
Trash			
Tray			
Vacuum			
Walker			
Watch			

Furniture and Rooms

Basement	Talghar		
Bathroom	Sundas		
Bathtub			
Bed	Palanga		
Bedroom			
Bench	Bak		
Chair	Khurchee		
Closet			
Couch	Koch		
Crib			
Door	Dar		
Drawer			
Dryer			
Garage			
High chair			
Kitchen	Swayampaghar		
Living room			
Oven			
Play pen			
Porch			
Potty			

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Refrigerator			
Rocking chair			
Room	Kholi		
Shower			
Sink			
Sofa			
Stairs	Jina		
Stove			
Table			
TV			
Washing machine			
Window	Khidkee		

Outside Things

Backyard	Angan		
Cloud	Dhug		
Flag	Zenda		
Flower	Phool		
Garden	Bag		
Grass	Gawat		
Ladder	Shidi		
Lawn mower			
Moon	Chandra		
Pool			
Rain	Pous		
Rock	Khadak		
Roof	Chappar		
Sandbox			
Shovel	Phavade		
Sidewalk			
Sky	Akash		
Slide	Gasarghundi		
Snow	Burfa		
Snowman			
Sprinkler			
Star	Tara		
Stick	Kathi		
Stone	Dagad		

Street	Rasta		
Sun	Surya		
Swing	Zoppala		
Tree	Zhad		
Water	Panee		
Wind	Wara		

Places to Go

Beach	Samudrakath		
Camping			
Church	Deoul		
Circus			
Country	Gao		
Farm	Shet		
Gas station			
Home			
House	Ghar		
Movie	Cinema		
Outside	Baher		
Park	Maidan		
Party			
Picnic			
Playground	Khelachemaidan		
School	Shala		
Store	Dukan		
Woods	Jungle		
Work	Kam		
Yard	Angan		
Zoo			

People

Aunt	Mami		
	Kaku		
	Mavashi		
	Atya		
Baby	Bal		
Babysitter			
Babysitter's name			
Boy	Mulga		

Word	Translation		
Brother	Bhaoo		
Child	Mul		
Clown	Vidooshak		
Cowboy			
Daddy	Baba		
Doctor			
Fireman			
Friend	Mitra/Maitrin		
Girl	Mulgi		
Grandma	Aji		
Grandpa	Ajoba		
Lady	Bai		
Mailman	Postman		
Man	Manous		
Mommy	Aai		
Nurse			
Child's own name			
People	Manse		
Person	Manous		
Pet's name			
Police			
Sister	Baheen		
Teacher			
Teacher's name			
Uncle	Kaka		
	Mama		

Games and Routines

Word	Translation		
Bath	Anghol		
Breakfast			
Bye	Aachaa		
Call (on phone)			
Dinner	Jevan		
Give me five!	Tali de!		
Gonna get you!			
Go potty			
Hi			
Hello	Namaskar		

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Lunch			
Nap			
Night night			
No	Nahi		
Patty cake			
Peekaboo			
Please			
Shh/shush/hush			
Shopping			
Snack			
So big!			
Thank you			
This little piggy			
Turn around			
Yes	Ho		

Action Words

Bite	Chav		
Blow	Phoonk		
Break	Mode		
Bring	Aan		
Build	Bandh		
Bump			
Buy	Vikat ghe		
Carry			
Catch	Packud		
Chase	Pathlag kar		
Clap	Tali waz		
Clean	Swachha kar		
Climb	Chadh		
Close	Banda kar		
Cook	Swepak kar		
Cover	Zak		
Cut	Kap		
Dance	Nach		
Draw	Chitra kadh		
Drink	Pee		
Drive	Chalav		

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Drop	Pad		
Dry	Korda kar		
Dump	Tak		
Eat	Kha		
Fall	Pud		
Feed	Bharav		
Find	Sapad		
Finish	Sumpow		
Fit			
Fix	Durust kar		
Get			
Give	Deh		
Go	Ja		
Hate	Tiraskar kar		
Have	Asne		
Hear	Aik		
Help	Madhath		
Hide	Lapo		
Hit	Mar		
Hold	Dhar		
Hug	Mithi mar		
Hurry	Lokar za		
Jump	Oodhi mar		
Kick	Lath mar		
Kiss	Papi ghe		
Knock	Tak tak kar		
Lick	Chaat		
Like	Aawad		
Listen			
Look	Bagh		
Love	Prem kar		
Make	Kar		
Open	Ughad		
Paint	Rangav		
Pick	Niwad		
Play	Khel		
Pour	Oth		
Pull	Odh		
Push	Dhakal		

Put	Thev		
Read	Wach		
Ride			
Rip	Phadne		
Run	Dhav		
Say	Muhn		
See	Disne		
Shake	Halav		
Share			
Show	Dakhav		
Sing	Ga		
Sit	Bus		
Skate			
Sleep	Zop		
Slide	Ghasar		
Smile	Has		
Spill	Sand		
Splash	Oodav		
Stand	Oobha Raha		
Stay	Rah		
Stop	Thamb		
Sweep	Ker kadh		
Swim	Poh		
Swing	Zoka ghe		
Take	Ghe		
Talk	Bol		
Taste	Chav bagh		
Tear			
Think	Vichar kar		
Throw	Fek		
Tickle	Gudgullya kar		
Touch	Hat lav		
Wait	Thamb		
Wake	Ooth		
Walk	Chal		
Wash	Dhu		
Watch	Bagh		
Wipe	Poos		
Wish	Ichha kar		

Work	Kam kar		
Write	Lihee		

Descriptive Words

Big	Motha		
Black	Kala		
Blue	Nila		
Broken	Modlela		
Clean	Swucha		
Cold	Gar		
Dark	Kalokh		
Dirty	Kharab		
Dry	Kohrda		
Empty	Rikama		
Fast	Putkan		
Fine	Barra		
First	Pahila		
Full	Bharla		
Good	Changla		
Green	Hirwa		
Happy	Anandi		
Hard	Kadak		
Heavy	Jud		
High	Unch		
Hot	Garam		
Hungry	Bhukela		
Little	Chota		
Long	Lamb		
Loud	Motha awaj		
Mad	Ragavlela		
New	Naveen		
Nice	Chhaan		
Old	Juna		
Pretty	Sundar		
Red	Lal		
Sad	Dukhee		
Sleepy			
Slow	Haloo		
Soft	Mau		

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Thirsty	Tahan		
Tired	Dumlela		
Wet	Ola		
White	Pandhra		
Yellow	Piwala		
Yucky	Ghan		

Words About Time

After	Magahoun		
Before	Adhee		
Day	Divas		
Later	Nantar		
Morning	Sakal		
Night	Ratra		
Now	Atta		
Time	Wel		
Today	Aaj		
Tomorrow	Oodhya		
Tonight	Aaj ratree		
Yesterday	Kal		

Pronouns

He	To		
Her	Tila		
Hers	Thicha		
Him	Tyala		
His	Tyaacha		
I	Me		
It	Tay		
Me	Mala		
Mine	Maza		
My	Maza		
Myself	Me		
Our	Aamcha		
She	Tee		
That	Te		
Their	Tyanche		
Them	Tyana		
These	Hya		

They	Te		
This	He		
Those	Tee		
Us	Aamacha		
We	Aapan		
We	Aamhee		
You	Tu		
You (formal)	Tumhee		
Your	Tuze		
Your (formal)	Tumche		
Yourself			

Question Words

How	Kasa		
What	Kay		
When	Kevnha		
Where	Kuthe		
Which	Kuthla		
Who	Kon		
Why	Ka		
Why	Kashala		

Prepositions and Locations

About	Baddal*		
Above	Vartee		
Around	Bhovatee		
At			
Away	Lamb		
Back	Mage		
Behind	Pathimage		
Beside			
By	Pashee*		
Down	Khali		
For	Karta*		
Here	Ithay		
Inside/in	Aat		
Into	Aat*		
Next to	Shejaree		
Of			

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Off	Bunda		
On	Lauw		
On top of	Wartee		
Out	Baher		
Over			
There	Thithay		
To	La*		
Under	Khalti*		
Up	Var		
With	Burobar		

*indicates suffix (attaches to the end of a word)

Quantifiers and Articles

A			
All	Sagle		
A lot	Khoop		
An			
Another	Anaik		
Any	Kootle		
Each	Pratyek		
Every			
More	Aajoon		
Much			
Not	Nahee		
None			
Other	Dusra		
Same	Sarka		
Some	Thoda		
The			
Too	Pun		

Connecting Words

And	Anee		
Because	Karan		
But	Pun		
If	Jar		
So	Mhanoon		
Then	Tar		

<u>HOW CHILDREN USE WORDS</u>

1. Does your child ever talk about past events or people who are not present? For

example, a child who saw a parade last week might later say parade, clown, or band.

In English: ____ Not yet   ____ Sometimes   ____ Often

In Marathi: ____ Not yet   ____ Sometimes   ____ Often

2. Does your child ever talk about something that's going to happen in the future, for

example, saying "choo choo" or "airplane" before you leave the house for a trip, or saying

"swing" when you are going to the park?

In English: ____ Not yet   ____ Sometimes   ____ Often

In Marathi: ____ Not yet   ____ Sometimes   ____ Often

3. Does your child talk about objects that are not present such as asking about a missing

or absent toy, referring to a pet out of view, or asking about someone not present?

In English: ____ Not yet   ____ Sometimes   ____ Often

In Marathi: ____ Not yet   ____ Sometimes   ____ Often

4. Does your child understand if you ask for something that is not in the room, for

example, by going to the bedroom to get a teddy bear when you say "where's the bear?"

In English: ____ Not yet   ____ Sometimes   ____ Often

In Marathi: ____ Not yet   ____ Sometimes   ____ Often

5. Does your child ever pick up or point to an object and name an absent person to whom the object belongs? For example, a child might point to mommy's shoe and say "mommy".

In English: _____ Not yet _____ Sometimes _____ Often

In Marathi: _____ Not yet _____ Sometimes _____ Often

WORD ENDINGS

1. To talk about more than one thing, we add an "s" to many words in English and an "a" to many words in Marathi. Examples include "cars" (for more than one car) in English or "gadya" (for more than one car) in Marathi. Has your child begun to do this?

In English: _____ Not yet _____ Sometimes _____ Often

In Marathi: _____ Not yet _____ Sometimes _____ Often

2. To talk about ownership, we add an "'s" in English and "chee" in Marathi. Examples include "baby's bottle" in English or "balachee batlee" in Marathi. Has your child begun to do this?

In English: _____ Not yet _____ Sometimes _____ Often

In Marathi: _____ Not yet _____ Sometimes _____ Often

3. To talk about activities, we sometimes add "ing" to verbs in English and "te" in Marathi. Examples include "crying" in English and "radte" in Marathi. Has your child begun to do this?

In English: _____ Not yet _____ Sometimes _____ Often

In Marathi: _____ Not yet _____ Sometimes _____ Often

4. To talk about things that happened in the past, we often add "ed" to the verb in English and "le" in Marathi. Examples include "opened" in English and "ughadle" in Marathi. Has your child begun to do this?

In English: ____ Not yet   ____ Sometimes   ____ Often

In Marathi: ____ Not yet   ____ Sometimes   ____ Often

Has your child begun to combine words yet, such as "doggie bite" or "mala de"?

In English: ____ Not yet   ____ Sometimes   ____ Often

In Marathi: ____ Not yet   ____ Sometimes   ____ Often

Please list three of the longest sentences you have heard your child say in each language recently:

In English: _____

In English: _____

In English: _____

In Marathi: _____

In Marathi: _____

In Marathi: _____

APPENDIX C – Parent Questionnaire

Participant #_____   Today's Date_____

Thank you for participating in our study! Please take a few minutes to complete the following
questionnaire. You may skip any questions you do not wish to answer. This information will be kept
completely confidential and will only be used in conjunction with this study. Thank you for your time!

Child Participant:

Sex (circle one):   Male   Female   School (circle one):
                                              1=Preschool or daycare center
Birthdate: _____   2=Kindergarten
                                              3=Not in school
                                              4=Other_____

Child Participant's Siblings

Relation to Child: Age: Grade in School:
(ex. brother, sister)

_____   _____   _____

_____   _____   _____

_____   _____   _____

Other Household Members

Please list all OTHER members, not listed above, who are living in the HOUSEHOLD in relation to the
child participant (***including yourself***, spouse, partner, live-in grandparents, etc.):

Relation to Child: Age: Level of Education: Occupation: Languages Spoken   Sex:
                                (Please see list below)

_____   ____ _____ _____   _____   M F

_____   ____ _____ _____   _____   M F

_____   ____ _____ _____   _____   M F

_____   ____ _____ _____   _____   M F

_____   ____ _____ _____   _____   M F

_____   ____ _____ _____   _____   M F

Key

Please list the number or letter that corresponds in the table above:

Level of education:

1=some high school	4=some college
2=high school diploma	5=college degree
3=technical/trade training	6=post college education

Caregiver (s)

Please list the caregivers who spend the most time with the child in a "typical" week (for example, mother, teacher, nanny, babysitter, daycare, other relatives, neighbor and/or friend, etc.). Additionally, please estimate what hours/week of WAKING time the child spends with each listed person.

Relation to child	Hours per Week	Languages Spoken to Child
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

How long have you and your spouse lived in the United States? _____

Please estimate the percentage of time that you speak to your child in Marathi _____ in English _____

Please estimate the percentage of time that your spouse speaks to your child in Marathi _ in English _____

How important is it to you that your child learn Marathi?_____

What concerns, if any, do you have about raising a bilingual child?_____

_____

Do you use any strategies in teaching your child language(s)? _____

Person completing this form (circle one): Mother   Stepmother   Father   Stepfather   Other:__

Self-assessment of Parent's Language Ability* (person conducting study with child):

Please estimate the percentage of time that you speak: English _____ Marathi_____

Please rate your language ability for each language component on a scale of 1-5 as defined below.

<u>**ENGLISH ABILITY:**</u>

<u>Grammar</u>:

1   **2**   **3**   **4**   **5**
1 = Difficulty producing simple sentences
3 = Few grammatical errors
5 = No errors in grammar

<u>Vocabulary</u>:

1   **2**   **3**   **4**   **5**
1 = Limited vocabulary
3 = Good general vocabulary
5 = Extensive vocabulary, used accurately

<u>Pronunciation</u>:

1   **2**   **3**   **4**   **5**
1 = Frequent pronunciation errors
3 = Clearly understandable speech
5 = Native-like pronuciation

<u>**MARATHI ABILITY:**</u>

<u>Grammar</u>:

1   **2**   **3**   **4**   **5**
1 = Difficulty producing simple sentences
3 = Few grammatical errors
5 = No errors in grammar

<u>Vocabulary</u>:

1   **2**   **3**   **4**   **5**
1 = Limited vocabulary
3 = Good general vocabulary
5 = Extensive vocabulary, used accurately

<u>Pronunciation</u>:

1   **2**   **3**   **4**   **5**
1 = Frequent pronunciation errors
3 = Clearly understandable speech
5 = Native-like pronuciation

*Reformatted to fit this document page

APPENDIX D – Language Check

Participant #_____   Today's Date_____

Order of meeting RAs: _____

1st RA – show picture

(a) What language did _____ speak? _____

If no response or "I don't know":

Did she speak English or Marathi? _____

 (b)Does she also speak _____ (ask only the one they didn't mention)? _____

2nd RA – show picture

 (a) What language did _____ speak? _____

If no response or "I don't know":

Did she speak English or Marathi?_____

 (b) Does she also speak _____ (ask only the one they didn't mention)? _____

 (c) Object pictures - show pictures of two objects (leftover items from Study 1) and ask
       for each person:

For Marathi speaker: Would she call this a _____ or a _____? _____

For English speaker: Would she call this a _____ or a _____? _____

Order of languages counterbalanced between subjects.

APPENDIX E – Theory of Mind Tasks Protocol (Wellman & Liu, 2004)

Not-Own Desire (X)

Story: Here's Mr. Jones. It is his snack time. So, Mr. Jones wants a snack to eat. Here are two different snacks: a carrot (point) and a cookie (point).

Own Desire: Which snack would YOU like best? Would you like a carrot (point) or…a cookie (point) best?

___ If carrot: Well, that's a good choice, BUT…Mr. Jones REALLY LIKES cookies (don't point). He doesn't like carrots. What he likes best are cookies.

___ If cookie: Well, that's a good choice, BUT…Mr. Jones REALLY LIKES carrots (don't point). He doesn't like cookies. What he likes best are carrots.

Question: So, now it's time to eat. Mr. Jones can only choose one snack, just one. Which snack will Mr. Jones (point to Mr. Jones) choose?…A carrot or…a cookie?

___ carrot   ___ cookie

Not-Own Belief (X)

Story: Here's Linda. Linda wants to find her cat. Her cat might be hiding in the bushes (point) or…it might be hiding in the garage (point).

Own Belief: Where do YOU think the cat is? In the bushes (point) or…in the garage (point)?

___ If bushes: Well, that's a good idea, BUT…Linda THINKS her cat is in the garage (don't point). She thinks her cat is in the garage.

___ If garage: Well, that's a good idea, BUT…Linda THINKS her cat is in the bushes (don't point). She thinks her cat is in the bushes.

Question: So…where will Linda (point to Linda) look for her cat?…In the bushes or…in the garage?

___ bushes   ___ garage

<u>Knowledge Access (X)</u>

Experimenter: Here's a box (keep finger over box).

Question to child: What do you think is inside the box (point to box)?

(If child gives an answer): _____

Experimenter: (With drama) Let's see…it's really a DOG inside!

(Open box to show dog)

(Close the box to restrict view again after a pause)

Post-view Question: Okay…what is in the box? _____

(If child makes an error here, show contents inside again until child gets this question

correct)

Experimenter: Polly has never ever seen inside this box. (Take Polly out) Now here

comes Polly.

Question: So…does Polly KNOW what is in the box?

___ yes   ___ no

Did Polly see inside this box?

___ yes   ___ no

APPENDIX F – Sample Coding of Parent-Child Conversation

Sample Exchange (Older male child in Marathi session of Study 2 with mother):

*MOT: **Hmm ani hai kai?**

%eng: Hmm, and what's this?

Coded as: Marathi; Request for Label in Marathi

*CHI: **Dog**

Coded as: English; Label – English Response; Child's first label in English

*MOT: **Ani dogla kai mhantow Marathit tu?**

%eng: And what do you call "dog" in Marathi?

Coded as: Marathi with English Quoting; Translation Question, Uses Name of

Language; Parent uses translation strategy after English label

*CHI: **We call it as puppy**

Coded as: English

*MOT: **Nahi nahi, apan kai mhantow Marathit?**

%eng: No, no, what do we say in Marathi?

Coded as: Marathi; Translation Question; Uses Name of Language

*CHI: **I don't know**

Coded as: English

*MOT: **Kutra**

%eng: Dog

Coded as: Marathi; Provides Translation Equivalent

*MOT: **Kai mhantow?**

%eng: What is it called?

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Coded as: Marathi; Request for Repetition of Translation

*CHI: **Kutra**

%eng: Dog

 Coded as: Marathi; Repetition of Translation

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