The Pennsylvania State University

The Graduate School

College of the Liberal Arts

PREDICTORS OF INTERNAL STATE TALK AMONG PARENTS OF

TODDLERS

A Thesis in

Psychology

by

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Submitted in Partial Fulfillment
of the Requirements
for the Degree of

Master of Science

May 2008

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ABSTRACT

Internal state language (ISL) appears to be an important component of developing socio-emotional competence (Dunn, Brown, & Beardsall, 1991; Saarni, 1999). However, most ISL research has focused on children from middle class, educated, advantaged homes. The present study focused on (a) parental ISL before children have acquired these terms and (b) in a sample of 105 economically-strained families. Specifically, two sets of predictors of mothers' and fathers' ISL were examined: (1) child characteristics, namely gender, language status (vocabulary production and comprehension), and temperament (negative emotionality, and surgency) and (2) parent characteristics, namely education status and parenting quality (sensitivity and positive affect). ISL data were drawn from 20 minutes of naturalistic home observations when the children were 18 months old. The results indicated that mothers spoke more than fathers, and the percentage of speech that referred to internal states was significantly greater for mothers than for fathers. However, further analyses indicated that the percentage of internal state terms used across different categories (desire, emotion, perception, or cognition term) and forms (question, contrastive, explanation, or prediction) of ISL did not differ as a function of parental gender. Hierarchical regressions, conducted separately for each parent, modeled child and parent characteristics to predict parental ISL. For mothers, only parenting quality predicted ISL, even after other predictors were considered. For fathers, with the same model, only child characteristics predicted ISL. Findings are discussed in terms of future directions for this type of work.

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Chapter 1. INTRODUCTION

Emotions are processes that involve the rapid appraisal of one's experience and the preparedness to act in order to maintain favorable conditions and deal with unfavorable conditions (Arnold, 1960; Barrett & Campos, 1987; Izard, 1977). Children who are able to utilize emotions in an organized and prosocial way that facilitates the achievement of their goals are thought to be emotionally competent individuals (Saarni, 1999). Becoming an emotionally competent individual is an essential developmental task, with implications for later academic success, social and emotional development, relationships, and mental health. Emotional competence includes skills such as emotion understanding, perspective-taking, and self-regulation. As is the case for many aspects of child development, emotional competence develops as a product of a transactional process that occurs as the child and caregivers interact with each other. Thus, individual differences in the development of emotional competence may arise as a result of child characteristics, parent characteristics, and their interaction. Parental discourse about internal states is one context in which children's emotions are socialized. Internal state language or ISL is thought to be important in cultivating a child's socioemotional competence (Denham, 1998; Dunn, Brown, & Beardsall, 1991). Often viewed as a predictor of child outcomes, few studies examine the child and parent characteristics that predict parental use of internal state language.

Internal state talk refers to communication about emotions, as well as communication about desires, perceptions, bodily sensations, and cognitions (Bretherton, Fritz, Zahn-Waxler, & Ridgeway, 1986). Most of the research on internal state language has examined how parents talk to children who are preschool age or older. With older

children, researchers have demonstrated that parent internal state talk is associated with children's own internal state talk (Dunn, Bretherton, & Munn, 1987; Cervantes & Callanan, 1998), emotion understanding (Dunn et al., 1987; Laible, 2004; Denham, Zoller, & Couchoud, 1994), and emotion perspective-taking (Garner, Jones, Gaddy, & Rennie, 1997; Dunn et al., 1991), as well as the development of theory of mind (Bretherton & Beeghly, 1982). Therefore, parental discourse with their young children about internal states is one way that parents help children develop at least some aspects of emotional competence. What is not known is how talk about emotion, or internal states generally, comes into parental discourse with children. One possibility is that parental internal state language is triggered by child characteristics, although it is also likely that parental characteristics influence internal state language use as well. One child characteristic that may influence parental internal state language is the child's language ability. Thus, the aim of the proposed study is to examine parental use of internal state language when children's expressive language is emerging.

In sum, both parent and child characteristics are likely to influence parental use of internal state language. Parents, especially those who are sensitive, are likely to use internal state language but they may do so less or more depending on the degree to which a child provides opportunities (e.g., if the child is highly emotional) or if the child is more verbal (e.g., has an expressive vocabulary). Moreover, child gender may be a factor in that there is a widespread assumption that boys' and girls' emotions are socialized differently. Because the extant literature on parental internal state talk has not fully examined these predictors, the present study investigated the ways in which child language status, as well as child gender and temperament, and parental characteristics,

including gender, education and parenting quality influence the amount and quality of parent-child internal state talk when children are 18 months of age. In addition, it was hypothesized that parenting quality would moderate the relation between child factors and the *amount* of ISL parents use, whereas parenting quality would mediate the relation between child factors and the *quality* of parental ISL. For the moderation model, it was assumed that all parents would use some ISL regardless of their parenting quality and that parenting quality would only serve to weaken or strengthen the association between child factors and amount of parental internal state talk. For the mediation model, it was assumed that the quality of parents' internal state talk would be dependent on parenting quality, such that only those parents who were sensitive and positive would use a higher quality of ISL.

Importance of Internal State Talk

Talking about internal states is one way that parents socialize their children to be emotionally competent individuals (Bretherton et al., 1986; Denham, 1998; Dunn et al., 1987; Eisenberg, Cumberland, & Spinrad, 1998; Gottman, Katz, & Hooven, 1997). Parents and children can use internal state terms to label and talk about their feelings, and as a guide for their own behavior. Emotion language, in particular, is thought to allow parents to be specific in teaching children how to feel, what to say, and what to do (Denham, 1998). In addition, talk about emotions enables parents to discuss the present circumstances, and also past and future events. Internal state language, in general, helps a child develop the tools to think about their wants, needs, and desires and to realize that others have states that are similar and different from their own.

Parents who talk about internal states have the ability to encourage certain patterns of expression and facilitate awareness and understanding of internal states by increasing the child's motivation to attend to events, by creating and/or strengthening the association in the child's mind between the expression of an internal state, the label for that state, and the situations that elicit those states, and by increasing the salience of the event so that the situations that elicit particular states are able to be recalled and talked about in the future. As children's ability to talk develops, parents have new opportunities to communicate with children about mental states and their labels.

Children begin using emotion words around 18 months of age and between 18 and 36 months of age children show considerable growth in talking about emotions. This advance in the use of emotion terms parallels their growth in language production (Bretherton et al., 1986). At 18 months of age, some children are just acquiring their first words and others have entered the vocabulary spurt. What is particularly notable is that during this same period, the late toddler and early preschool years, there is heightened emotional expressivity (Bretherton et al., 1986; Adamson & Bakeman, 1985). Thus, at a time when children are emotionally expressive, their emerging language skills offer a vehicle for understanding their experiences and moving toward more effective ways of dealing with them. Emerging linguistic abilities allow caregivers to label children's emotions and give verbal commands and feedback about the appropriateness of the child's emotions as children develop a vocabulary to describe their experience and to think about it.

Individual differences in children's use of internal state language, and emotion terms, may be a product of individual differences in parents' earlier use of internal state

language. Research has shown that the frequency and quality of internal state language may matter. The frequency of parental internal state talk has been associated with a multitude of positive child outcomes, including emotion understanding and perspective-taking (Dunn et al., 1991; Martin & Green, 2005), positive emotional displays (Denham, Cook, & Zoller, 1992), and children's own internal state language (Cervantes & Callanan, 1998; Dunn et al., 1987). In addition, mothers who talk more about past emotions during parent-child conversations have children who are happier and less angry during free play in preschool (Denham, Mitchell-Copeland, Strandberg, Auerbach, & Blair, 1997).

Parent remarks about internal states may take on different forms. Some parents may comment on the internal states associated with a particular event, without using the situation as an opportunity to explain the causes and consequences of the state or to guide behavior. Other parents, however, may consistently use emotional events as a chance to explain the antecedents and outcomes related to internal states. These two groups of parents may be talking about internal states with the same frequency, but the nature of the talk is qualitatively different.   Research has shown that children whose mothers use explanations during emotion simulations are less sad in preschool, whereas children whose mothers talk about their own distress with little or no explanation appear more affectively negative in preschool (Denham & Auerbach, 1995; Denham et al., 1992). In addition, mothers' explanations of the causes and consequences of emotion uniquely predicted children's emotional role-taking ability over and above the effects of the child's own emotion language (Garner et al., 1997). In this study, unelaborated comments about emotion were not related to emotion knowledge. Thus, there is reason to believe that

explanations may serve the goal of helping children understand and therefore regulate emotional experiences more than merely labeling an emotion. It is through the parental discussion of feeling states in the home that children learn to internalize feeling state terms and develop the ability to talk about these states themselves. Dunn and colleagues (1987) found that mothers are more likely to use internal state talk to guide behavior or to explain/clarify an inner state rather than simply comment on an internal state. Accordingly, when children are 18 months, they are more likely to comment on inner states, but by 24 months, about one-third of children's internal state talk is used to explain inner states or guide behavior. Thus, the quality of parental internal state talk also has relevant implications for the emergence of this talk in children.

Although emotion talk typically begins around 18-20 months of age, few 18-month olds talk about physiological and emotional states, and by 20 months of age only about 30% of children are able to label physiological and emotional states (Bretherton et al., 1986; Dunn et al., 1987). By 28 months of age, children use emotion terms relatively more frequently than cognitive terms, but their vocabulary pertaining to perceptions, physiological states, sensations, and volitions is more extensive and highly elaborated than for emotions and cognitions (Bretherton & Beeghly, 1982). Even though the acquisition of internal state language may seem relatively uniform, there are marked individual differences in terms of when and how often children use internal state language. Even though children may not have the capacity to talk about feeling states at 18 months of age, they are still active participants in the conversation. Dunn and colleagues (1987) found that mothers' frequency of internal state talk remained stable throughout the 18- and 24 month home visits; however, when children were 18 months

old, mothers made most of the references to internal states, but by the time children were 24 months old, they frequently talked about internal states as well. Moreover, there was a significant positive correlation between mothers' internal state talk when the children were 18 months old and children's proportion of internal state references and conversation turns at 24 months of age.

Although general trends can be found in the frequency and quality of parental internal state talk, given the variability in child-rearing practices across families, one would expect there to be a wide range in the amount and quality of parental internal state talk across families. The variance in the frequency of parental internal state talk may be directly related to child characteristics, including child gender, temperament, and language status. However, parenting quality (i.e., sensitivity and positive affect) may serve to attenuate or strengthen the relation between child characteristics and frequency of parental internal state talk. Furthermore, child characteristics may be indirectly related to quality of parental internal state talk through parenting quality.

Child Gender

The gender of the child may be a factor in predicting the frequency and quality of parental internal state talk. Parents discuss emotions with boys and girls at differing frequencies, and the nature of particular emotional discussions tends to vary across gender (Adams, Kuebli, Boyle, & Fivush, 1995; Dunn et al., 1987; Fivush, 1989). Adams and colleagues (1995) found that when children were approximately 3 years old, parents used more emotion words with daughters than with sons, and they used a greater variety of emotion words with daughters than with sons. Fivush (1989, 1991) found that when children were between 2.5 and 3 years of age, mothers discussed anger more with

sons than with daughters, whereas mothers discussed sadness more with daughters than with sons. In terms of the nature of emotion talk, research has shown that when children are about 3 years old, parents discuss the causes of emotions in a similar manner for boys and girls, except both mothers and fathers discuss the causes of sadness more with daughters than with sons. This work has also demonstrated that parents discuss more interpersonally-situated emotional experiences with daughters than with sons; whereas parents discuss emotions as stemming from autonomous activities more often with sons rather than with daughters (Fivush, Brotman, Buckner, & Goodman, 2000). This research fits with gender stereotypes that assume males experience and express anger more frequently than females, and females experience and express sadness more than males.

Given that the current investigation included a sample of younger children, child gender may not yet be a factor in predicting internal state talk, at this young age. However, if gender is an important factor, it should follow the same trends as mentioned above. Specifically, parents would be expected to talk more frequently about internal states and use a higher quality of internal state language when the target child is a girl than when the target child is a boy.

Child Temperament

It is thought that maternal perceptions of children's temperament are likely to influence the frequency and quality of internal state talk in families (Laible, 2004). Discourse about internal states may be facilitated or impeded depending on particular attributes of the child's temperament. Temperament can be thought of as patterns of individual differences in reactivity and self-regulation that are biologically based

(Rothbart, 1981). Reactivity is a dimension related to one's characteristic level of neurophysiological arousal in response to emotion-eliciting events, whereas self-regulation refers to the processes that modulate that reactivity. Child temperament may influence the opportunities parents have to converse about the causes and consequences of, and the connections among, internal states. For example, a child who is low in reactivity may have fewer emotional episodes than other children, and therefore may not occasion parents with as many chances for instruction about emotions or other internal states. Research has demonstrated that child temperament influences maternal behavior in a variety of contexts (Rothbart & Bates, 1998). The current study investigated two aspects of child temperament: negative emotionality and extraversion/surgency.

Children's negative emotionality is determined by their levels of anger, sadness, social fearfulness, and difficulty in being soothed. A child who is high in negative emotionality, for example, would be characterized by intense negative emotional reactions which may include crying, tantrums, a low threshold for aversive stimuli, and intense activation of the sympathetic nervous system (Goldsmith et al., 1987). These children are often thought of as having a difficult temperament. Research has shown that mothers who perceive their children to be high in negative emotionality are more punitive and avoidant in reaction to children's negative emotions than children perceived as low in negative emotionality (Eisenberg & Fabes, 1994). Other studies have found that parents are more likely to try to regulate their child's behavior if the child is prone to negative emotions (Casey & Fuller, 1994). There has been only one study that addresses the way in which child temperament influences mothers' internal state talk. Laible (2004) found that mothers who perceived their children to be high in negative reactivity used more

elaboration on a reminiscing task compared to children who were perceived as low in negative reactivity. Furthermore, if the child was high in negative reactivity, mothers and children were more likely to discuss negative emotions during the reminiscing task than if the child was low in negative reactivity. These findings suggest that mothers do adjust their style of discourse based on their child's temperament.

Children's degree of extraversion/surgency is determined by their level of activity, pleasure, impulsivity, positive anticipation, and lack of social fearfulness. It can be thought of as a combination of activity and sociability. A child who is high in extraversion/surgency would be characterized as high in behavioral arousal and as one who seeks out opportunities to share activities, to receive attention from others, and to get involved in social interaction (Goldsmith et al., 1987). Laible (2004) found that children who were perceived as low in extraversion/surgency had mothers who used frequent elaboration when reminiscing. This is the only study that has examined the relation between temperament and internal state language; therefore, the current literature provides a limited basis from which to make predictions about the association between these two factors. One might speculate, however, that children who are high in extroversion/surgency may be more likely to seek out conversation partners and also to be viewed as favorable conversation partners than children low in this trait. Therefore, children who are high in extraversion/surgency may provide parents with more opportunities to discuss internal states.

Although there is still much to learn about how child temperament influences parental internal state talk, the literature on the valence of emotional episodes and emotion talk may provide some additional suggestions. Lagatutta and Wellman (2002)

found that parents and children talk about positive and negative emotions at similar rates; however, when conversations about negative emotions occur, there is significantly more talk about past emotional experiences, the causes of emotions, and the connections between emotions and other internal states, as well as significantly higher rates of open-ended questions and a more extensive vocabulary of emotion words than in conversations about positive emotions. Similar results were found in Burger and Miller's (1999) study of emotion talk in working- and middle class families. Although conversations about negative emotions predominated in the working class families and not in the middle class families, the discourse about negative emotions in both communities was more varied than discourse about positive emotions. Approximately 90% of the positive emotion talk in both communities was accounted for by emotion state terms, whereas the negative emotion talk that was accounted for by emotion state terms was about 52% and 72% for the working class and middle class families, respectively. The remainder of the discourse about negative emotions could be explained by emotion verbs, expletives, and negative attributions.

Based on the literature, it appears that negative emotions are a factor in determining the quality of parental conversations about internal states. Children who are high in negative emotionality may provide more opportunities for elaborate discussions about internal states simply because they have more instances of negative emotional episodes. In addition, children who are high in extraversion/surgency may also afford parents with more chances for internal state talk and discussions that include explanations of the causes and consequences of internal states because they are more easily viewed as potential conversation partners.

Child Language Status

Because parents tend to behave in ways that complement their children's emerging abilities, it follows that children who are more advanced linguistically will be talked to more frequently and in more sophisticated ways by their parents (Denham et al., 1994; Lagatutta & Wellman, 2002). Between ages 9 and 21 months, there is an increase in children's emotional expression and during this same period, there is rapid development of language (Adamson & Bakeman, 1985; Bloom, Beckwith, & Capatides, 1988). Although children at this age differ greatly in the degree to which they acquire expressive language skills, they are still active participants in conversations with their caregivers. Children with more sophisticated linguistic abilities are able to communicate with people more easily and are seen as more attractive communication partners. Therefore, children with greater language ability may have more opportunities to engage in conversations with others, which in turn allows them greater access to the interpersonal functions of emotion.

In addition to providing opportunities for parents to discuss internal states, temperament has also been associated with individual differences in the acquisition of language skills in children (Slomkowski, Nelson, Dunn, & Plomin, 1992; Karrass & Braungart-Rieker, 2003; Dixon & Smith, 2000; Bloom et al., 1988). Some research suggests that children who are low in reactivity will achieve linguistic milestones (i.e., first word and vocabulary spurt) earlier than those children high in reactivity (Bloom & Beckwith, 1989; Bloom & Capatides, 1987). Bloom and colleagues assert that the expression of emotion and the production of language require cognitive resources. Therefore, during times of qualitative change in linguistic ability, such as when children

are saying their first words and beginning their vocabulary spurt, most of their cognitive effort is being put towards speaking, rather than expressing emotion. This means that it would be extremely difficult for a child to talk and exhibit an emotion at the same time, and children would be more likely to speak during episodes of neutral emotion. In accordance with this position, Bloom and colleagues have found that children between 9 and 24 months of age say significantly more words during low or neutral emotion episodes than during episodes of greater emotional intensity (Bloom & Beckwith, 1989), and children who spend greater amounts of time in neutral emotional states have their language transitions earlier than children who have more episodes of emotionality (Bloom & Capatides, 1987). Therefore, children who are low in the temperamental traits of negative emotionality and extraversion, which is characterized by heightened positive emotionality, would be expected to spend greater amounts of time in neutral affective states and reach linguistic transitions earlier than those high in negative emotionality or extraversion. However, further refinements in the work of Bloom and colleagues (1988) have shown that delays in the achievement of linguistic transitions is only related to heightened positive emotionality, which would lead one to conclude that it is children who are high in extraversion that will be slower in acquiring language than those low in this trait.

There has been other research, however, that has demonstrated that children high in extraversion actually acquire language earlier than those low in the trait (Slomkowski et al., 1992; Dixon & Smith, 2003; Kubicek, Emde, & Schmitz, 2001; Karrass & Braungart-Rieker; 2003). Slomkowski and colleagues (1992) found that extraversion at age 24 months is significantly related to language comprehension and production at age

24 months and 36 months, as well as language comprehension at age 7. Other studies have revealed that children who displayed relatively more smiling and laughter at 7 months had advanced language comprehension at 7 months and 10 months of age. In addition, a heightened positive mood at 13 months predicted advanced language productivity at age 20 months (Dixon & Smith, 2000). However, it has been demonstrated that when boys displayed relatively less smiling and laughter at 12 months, greater levels of maternal responsiveness at 12 months predicted better language abilities at 16 months of age (Karrass & Braungart-Rieker; 2003). Moreover, when children showed less distress to novelty at 12 months, greater maternal responsiveness at 12 months was associated with more advanced language abilities at 16 months. Thus, it seems that parents play an especially important role in children's language development when children are low in emotional reactivity.

The aforementioned findings would seem to conflict with those of Bloom and colleagues, but the disparate results may be a function of the different systems of measurement. More specifically, Bloom and colleagues used a microanalytic method, whereby children's speech and affect were transcribed and coded in the same observation session. Thus, the results reflect children's affect and speech performance at a single moment in time. In contrast, Slomkowski et al. (1992), Dixon and Smith (2000), and Karrass and Braungart-Rieker (2003) assessed children's temperamental emotionality and language ability more globally through maternal report, using separate measures.

Another explanation for the different findings may be that children who are low in reactivity are better able to learn from their environment, whereas children who are highly reactive are too preoccupied with internal states to attend to environmental cues

(Karrass & Braungart-Rieker, 2003). Thus, when children are in neutral emotional states, as in the studies by Bloom and colleagues, they are more easily able to learn from their caregivers. For children who are low in both extraversion and negative affectivity, responsive parenting may be the key to advanced language acquisition. On the other hand, children who are high in both extraversion and negative affectivity may be viewed as having a difficult temperament, and it may be harder for parents, even those who are high in sensitivity, to assist them in developing language skills. As a result, these children will probably be slower than others in acquiring language abilities. However, the case becomes more complicated when children are high in one emotional valence and low in the other. It is uncertain how quickly children low in extraversion (i.e., shy children) and high in negative affectivity will acquire language skills. Although shy children may talk less, it does not mean that they are incapable of talking. In addition, assuming that these children are primarily shy in novel situations and talking with their mother is not a novel situation, then there is reason to believe that they will be able to fully exhibit their language skills with their mother. Children who are high in extraversion and low in negative affectivity may have the optimal combination of temperamental traits for the acquisition of language. Children who are extraverted may be more willing to seek out partners for conversation, and the combination of high extraversion and low negative affect may make them more likely to be seen as attractive communication partners. This would create more opportunities for these children to have linguistic interactions; thus promoting earlier transitions through linguistic milestones than other children with different temperaments.

Given the predictions that high negative emotionality may increase the quality of parent talk about internal states and high extraversion predicts advances in language acquisition, it appears that the quality of parenting may be the major factor in determining the nature of parental conversations about internal states. More specifically, child temperament may be indirectly related to the quality of parental internal state talk through optimal parenting characteristics, including high sensitivity and high positive affect, whereas these same parenting characteristics, may moderate the relation between temperament and the frequency of parental talk about internal states.

Parent Gender

Because the expression and discussion of emotion varies by gender, one would expect these gender differences to be manifested in child-rearing, as well. However, there are relatively few studies that include fathers in the methodology because the focus has traditionally been on the relationship between the primary caregiver (i.e., the mother) and the child. Therefore, most studies are unable to address the unique contributions of fathers in child development or the differences in parenting behavior as a function of the gender of the parent. In the work that has been done on the relation between fathers and children's emotional competence, it has been shown that fathers do in fact provide unique contributions to their children's development. For example, fathers' control over children's emotional expression uniquely predicts children's emotional display rule knowledge over and above the contributions of mothers (McDowell & Parke, 2005). In addition, fathers who responded to children's negative emotions with negative affect were more likely to have children who were physically aggressive and less socially competent, than fathers that did not respond with negative affect. Furthermore, fathers

who were more accepting and responsive to children's expressions of anger and sadness at 5 years old had children who were socially competent at 8 years old (Gottman, Katz, & Hooven, 1996). Other research has shown that father's socialization of emotional expression is related to boys' social competence in kindergarten and first grade, whereas father's controlling behavior predicts teacher ratings of girls' aggression (McDowell, Kim, O'Neil, & Parke, 2002).

In terms of parental communication with children, research has shown that mothers talk more overall (Fivush et al., 2000; Leaper, Anderson, & Sanders, 1998) and use praise more often than fathers (Leaper et al., 1998). In an examination of internal state language, Fivush and colleagues (2000) found that mothers use significantly more emotion words than fathers, and mothers discuss the causes of emotions to a greater extent than fathers. In light of the relevant literature, it seems that mothers will probably use internal state language more frequently than fathers and mothers' internal state language will be of a higher quality than that of fathers.

Parental Education

Parental education has been consistently associated with both parenting behavior and child outcomes. Parental education has been associated with the amount of time parents spend with their children, with more educated parents spending greater amounts of time with their children, than less educated parents (Hill & Stafford, 1980; Sayer, Gauthier, & Furstenberg, 2004). It is thought that this difference in time spent with children is accounted for by variation in parental values and behaviors that arise from the realities of living within different social classes (Rubin, 1976). When spending time with their children, more educated parents tend to focus more of their time on activities that

stimulate their children's cognitive development (Bianchi & Robinson, 1997; Hofferth & Sandberg, 2001). In a similar vein, maternal education has also been related to mothers' use of planning, effective strategy use, less directive instruction, and praise during problem solving tasks (Blechman & McEnroe, 1985; Borduin & Henggeler, 1981; Lasosa, 1980; Supplee, Shaw, Hailstones, & Hartman, 2004). More educated mothers were more likely to regulate task difficulty when they perceived their children as having a difficult temperament, whereas less educated mothers regulated task difficulty the same, regardless of their perception of child temperament (Neitzel & Stright, 2004). Maternal education is also related to providing metacognitive information about the tasks. In addition, mothers with more education were more likely to provide encouragement to their children, especially if they perceived the child to have a difficult temperament; whereas for less educated mothers, child temperament was not related to encouragement. Furthermore, less educated mothers who perceived their children to have a difficult temperament were less likely to encourage their children to take an active role in the problem-solving process; whereas more educated mothers who perceived their children to have a difficult temperament were more likely to encourage their children to take an active role in the problem solving process. It is thought that mothers with higher levels of education have greater exposure to multiple learning strategies and styles (Flavell, 1979). These studies suggest that parents who have attained higher levels of education are more likely to tailor their parenting style to the perceived needs of their children.

Maternal education has also been associated with other cognitive tasks, such as maternal talk with young children. During storybook reading, research has shown that all mothers adapted their discourse to their children's developmental level; however, the

mothers with more education compared to those with less education used more elaboration in the story-telling, and the highly educated mothers established more relationships with the children's own experience while reading the books (Mendonza, 1995). Other research has demonstrated that mothers with a higher level of education talk more to their toddlers than less educated mothers (Hoff-Ginsberg, 1994; Rowe, Pan, & Ayoub, 2005). In terms of the quality of the discourse, college-educated mothers produced more conversation-eliciting talk and less directive talk during interaction than did high school-educated mothers (Hoff-Ginsberg, 1994). More educated mothers also demonstrated a greater amount of lexical diversity when conversing with their toddlers than less educated mothers (Rowe et al., 2005).

With respect to the relation between parental education and internal state talk, in particular, research has shown that mothers who attained higher levels of education used more cognitive terms with their children than mothers with lower levels of education (Jenkins, Turrell, Kogushi, Lollis, & Ross, 2003). No differences were found in the frequency of other types of internal state language based on education level. This research suggests that parents who have attained a higher level of education may talk more about certain types of internal states with their children and these conversations will probably be more sophisticated compared with parents with lower levels of education.

Sensitive Parenting

Parental sensitivity reflects parents' accuracy in interpreting their children's signals and causes of negative emotionality. According to Maccoby and Martin (1983), parental sensitivity consists of assessing the problem, taking action consistent with this assessment, and evaluating the consequences of the intervention. In research studies, the

construct of sensitivity has often been operationalized as the frequency and appropriateness of mothers' responses to infant emotional displays during face-to-face and daily activities (Eisenberg et al., 1998). It is thought that sensitive parents modify their behavior in response to infant cues in order to maintain an optimal level of arousal for the infant. Thus, a parent who tries to elicit positive emotion from the infant and also paces her activity level in response to the infant's signals would be classified as a sensitive parent. These infant-parent interactions may facilitate emotion regulation through the occurrence of sensitive parental behavior.

Researchers have found that infants whose mothers were appropriately responsive (i.e. maintained a moderate and not overly stimulating level of arousal) during face-to-face interactions expressed higher levels of positivity and more emotion regulation than infants whose mothers were less responsive to infant cues (Gianano & Tronick, 1988; Stifter & Moyer, 1991). In addition, parents who respond promptly and effectively to infant distress are thought to modulate the infants' immediate arousal, as well as provide learning experiences for the infant (Kopp, 1989). Research has shown that infants who remain low in negative reactivity from birth to 5 months of age have more sensitive mothers than infants' whose crying increased over that time period, which suggests that sensitive parenting helps infants to either become less reactive or develop effective emotion regulation strategies (Fish, Stifter, & Belsky, 1991). Sensitive parenting has also been associated with a multitude of positive child outcomes, including the development of secure attachments (Ainsworth, Blehar, Waters, & Wall, 1978), cognitive development (Seifer, Schiller, Sameroff, Resnick, & Riordan 1996), and socio-emotional competence (Denham, 1993; Steelman, Assel, Swank, Smith, & Landry, 2002). In contrast, when

parents are not sensitive to infant emotional signals, infants show signs of distress. For example, infants' whose mothers provide too much stimulation during interactions show less positive affect than do infants whose mothers provide somewhat less stimulation (Gianano & Tronick, 1988). However, infants' whose parents are underresponsive show increases in negativity and less sophisticated forms of regulation, such as thumb sucking (Stifter & Moyer, 1991).

Based on the literature, it seems that sensitive parents are able to strike an optimal balance between providing too much stimulation and not enough stimulation so that their infant is moderately aroused. What is not known, however, is whether sensitive parenting is related to the frequency and/or quality of parental internal state talk. It seems fitting that one way in which sensitive parents might intervene during an affectively-laden problem is through verbal communication about the child's internal state. Parental talk about a child's internal state may help to modify her level of arousal and at the same time function as a learning experience for the child. Therefore, one would expect that parents who are high in sensitivity will talk about internal states more often and that this talk will be of a higher quality than parents who are low in sensitivity.

Parental Positive Affect

Parental affect is thought to both organize parenting behavior and reflect the quality of the parent-child relationship (Dix, 1991). Emotions are motivators that mobilize parents' resources for efficient and focused responding to the situations that arise. Specifically, parents' emotions motivate their efforts to console, defend, discipline, and stimulate their children. Emotion and cognition can be thought of as interwoven processes in the sense that emotional states influence which information is attended to,

how that information is processed, and the interpretation of the information (Bugental & Goodnow, 1998). Parents who lack emotional engagement, such as those who are depressed, tend to be cold, unresponsive, and low in limit setting (Bousha & Twentyman, 1984; Field, 1994). On the other hand, strong negative emotions are thought to disrupt parenting by increasing parents' tendency to use short-term, self-focused techniques as in power assertive discipline, whereas positive emotions are thought to facilitate teaching and correction in parents (Dix, 1991).

Parental negative affect has been found to disrupt parenting by creating a propensity in parents to view children negatively, by impeding parental monitoring and attention, and by hindering parental problem solving, reasoning, and information processing (Brody & Forehand, 1988; Goodnow, 1988; Patterson, 1982). Because emotional expression is often a reciprocal process, parents who express high levels of negative emotion toward their children are also more likely to elicit irritation and disappointment from their children, which may then contribute to the escalation of coercive interaction (Patterson et al., 1984). In addition, distressed parents are likely to speak loudly and harshly, which invokes fear and dysregulation within children, such that they are less able to attend to and remember parental messages.

In contrast, parents who are high in positive affect are thought to view their children more positively, have the cognitive resources available to appropriately monitor and attend to child behavior, and use situations that arise as opportunities to teach their children (Dix, 1991). Moreover, parental positive affect tends to elicit enthusiasm and cooperation from children (Lay, Waters, & Park, 1989) and decrease children's propensity for overarousal, which may promote children's processing of parental

messages. Accordingly, research has shown that parents who are high in positive emotion and low in negative emotion during interactions with their children have children who exhibit increased social competence and understanding, as well as decreased levels of hostility, externalizing problems, and internalizing problems (Dunn & Brown, 1991; Lindahl, 1998; Matthews, Woodall, Kenyon, & Jacob, 1996). In terms of parental expressivity in the home more generally, positive affect has been related to children's social competence, emotion understanding, prosocial behavior, attachment security, positive emotion, and high quality parent-child relationships (Boyum & Parke, 1995; Bronstein, Fitzgerald, Briones, Pieniadz, & D'Ari, 1993; Denham, 1993; Denham et al., 1997; Denham et al., 1994; Halberstadt, Crisp, & Eaton, 1999). It has also been demonstrated that mothers' positive emotional responsiveness is associated with child emotion situation knowledge and child emotion language (Denham et al., 1994). Thus, parents who are high in positive affect create a home environment that facilitates the development of emotional competence in children.

Few studies have specifically examined the relation between parental affect and talk about internal states. Denham and colleagues (1994) found that maternal positive emotional responsiveness was associated with children's emotion language. However, it is unclear as to whether there is a direct link between maternal positive affect and children's emotion language or whether the connection is indirect and mediated by parental internal state talk. On the other hand, although situations that invoke negative emotions in children afford parents the opportunity to discuss internal states, Dunn and Brown (1994) found that for families high in negative affect these situations were less likely to be used as opportunities for learning. Based on these studies, as well as those

conducted in related areas, it would seem that parents who are high in positive affect and low in negative affect would be more likely to discuss internal states with their children and the nature of these discussion would be of a higher quality than those parents low in positive affect.

Study Overview

The goal of the present study was to understand the factors that predict the amount and quality of parental internal state language in a naturalistic setting. Four predictions were tested:

Prediction 1: Each of the selected child factors will be related to the frequency and quality of parental internal state talk. Specifically, the following relations between child factors and parental internal state talk were expected: (1) parents will use more internal state talk when the target child is a girl and this talk will be of a higher quality than when the target child is a boy because girls develop language skills earlier than boys, (2) children who are more temperamentally emotional will afford more opportunities for internal state talk, and thus parents will talk about internal states more with these children and the talk will be of a higher quality, (3) children with larger vocabularies will stimulate more internal state talk from their parents and this talk will be of a higher quality, and (4) children who understand more words will also stimulate more and higher quality parental internal state talk.

Prediction 2: Each of the selected parent factors will be related to the frequency and quality of parental internal state talk. Specifically, the predicted relations between parent factors and parental internal state talk are as follows: (1) mothers will talk more about internal states and their talk will be higher in quality than that of fathers, (2) parents who

have attained higher levels of education will talk more about internal states and their talk will be of a higher quality because more educated parents simply talk more often and in a more sophisticated way than less educated parents, (3) parents rated higher in sensitivity will use more and higher quality internal state language, and (4) parents rated higher in positive affect will use more and higher quality internal state language.

Prediction 3: The relation between child factors (i.e., gender, temperament, and language status) and the *amount* of parental internal state talk will be moderated by parenting quality (i.e., sensitivity and positive affect).

Prediction 4: The relation between child factors and the *quality* of parental internal state talk will be mediated by parenting quality.

Chapter 2. METHOD

Data for the current study was taken from the Development of Toddlers Study (D.O.T.S; Cole, Crnic, Nelson, & Blair, 2000). Only the tasks and measures relevant to the current study are described.

Recruitment Procedures

Families with a young child (younger than 18 months) and who lived in specific regions of a semi-rural city in the Northeast, known to have large numbers of young families with incomes at or below the national median income, were recruited to participate in the Development of Toddlers Study (D.O.T.S.), a longitudinal project investigating the development of emotion regulation between 18 and 60 months of child age (Cole et al., 2000). The study further focused on sampling families with a range of income that was just above the U.S. government's definition of poverty but below or near the community median income. To recruit families of 18-month olds whose income placed them above the U.S. government's definition of poverty but below the community median income, several strategies were used: (1) Community Leader Contacts (e.g., Clergy, daycare providers and preschool administrators, medical practices, and local officials were contacted to discuss the study and solicit their support for distributing and posting flyers), (2) Community Events - project staff attended and distributed flyers at community events, such as health fairs, town festivals, and Head Start fairs, (3) Letter Campaign – based on birth announcements published in local newspapers, families were contacted by letter and then called to see if they were interested in the project, and (4) Word-of-Mouth of Enrolled Participants - enrolled families recommended friends and family members with an 18-month old by supplying names, addresses, and phone

numbers. Project staff then proceeded to contact potential participants through methods specified in the letter campaign.

After families expressed interest in the project, they participated in a two-step phone interview, conducted by research assistants. Advanced undergraduate and clinical graduate students, who were blind to the objectives of the study served as research assistants. The first step was designed to assess whether the family met eligibility criteria. Once it was determined that the family met study requirements, the research assistants conducted an enrollment interview during which family and demographic information was collected.

During the first phone interview, families were asked a series of questions to determine (a) whether they met eligibility requirements for household income, maternal education, child age, and legal guardianship, and (b) whether there were any exclusionary criteria (e.g., family planned to move from the area, child had handicaps that would interfere with procedure administration, child had serious medical or psychological disorder that would interfere with administration, child did not live with current guardian since 3 months of age).

Enrollment Procedures

After determining family eligibility, families were asked several questions regarding family and demographic status. Specifically, families were asked questions about family composition, family racial/ethnic status, child care history, highest level of parental education achieved, religious affiliation, parental employment, and salary information. Because of the longitudinal nature of the study, the names, addresses, and numbers of two individuals who would know how to get in contact with the enrolled

family were also gathered. Recruitment led to the enrolment of 128 families. Of this initial group, three families did not meet financial criteria, and one family withdrew before completing 18-month data.

Participants

The present study sample included 124 families with 18-month old children, who successfully participated in the 18-month home visit. Table 1 shows the percentage of participants in each demographic category for ethnicity, education, and employment. The mean age of mothers was 30.86 years old (SD = 5.63), and the mean age of fathers was 32.57 years old (SD = 6.20). There were 68 boys and 56 girls in the sample. In terms of birth order, 43.5% of these children were first-born, 39.5% were second-born, 12.1% were third-born, and 4.8% were the fourth- or later- born. The mean annual income for mothers was $11,587.06 (SD=11,935.88), and for fathers was $28,576.94 (SD=13,661.56). The average household annual income (all sources) at 18 months was $40,502.94 (SD=14,480.727), whereas the average household per capita income at 18 months was $10,881.21 (SD=4,279.15).

Table 1. Percentage of Participants in Each Demographic Category

		Mothers[a]	Fathers[b]	Children[c]
Ethnicity	Caucasian	97.6	98.4	93.5
	African American	0.8	0.0	0.0
	Latino	0.8	1.6	0.0
	Other	0.8	0.0	6.5
Education	Some high school	2.4	4.0	
	Completed high school	18.5	31.5	
	Some vocational school	5.6	1.6	
	Completed vocational school	9.7	7.3	
	Some college	21.8	23.4	
	Completed college	36.3	25.8	
	Earned an advanced degree	5.6	4.0	
	Missing	0.0	2.4	
Employment	Unemployed/homemaker	29.0	5.7	
	Part-time	30.6	1.6	
	Full-time	40.3	91.8	
	Missing	0.0	0.8	

[a]n = 124. [b]n = 122. [c]n = 124.

Home Visit Procedure

The home visit was conducted when the child was 18 months old. The D.O.T.S. project coordinator scheduled the home visits during a time in which most family members could be present and when the target child was alert. Families were told that the object of this home visit was to observe the target child in the natural setting of the family's home, paying special attention to toddler's emotion and language use.

Additionally, the coordinator explained that the family should engage in activities as they would normally.

Upon arrival at the home, the D.O.T.S. research assistant answered any questions about the visit or the project and then obtained written parental consent. The research assistant then observed and coded the child and the child's mother and father using the Parent-Child Interaction Rating System (Belsky, Crnic, & Woodworth, 1995).

In addition, naturally occurring speech samples were audio-taped during the home visit for the coding of parental and child expressive language. At the end of the home visit, parents were financially compensated and given packets of questionnaires on family, marriage, and child functioning (including the Toddler Behavior Assessment Questionnaire-Revised used in the present study), to complete before the 18-month lab visit, which was scheduled to follow.

Research Assistants

As mentioned earlier, advanced undergraduate and clinical graduate students, who were blind to the objectives of the study served as research assistants. All research assistants who performed home visits underwent protocol training before conducting these visits, including instructions and demonstrations by the principal investigator following detailed protocol manuals. The principal investigator supervised all research assistants, reviewed audiotapes of the home visits, and provided weekly meetings to guarantee protocol adherence and to maximize the quality of the data. Due to logistical constraints, we were not able to randomize the research assistants to home visits. Thus, there is a chance that experimenter effects may influence the results.

Child Measures

      Child temperament. Child temperament was assessed using the Toddler Behavior

Assessment Questionnaire-Revised (TBAQ-R; Goldsmith, 1996) when the child was 18

months old. The TBAQ-R is a 105-item questionnaire designed to assess temperament-

related behavior in children 16-36 months of age by asking the parent to report on the

child's reactions to a number of situations. The TBAQ-R was administered to the

primary caregiver, who was asked to indicate how often she observed the toddler engage

in each behavior, rating the frequency on a 7-point scale, ranging from never to always.

This measure has the following subscales: activity level, anger, attentional focusing,

attentional shifting, high pleasure, impulsivity, inhibitory control, low pleasure,

perceptual sensitivity, pleasure, positive anticipation, sadness, social fearfulness, and

soothability. These scales are combined to derive three factors: Negative affectivity (i.e.,

anger, sadness, social fearfulness, and soothability-reversed), Effortful control (i.e.,

attentional focusing, attentional shifting, inhibitory control, low pleasure, perceptual

sensitivity), and Extraversion/surgency (i.e., activity level, high pleasure, impulsivity,

positive anticipation, and social fearfulness-reversed). Internal consistency reliability

estimates (alphas) for the three factors range from .77 to .81. For the analyses that

follow, each child's mean score on the Negative affectivity and Extraversion/surgency

factors was used.

      Child language status. In order to measure child language status at 18 months,

mothers completed the MacArthur Communicative Development Inventory – Words and

Gestures (CDI; Fenson et al., 1993) during the laboratory visit. The CDI is an 889- item

form on which mothers indicate how many gestures, words, and phrases the child

understands and uses. Although the children were 18 months of age, the Words and Gesture form, which is normed up to 16 months of age, was used. The reason for using this form was that the CDI was normed on children from advantaged households; however, the children in this sample are from homes in which geographic isolation and economic strain are prominent features of their environment. Because the CDI – Words and Gestures was not normed for 18 month olds, only raw scores are used in the analysis. For the analyses, the vocabulary comprehension and production scores, which have alphas of .95 and .96, respectively, were used.

Parent Measures

Parent education. Parent education was assessed through self-report during the initial enrollment interview, which was conducted by the project coordinator. Each parent was asked to report the highest level of education received. As seen in Table 1, this yields seven categories. Education level was rank ordered on a scale from 1-7, such that "some high school" received the lowest ranking and "earned an advanced degree" received the highest ranking.

Parenting quality. Parenting quality was assessed during the 18 month home visit using a coding system, developed by Belsky and colleagues (1995), called the Parent-Child Interaction Rating System (see Appendix A). In this procedure, the observer watches the family for 10 minutes and then makes ratings during the following 5 minutes. These rating periods characterize the quality of parenting as seen during the previous 10 minutes on a 5-point scale. Each parent who was present was rated on the degree of: (a) sensitivity and (b) positive affect that they exhibited. This pattern was repeated six times at the 18-month visit yielding 60 minutes of rated observations.

The home visitors were advanced undergraduate and graduate research assistants who received approximately three months of training, which included instruction, demonstrations, use of videotapes from other studies, and practice during live observations. The initial home observers were trained by Keith Crnic (co-author of the coding system) and subsequent home observers were trained by master coders from the initial group. All observers were unaware of the study aims. Due to logistical constraints, the observers were not randomly assigned to home visits. Reliability criteria for training were defined as a minimum of 70% exact agreement and 95% agreement within one scale point (against a master coder) on the 5-point rating scales. To ensure cross-rater reliability and to avoid observer drift, consensus ratings were regularly conducted on videotaped home observations. Reliability was calculated from 7% of the home visits: 70% of ratings were an exact match and 98% were within one-point.

In order to reduce variables for the analyses, a mean sensitivity and a mean positive affect score was created for each parent representing the average ratings across all six epochs.

Internal State Talk

Transcripts of naturally occurring speech from the aforementioned procedures were used to evaluate parental internal state talk when the child was 18 months old, using an established coding system developed by Dunn and Hughes (2004), The Inner State Coding Manual (see Appendix B). All instances of explicit internal state terms were identified and assigned to the following categories: (a) desire terms, (b) emotional terms, (c) perceptual terms, and (d) cognition terms. References to inner state terms were coded in terms of the individual who was speaking, the one who was being addressed, and

whose inner state was being referred to. In addition, the form and function of the inner state references were coded. For form, each internal state reference was assigned to one of the following categories: (a) question, (b) contrastive, (c) explanation, (d) prediction and (e) other. For function, each reference was assigned to one of four categories, including: (a) genuine mental state reference, (b) conversational, (c) directing interaction, or (d) not applicable. The "not applicable" code was used only for desire terms, which could be classified as both genuine mental state references and directing references. Undergraduate research assistants who were blind to the objectives of the study served as internal state coders. All coders were trained by the first author under the supervision of the principal investigator and with the consultation of Judy Dunn and Claire Hughes. Training included demonstrations by the first author, using the Inner State Coding Manual. Once trained, coders were randomly assigned transcripts to code for internal state language. These undergraduate research assistants also obtained word counts for each speaker in the transcripts. Inter-rater reliability among internal state coders was calculated on 20% of the transcripts. An intraclass correlation coefficient was calculated for the frequency of internal state terms, and Cohen's κ was calculated for the following codes: speaker, addressee, subject of reference, form, and function. The intraclass correlation for the frequency of internal state terms was .99, and the Cohen's κ ranged from .78 to 1.0.

The Total Word Usage for each parent was indexed by the total number of words said by each parent during the home visit. The Frequency of Internal State Language used by each parent was indexed by the sum of desire, emotion, perception, and cognition terms said by each parent. In addition, the Percentage of Internal State Language used by

each parent was indexed by the Frequency of Internal State Language used by each

parent divided by the Total Word Usage for each parent. The Percentage of Internal State

Language variable was used as a measure of frequency that would account for differences

in parents' verbal fluency. In addition, the Percent of High Quality Internal State

Language for each parent was indexed by the sum of internal state references in the form

of a contrastive, explanation, and prediction divided by the Frequency of Internal State

Language used by each parent during the home visit.

Chapter 3. RESULTS

Missing Data

Of the 124 families in the original sample, 19 were missing transcripts due to technical failure, leaving 105 mothers with data suitable for analysis. Fathers were more likely than mothers to have missing data; there was data for 94 fathers from the 105 eligible families. Two families were single mother households. In addition, there was no father data for nine families, either because they were not home on the day of the visit, or they were home but not in the vicinity of the child during the entire home observation (60 minutes). Four fathers who were home but did not enter the vicinity of the child for the period from which the 20-minute speech sample was taken were treated as participating and given internal state language counts of '0.'

Of the 105 mothers and 94 fathers in the sample, 1 mother and 16 fathers were missing one of the two 10-minute epochs used for the 20-minute speech sample. The missing data in these 17 cases were due to either technical failure or parental absence for that epoch. Because internal state references were not highly correlated between epochs, sub-sample means for the word usage and internal state language variables of the missing epoch were imputed for these 17 cases. In the analyses to follow, separate models were run for mothers and fathers in order to retain as much data as possible for the mothers in the sample.

Preliminary Analyses

Prior to data analysis, variables were examined for outliers and their distributions were examined to determine their suitability for parametric statistics. For any skewed distributions, transformations were attempted to determine whether the distributions

could be improved. The means and standard deviations for the parenting quality and child language and temperament variables are shown in Tables 2 and 3.

Table 2. Means and Standard Deviations (SD) for Parenting Quality

Parenting Quality	Mothers (N = 105)		Fathers (N = 94)		$p <$
	M	SD	M	SD	
Positive Affect	2.88	.70	2.57	.76	.01
Sensitivity	3.33	.80	2.84	.94	.001

Table 3. Means and Standard Deviations (SD) for the Child Variables for Boys and Girls

Child Variables	Boys			Girls			$p <$	Total		
	M	SD	N	M	SD	N		M	SD	N
Vocabulary Comprehension	233.23	93.08	57	251.85	85.35	41	ns	241.02	89.95	98
Vocabulary Production	64.58	64.08	57	99.07	84.66	41	.05	79.01	74.96	98
Negative Emotionality	3.42	.52	59	3.43	.55	43	ns	3.42	.53	102
Surgency	4.61	.51	59	4.57	.60	43	ns	4.60	.55	102

The data were analyzed to determine whether there were any pre-existing differences between mothers' and fathers' parenting quality. Gender differences in child language status and temperament were also examined. Paired t-tests revealed that mothers displayed more positive affect, $t(93) = 3.57$, $p < .01$ and sensitivity, $t(93) = 4.70$, $p < .001$ than fathers. For children, the only difference between girls and boys was in vocabulary production, whereby girls were rated as having significantly greater vocabulary production than boys, $t(96) = -2.30$, $p < .05$.

Differences in the Use of Internal State Language as a Function of Parent Gender

Parents' use of internal state language (ISL) taken from 20-minute speech samples was analyzed by category, subject of reference, form, and function. Table 4 shows the means and standard deviations for the frequency (Table 4a) and percentage

(Table 4b) of parental ISL. Parents spoke an average of 682.26 words (SD = 320.28), of which 32.36 words (4.74%) were internal state terms. As can be seen in Table 4a, there were large individual family differences in the amount of parental internal state language spoken in the home. Specifically, the frequency of internal state references made by parents ranged from 5 to 81 during the 20 minutes. As expected, paired-samples t-tests revealed that mothers spoke more, $t(93) = 6.87$, $p < .001$, made significantly more internal state references, $t(93) = 8.36$, $p < .001$, and used a significantly higher percentage of internal state terms in their speech, $t(88) = 2.28$, $p < .05$, than fathers.

Table 4a. Means and Standard Deviations (SD) for Parents' Frequency of Internal State Language (ISL)

	Mothers (N = 105)		Fathers (N = 94)			Parents (N = 105)	
	M	SD	M	SD	*p* <	M	SD
Total Words Used	481.92	283.61	223.79	183.50	.01	682.26	320.28
ISL Terms	23.75	14.37	9.61	8.31	.01	32.36	16.99
Category							
Desire	9.29	6.93	3.67	3.15	.05	12.57	7.23
Emotion	1.99	2.65	0.59	0.98	.05	2.52	2.92
Perception	7.65	6.04	2.98	3.28	.05	10.31	7.00
Cognition	4.66	4.43	2.25	2.78	.05	6.68	5.83
Subject of Reference							
Own State	5.47	4.5	2.41	2.77	.05	7.62	5.66
Another's State	17.39	10.95	6.88	6.03	.05	23.55	12.44
Shared State	0.62	1.11	0.21	0.54	.05	0.81	1.27
Form							
Question	10.23	7.72	4.3	3.97	.05	14.09	8.37
Contrastive	0.17	0.43	0.11	0.31	ns	0.27	0.52
Explanation	0.55	0.89	0.12	0.36	.05	0.66	1.00
Prediction	0.57	1.12	0.22	0.50	.05	0.77	1.25
Other	11.32	8.00	4.43	4.51	.05	15.28	9.89
High Quality	1.29	1.77	0.46	0.77	.05	1.70	1.95
Function							
Genuine Mental State	9.52	6.84	4.25	4.62	.05	13.33	9.22
Conversational	1.05	1.42	0.27	0.56	.05	1.29	1.57
Directing Interaction	2.86	3.25	0.9	1.22	.05	3.67	3.46
Not Applicable	9.31	6.97	3.67	3.16	.05	12.59	7.25

Table 4b. Means and Standard Deviations (SD) for Parents' Percentage of Internal State Language (ISL)

	Mothers (N = 105)		Fathers (N = 94)			Parents (N = 105)	
	M (%)	SD	M (%)	SD	p <	M (%)	SD
ISL Terms	4.97	1.77	4.42	2.00	.05	4.75	1.42
Category							
Desire	40.76	22.51	40.44	24.78	ns	40.85	17.30
Emotion	8.62	10.84	6.24	12.71	ns	7.97	7.79
Perception	31.27	17.36	31.29	24.01	ns	30.99	13.94
Cognition	18.74	13.42	21.09	19.50	ns	19.48	11.02
Subject of Reference							
Own State	22.44	14.05	23.36	21.66	ns	22.72	11.44
Another's State	73.85	14.66	74.17	22.42	ns	73.68	12.38
Shared State	2.24	4.07	1.44	3.51	ns	2.29	3.75
Form							
Question	43.08	21.30	46.91	26.03	ns	44.84	17.70
Contrastive	0.54	1.39	1.04	3.15	ns	0.74	1.52
Explanation	2.81	5.62	0.97	2.84	.05	2.32	4.25
Prediction	2.04	4.77	2.21	5.64	ns	2.21	4.09
Other	46.44	19.24	45.05	22.64	ns	45.82	15.28
High Quality	5.40	8.04	4.22	7.36	ns	5.26	6.54
Function							
Genuine Mental State	39.50	19.27	41.10	25.13	ns	39.66	14.12
Conversational	3.97	5.43	2.68	5.89	ns	3.78	4.21
Directing Interaction	11.78	12.22	11.03	17.80	ns	11.31	10.11
Not Applicable	40.74	22.58	40.41	24.73	ns	40.82	17.29

Internal state category. The frequency with which parents used different categories of internal state terms (i.e., desire, emotion, perception, and cognition) is shown in Table 4a. A repeated measures analysis of variance (ANOVA) yielded a significant effect for category, $F(3, 279) = 77.01$, $p < .001$, parent gender, $F(1,93) = 70.06$, $p < .001$, and the interaction between category and parent gender, $F(2.67, 248.63) = 13.90$, $p < .001$. Specifically, parents used desire terms significantly more often than terms in any other category, and they used emotion terms significantly less often than all

other categories. Perception terms were used significantly more often than cognition and emotion terms. In other words, desire terms were used most often, followed by perception, cognition, and emotion terms, respectively. Furthermore, mothers used significantly more desire, emotion, perception, and cognition terms than fathers. In addition, the significant interaction revealed that the effect for category within mothers was different than that for within fathers. Specifically, mothers used perception terms more often than cognition terms, whereas fathers used perception terms with the same frequency as cognition terms.

When internal state category was indexed as a percentage of internal state language, to account for the significant difference between mothers' and fathers' total internal state language, there was a significant effect for category, $F(2.29, 192.33) = 68.08$, $p < .001$, which mirrored that mentioned previously using frequency of terms in each internal state category. Specifically, desire terms made up the greatest percentage of parents' internal state language (about 40%), followed by perception (31%), cognition (20%), and emotion terms (8%), respectively (refer to Table 4b). There was no longer a main effect for parent gender, $F(1, 84) = .434$, $p = .51$, ns, or an interaction effect, $F(2.45, 205.70) = .396$, $p = .72$, ns.

Subject of internal state reference. Parental internal state language was also analyzed in regard to whether it referred to the parent's own, another's, or a shared internal state, as shown in Table 4a. A repeated measures ANOVA revealed a significant effect for the subject of the internal state reference, $F(1.32, 122.80) = 287.55$, $p < .001$, parent gender, $F(1,93) = 68.99$, $p < .001$, and the interaction between subject and parent gender, $F(1.25, 115.95) = 52.65$, $p < .001$. Specifically, parents used internal state

language to talk about another's state significantly more often than to talk about their own or a shared state, and they talked about a shared internal state significantly less often than they talked about their own or another's state. Moreover, mothers used internal state language to talk about their own, another's, and shared internal states significantly more often than fathers did.

When the subject of the internal state reference was indexed as a percentage of total ISL, the only significant effect was for subject, $F(1.09, 91.45) = 758.49$, $p < .001$; that is, parents' descriptions of the internal states of other people made up the greatest percentage of references (74%), followed by descriptions of their own internal states (23%), and descriptions of shared internal states (2%), respectively (refer to Table 4b). When indexed as a percentage, there was no effect for parent gender, $F(1, 84) = 2.00$, $p = .16$, *ns*, or an interaction effect, $F(1.06, 88.86) = .26$, $p = .63$, *ns*.

Form and function of internal state language. As shown in Table 4a, the nature of parents' internal state talk was examined in terms of how (i.e., form) and why it was used (i.e., function). With respect to the form of parental ISL, references were coded as questions, contrastives, explanations, predictions, or other. There was a significant main effect for the form of parental internal state language, $F(1.88, 174.74) = 196.66$, $p < .001$, for parent gender, $F(1, 93) = 68.14$, $p < .001$, and for the interaction, $F(1.94, 180.71) = 40.24$, $p < .001$. There was no difference between the amount of internal state language parents used in the form of a question and other, but these two forms were used significantly more often than contrastives, explanations, or predictions (refer to Table 4a). In addition, parents used explanations and predictions in similar amounts, and contrastives were used significantly less often than all other forms. In terms of parent

gender, mothers used questions, explanations, and predictions more often than fathers, but there was no difference between mothers' and fathers' use of contrastives. The interaction between ISL form and parent gender appeared to be explained by the fact that mothers used contrastives less often than all other forms and similar amounts of explanations and predictions, whereas fathers used similar amounts of contrastives, explanations, and predictions. In order to index parents' use of higher quality ISL, the sum of contrastives, explanations, and predictions was calculated for each parent. A paired t-test determined that mothers used higher quality ISL more frequently than fathers, $t(93) = 4.14$, $p < .001$.

When form was converted to a percentage of total ISL there was no longer a significant main effect for parent gender, $F(1,84) = 1.74$, $p = .19$, *ns*, or interaction effect between form and parent gender, $F(1.30, 109.30) = .93$, $p = .36$, *ns*. However, the main effect for form remained significant, $F(1.24, 104.12) = 315.73$, $p < .001$. Therefore, across both mothers and fathers, the percentage of ISL in the form of a question or other was significantly greater than the percentage in the form of a contrastive, explanation, or prediction. In addition, parents used a significantly greater percentage of predictions than contrastives in their ISL. About 46% of parental internal state references were in the form of other, 45% were in the form of a question, 2% in the form of a prediction, 2% in the form of an explanation, and .8% were in the form of a contrastive. A paired-samples t-test revealed that mothers and fathers used similar percentages of higher quality ISL, $t(84) = 1.22$, $p = .23$, *ns*.

In order to assess the function of parental ISL, internal state references were coded as referring to a genuine mental state, a conversational filler, a direction, or not

applicable. The latter code was used only for desire terms, which could be classified as both genuine mental state references and directing references. A repeated measures ANOVA revealed a significant effect for function, $F(2.21, 205.29) = 131.42$, $p < .001$, parent gender, $F(1, 93) = 70.87$, $p < .001$, and the interaction between the two, $F(2.46, 228.99) = 23.90$, $p < .001$. Specifically, parents used internal state language to express a genuine mental state significantly more frequently than as a conversational reference or to direct interaction (refer to Table 4a). In addition, parents used internal state talk as means to direct interaction significantly more often than as a conversational reference. The not applicable code was used as frequently as genuine mental state references. In terms of parent gender, mothers used ISL for each function significantly more often than fathers, and the interaction suggests that the differences between mother's and fathers' use of ISL for different functions are over and above what would be expected given the main effects.

When function was converted to a percentage of total ISL, the effect for function remained, $F(1.94, 162.69) = 135.52$, $p < .001$, but there was no longer a significant effect for parent gender, $F(1, 84) = .18$, $p = .67$, *ns*, or the interaction, $F(.03, 11.24) = .22$, $p = .77$, *ns*. Specifically, the percentage of ISL parents used for genuine mental state references and not applicable references were significantly higher than the percentage used for conversational and directing references. Furthermore, the percentage used for conversational references was significantly lower than the percentage of ISL used for all other functions. Overall, about 40% of parental ISL was used to reference genuine mental states, 40% was not applicable, 12% was used to direct interaction, and 3% was used as a conversational reference (refer to Table 4b).

Relations among Child and Parent Predictors

Pearson product-moment correlations (two-tailed) were conducted to test relations among child and parent variables. For clarification, the terms "language status" or "language skill" are used when the results apply to both vocabulary comprehension and production. If the results apply to one of the language variables, the name of the variable is used. Similarly, the term "parenting quality" is used when the results apply to both parenting variables, positive affect and sensitivity. If the results only apply to one of the parenting variables, the name of the variable is used. Table 5 shows the correlations among the child and parent variables.

Table 5. Correlations among Child and Parent Variables

	1	2	3	4	5	6	7	8	9	10
1. Negative Emotionality	--	-.23*	-.23*	-.21*	.02	.15	-.22*	-.17†	-.03	-.04
2. Surgency		--	.35**	.28**	-.08	-.20†	.19†	.08	-.02	-.05
3. Vocabulary Comprehension			--	.62**	.20†	.10	.19†	.19†	.07	.07
4. Vocabulary Production				--	.30**	.22*	.30**	.27**	.04	.04
5. Mother's education					--	.64**	.23*	.38**	-.02	.12
6. Father's education						--	.28**	.35**	.08	.22*
7. Mother Positive Affect							--	.77**	.35**	.27**
8. Mother Sensitivity								--	.23*	.37**
9. Father Positive Affect									--	.79**
10. Father Sensitivity										--

† p< .10, * p < .05, ** p < .01 (two-tailed)

Child temperament. As shown in Table 5, children rated by their mothers as higher in surgency were also rated as lower in negative emotionality. In addition, more

surgent children had more advanced language skills, had mothers who exhibited more positive affect, and had fathers with less education. In contrast, children higher in negative emotionality had less advanced language skills and their mothers were rated as lower in parenting quality.

Child language status. The variables that comprised child language status (i.e., vocabulary comprehension and production) were positively correlated with each other. As noted earlier, children with more advanced language skills were also higher in surgency and lower in negative emotionality. As would be expected, children with greater language abilities also had mothers who attained higher levels of education and were rated as higher in parenting quality; however, these correlations were stronger for vocabulary production than comprehension. Finally, children who used more words had fathers who were more educated.

Parent education. There was a significant positive relation between mothers' and fathers' educational attainment. In addition, both parents' education level was positively related to mothers' parenting quality and children's word use. Moreover, mothers who attained higher levels of education had children who understood more words, and fathers with more education were more sensitive and had children who were less surgent.

Parenting quality. There was a strong positive relation between parental positive affect and sensitivity for both mothers and fathers. In addition, mothers' and father's parenting quality was positively associated, such that mothers rated higher in parenting quality also had husbands rated higher in parenting quality. Furthermore, mothers rated higher in parenting quality were more educated, had husbands who were more educated, and had children with more advanced language skills and less negativity. In addition,

mothers rated higher in positive affect had children who were more surgent. On the other hand, fathers rated higher in sensitivity were more educated. Therefore, mothers' parenting quality was related to both parent and child variables, whereas fathers' parenting quality was only related to parent variables.

Relations among Predictor and Internal State Language Variables

In order to test the prediction that each of the selected child factors is related to the frequency and quality of parental internal state talk (**Prediction 1**), zero-order correlations (one-tailed) and a one-way ANOVA (for child gender) were conducted separately for each parent. It was expected that mean scores for Negative Affectivity and Extraversion/Surgency, and the Vocabulary Comprehension and Vocabulary Production scores would be correlated with (a) the Total Word Usage for each parent, (b) the Frequency of Internal State Language used by each parent, (c) the Percent of Internal State Language Used by each parent and (d) the Percent of High Quality Internal State Talk Used by each parent. In addition, it was predicted that word usage and internal state language variables would vary as a function of child gender.

To test the second prediction that each of the selected parent factors may be related to the frequency and quality of parental internal state talk (**Prediction 2**), another set of zero-order correlations (one-tailed) were conducted for each parent. It was expected that parent education and parenting quality as indexed by mean scores on Sensitivity and Positive Affect would be correlated with (a) the Total Word Usage for each parent, (b) the Frequency of Internal State Language used by each parent, (c) the Percent of Internal State Language Used by each parent and (d) the Percent of High Quality Internal State Talk Used by each parent. Table 6 displays all the relations among

the selected child and parent factors and the parent word usage and ISL variables. However, only the relations with the two ISL variables for which predictions were made, i.e. Percentage of Internal State Language (amount) and Percentage of High Quality Internal State Language (quality) will be discussed below.

Table 6. Correlations among Child and Parent Predictor Variables and Parental Internal State Language

	1	2	3	4	5	6	7	8
1. Mothers' Word Use	--	-.09	.81**	-.02	-.04	.09	.19*	.29**
2. Fathers' Word Use		--	-.02	.89**	.13	-.08	-.08	.23*
3 .Mothers' ISL Frequency			--	.09	.46**	.14	.19*	.24*
4. Fathers' ISL Frequency				--	.20*	.24*	-.09	.27**
5. Mothers' Percent of ISL					--	.17†	-.03	.02
6. Fathers' Percent of ISL						--	-.15†	.01
7. Mothers' Percent of High Quality ISL							--	.05
8. Fathers' Percent of High Quality ISL								--
Negative Emotionality	-.10	-.04	-.14†	-.04	-.12	.03	.01	-.22*
Surgency	.07	-.04	.09	-.03	.15†	.00	-.02	-.14†
Vocabulary Comprehension	.25**	-.01	.22*	.01	.08	.03	.04	.10
Vocabulary Production	.25**	-.07	.15†	-.09	-.01	-.01	-.09	.24*
Mother Education	.32**	-.02	.36**	-.03	.10	-.01	-.04	.16†
Father's Education	.32**	.03	.32**	-.05	.11	-.10	.09	.17†
Mother Positive Affect	.46**	-.01	.37**	-.01	-.02	-.04	.13†	.24*
Mother Sensitivity	.46**	-.03	.45**	-.02	.14†	.07	.04	.29**
Father Positive Affect	-.01	.53**	-.03	.47**	-.04	-.13	.19*	.14†
Father Sensitivity	-.02	.45**	.02	.40**	.05	-.12	-.02	.16†

† $p < .10$, * $p < .05$, ** $p < .01$ (one-tailed)

Percent of ISL. For mothers' percentage of ISL, there were two predicted relations that approached significance but failed to reach conventional significance levels. As expected, mothers who used a greater percentage of ISL in their speech tended to be rated as higher in sensitivity and had children rated higher in surgency. Contrary to

expectations, there were no significant relations between fathers' percent of ISL and child or parent factors. It should be noted that there was only a marginal relation between mothers' and fathers' percent of ISL. In addition, one-way ANOVAs were conducted to test predictions between child gender and the amount of parental ISL. Only one finding for child gender approached significance; unexpectedly, mothers used a higher percentage of ISL when the target child was a boy than when the target child was a girl, $F(1, 103) = 3.72$, $p < .10$.

Percent of high quality ISL. As expected, the percent of high quality ISL used by mothers was positively related to both parents' positive affect, although the association did not reach conventional levels of significance for mothers. On the other hand, the percent of high quality ISL used by fathers was related to a number of parent and child variables. Specifically, father's ISL quality was positively related to mothers' parenting quality and child vocabulary production and negatively related to child negative emotionality. In addition, there were a number of relations between fathers' percent of high quality ISL and child and parent variables that approached significance but did not reach conventional levels. Specifically, fathers' percent of high quality ISL was positively related to both parents' education and his own parenting quality, and negatively related to child surgency. There was no relation between mothers' and father's percentage of high quality ISL. In other words, the predicted positive relations between fathers' quality of ISL and parental education, parenting quality, and child vocabulary production were upheld; however, there was an unexpected negative association between fathers' ISL quality and child temperament.

Predicting Mothers' and Fathers' Internal State Language

Hierarchical regressions, conducted separately for each parent, were used to determine whether the selected child and parent variables accounted for variance in mothers' and fathers' word usage and ISL (frequency, percentage, and percentage of high quality ISL). Although Table 7 shows the regressions for all four parent language variables, only the regressions for percentage of ISL and percentage of high quality ISL are presented here. Prior to conducting the regressions, all variables were centered in order to reduce any collinearity among predictors (Aiken & West, 1991). The steps for each hierarchical regression predicting parental amount and quality of ISL were as follows: (Step 1.) parent education, (Step 2.) child variables: child gender, child vocabulary comprehension and production, child negative emotionality and surgency, and (Step 3.) parenting quality: positive affect and sensitivity.

Subsequently, to test the hypothesis that parenting quality would moderate the relation between child variables and the amount of parental ISL (**Prediction 3**), as well as to follow up on several other potential interactions, a series of follow-up hierarchical regressions were conducted for mothers' and fathers' amount and quality of ISL. To test the child language status by parenting quality interaction, parent education was entered on step one, child vocabulary comprehension and production were entered on step two, parent positive affect and sensitivity were entered on step three, and the four interactions (i.e., child vocabulary comprehension x parent positive affect, child vocabulary comprehension x parent sensitivity, child vocabulary production x parent positive affect, and child vocabulary production x parent sensitivity) were entered on step four. In the second model, the interaction between child temperament and parenting quality was

examined with parent education on step one, child negative emotionality and surgency on step two, parent positive affect and sensitivity on step three, and the interactions (i.e., child negative emotionality x parent positive affect, child negative emotionality x parent sensitivity, child surgency x parent positive affect, and child surgency x parent sensitivity) on step four. In the third model, the interaction between child gender and parenting quality was examined with parent education on step one, child gender on step two, parent positive affect and sensitivity on step three, and the interactions (i.e., child gender x parent positive affect and child gender x parent sensitivity) on step four.

For the regressions predicting mothers' ISL, maternal education, positive affect, and sensitivity were used in the regression. Likewise, for the regressions predicting fathers' ISL, paternal education, positive affect, and sensitivity were used in the regression. As mentioned earlier, the results of the regressions are presented in Table 7.

Table 7a. Summary of Hierarchical Regression Analyses for Maternal Word Usage and Internal State Language

	Mothers' Word Use			Mothers' ISL Frequency			Mothers' % of ISL			Mothers' % of High Quality ISL		
Full Model	$\Delta R^2 = .13$, F(2,88) = 7.92, $p < .01$			$\Delta R^2 = .10$, F(2,88) = 6.18, $p < .01$			$\Delta R^2 = .06$, F(2,88) = 3.08, $p < .10$			$\Delta R^2 = .04$, F(2,87) = 1.65, $p = .20$, ns		
	B	SE	β	B	SE	β	B	SE	β	B	SE	B
Step 1												
Mother Education	53.92	17.18	.31**	2.96	.85	.34**	.00	.00	.07	-.01	.01	-.09
Step 2												
Mother Education	47.16	18.20	.27*	3.05	.90	.35**	.00	.00	.11	-.01	.01	-.08
Gender	-41.85	57.93	-.07	-.82	2.88	-.03	.01	.00	.15	-.01	.04	-.02
Negative Emotionality	-33.07	55.40	-.06	-2.69	2.75	-.10	-.00	.00	-.07	.01	.04	.04
Surgency	3.38	55.82	.01	1.86	2.77	.07	.01	.00	.16	-.01	.04	-.02
Vocabulary Comprehension	.46	.41	.14	.03	.02	.17	.00	.00	.07	.00	.00	.17
Vocabulary Production	.22	.50	.06	-.02	.03	-.11	-.00	.00	-.12	.00	.00	-.16
Step 3												
Mother Education	29.29	18.15	.17	1.99	.92	.23*	.00	.00	.04	-.01	.01	-.06
Gender	-66.69	54.95	-.12	-2.42	2.78	-.08	.00	.00	.11	-.00	.04	-.01
Negative Emotionality	-1.48	52.21	-.00	-1.26	2.64	-.05	-.00	.00	-.07	.02	.04	.05
Surgency	-18.02	53.17	-.04	1.65	2.69	.06	.01	.00	.21†	-.02	.04	-.06
Vocabulary Comprehension	.50	.38	.16	.03	.02	.17	.00	.00	.04	.00	.00	.19
Vocabulary Production	-.12	.48	-.03	-.03	.02	-.18	-.00	.00	-.10	.00	.00	-.19
Mother Positive Affect	104.38	60.07	.26†	.62	3.04	.03	-.01	.00	-.37*	.07	.04	.30†
Mother Sensitivity	59.90	55.82	.17	6.13	2.82	.34*	.01	.00	.41*	-.04	.04	-.20

† p < .10, * p < .05, ** p < .01

Table 7b. Summary of Hierarchical Regression Analyses for Paternal Word Usage and Internal State Language

Full Model	Fathers' Word Use			Fathers' ISL Frequency			Fathers' % of ISL			Fathers' % of High Quality ISL		
	$\Delta R^2=.29$, F(2,78)=16.61, $p<.001$			$\Delta R^2=.24$, F(2,78)=12.37, $p<.001$			$\Delta R^2=.01$, F(2,74)=.48, $p=.62$, ns			$\Delta R^2=.01$, F(2,71)=.33, $p=.72$, ns		
	B	SE	β	B	SE	β	B	SE	β	B	SE	B
Step 1												
Father Education	7.28	10.75	.07	-.16	.50	-.04	-.00	.00	-.12	.02	.01	.17
Step 2												
Father Education	12.89	12.20	.13	.03	.57	.01	-.00	.00	-.14	.01	.01	.13
Gender	-23.34	40.77	-.07	.21	1.89	.01	.00	.01	-.02	.05	.04	.14
Negative Emotionality	-24.87	39.67	-.08	-.55	1.84	-.04	.00	.01	.08	-.07	.04	-.24*
Surgency	-5.93	39.44	-.02	-.22	1.83	-.02	.00	.01	-.01	-.08	.04	-.27*
Vocabulary Comprehension	.12	.28	.06	.01	.01	.10	.00	.00	.05	-.00	.00	-.00
Vocabulary Production	-.41	.34	-.18	-.02	.02	-.19	.00	.00	.00	.00	.00	.29*
Step 3												
Father Education	5.22	10.74	.05	-.34	.52	-.07	-.00	.00	-.13	.01	.01	.12
Gender	-26.77	34.72	-.08	.02	1.68	.00	.00	.01	-.01	.05	.04	.14
Negative Emotionality	-15.25	33.95	-.05	-.08	1.64	-.01	.00	.01	.08	-.07	.04	-.24*
Surgency	3.13	33.55	.01	.19	1.62	.01	.00	.01	-.00	-.08	.04	-.27*
Vocabulary Comprehension	.01	.24	.01	.00	.01	.05	.00	.00	.05	-.00	.00	-.01
Vocabulary Production	-.35	.29	-.15	-.02	.01	-.17	.00	.00	.00	.00	.00	.29*
Father Positive Affect	82.76	35.44	.37*	2.92	1.71	.28†	-.00	.01	-.13	.01	.04	.06
Father Sensitivity	37.62	29.36	.21	2.03	1.42	.24	.00	.00	.02	.01	.03	.03

† p < .10, * p < .05, ** p < .01

Percentage of ISL. The model predicting the percent of ISL in mothers' speech approached but did not reach significance. As can be seen in Table 7a, two of the predictors in the third step were significant; maternal positive affect and sensitivity each contributed to the percentage of maternal ISL but in different directions. Contrary to expectations, mothers' positive affect predicted decreases in her internal state language. Maternal sensitivity, on the other hand, predicted increases in her internal state language. The prediction that child variables would account for the percent of ISL used by mothers was not supported, although as shown in Table 7a, the relation was in the expected direction for child surgency. As predicted, there was a significant interaction between child temperament and parenting quality, $F(4, 92) = 3.24, p < .05$. Specifically, maternal sensitivity moderated the relation between child negative emotionality and the percent of maternal ISL ($\beta = .45, p < .05$). A closer inspection of the moderation revealed that for highly sensitive mothers, there was no relation between child negative emotionality and percent of maternal ISL ($t = 1.51, p = .13, ns$), whereas for mothers lower in sensitivity, there was a significant negative relation between child negative emotionality and percent of ISL ($t = -2.67, p < .01$). In other words, less sensitive mothers used a lower percentage of ISL if their child was high in negative emotionality.

For fathers', none of the predicted child or parent variables significantly contributed to the percent of ISL in fathers' speech, as shown in Table 7b. It is noteworthy, however, that when the child gender x father parenting interactions were included, the model predicting fathers' percent of ISL became significant, $F(2, 81) = 6.64, p < .01$. An examination of the interactions revealed that the predicted interaction between child gender and father sensitivity approached significance ($\beta = .52, p < .10$), but

did not reach conventional levels. Specifically, for highly sensitive fathers, there was no relation between child gender and percent of ISL ($t = 1.37$, $p = .18$, *ns*), whereas for fathers lower in sensitivity, there was a negative relation that approached significance between child gender and percent of ISL ($t = -1.70$, $p < .10$). Thus, fathers lower in sensitivity used a higher percentage of ISL when the target child was female compared to when the target child was male.

Percentage of high quality ISL. As shown in Table 7a, the model predicting the percent of high quality ISL was not significant for mothers. For fathers, percent of high quality ISL was predicted by some child variables, but not parenting quality (see Table 7b). Specifically, child vocabulary production, child negative emotionality, and child surgency were significant predictors of the percent of high quality ISL used by fathers, even after controlling for fathers' education. Unexpectedly, child negative emotionality and surgency predicted lower percentages of high quality ISL in fathers' speech. There were no significant interactions for mothers or for fathers.

To test the hypothesis that parenting quality would mediate the relation between the selected child variables the *quality* of parental ISL (**Prediction 4**), the methods recommended by Baron and Kenny (1986) were followed. The mediation analyses were run separately for mothers and fathers. In order to test for mediation, the following must occur: (1) all pertinent child variables (i.e., child gender, mean Negative Affectivity and Extraversion/Surgency scores, and Vocabulary Comprehension and Production scores) and parenting quality (i.e., Sensitivity and Positive Affect) are correlated with the Percent of High Quality Internal State Language used by parents; (2) the child variables (i.e., child gender, mean Negative Affectivity and Extraversion/Surgency scores, and

Vocabulary Comprehension and Production scores) and parenting quality (i.e., Sensitivity and Positive Affect) are correlated with each other; and (3) child and parenting quality variables explain a significant proportion of the variance, which can be determined by running a simultaneous multiple regression using both child and parenting quality variables as predictors on a single step. The Percent of High Quality Internal State Language for each parent is the dependent variable. In order to demonstrate mediation, the correlation between parenting quality and the Percent of High Quality Internal State Language used by parents must remain significant when child variables are statistically controlled and the correlation between child variables and Percent of High Quality Internal State Language used by parents must be non-significant when parenting quality is controlled.

Contrary to expectations, parenting quality did not mediate the relation between child variables and the quality of parental ISL. The full mediational model could not be tested for either parent because the aforementioned conditions were not met. Specifically, for mothers, the first condition for mediation was not met because the selected child variables were not related to her ISL quality. For fathers, although the first condition for mediation was upheld, the second condition was not met. In other words, child variables (i.e., vocabulary production and temperament) and fathers' parenting quality were related to fathers' ISL quality, but the child variables and fathers' parenting quality were not related to each other.

Chapter 4. DISCUSSION

To summarize, this study was the first of its kind to examine the amount and quality of parental internal state language as a function of selected child and parent characteristics at a time when children are highly variable in their language ability. Research has shown that parents' use of internal state language facilitates the development of emotional competence in children (Bretherton & Beeghly, 1992; Denham et al., 1992; Dunn et al., 1991). Specifically, parents' internal state talk has been related to a number of positive child outcomes including emotion understanding (Denham et al., 1994; Dunn et al., 1987), positive emotional expression (Denham et al., 1992), and emotion perspective-taking (Dunn et al., 1991; Garner et al., 1997), as well as theory of mind (Bretherton & Beeghly, 1982) and conscience development (Laible, 2004a). The present study, however, offers a unique look into the child and parent characteristics that promote both mothers' and fathers' internal state language in the home. Specifically, child gender, temperament, and language status, and parent education and parenting quality were examined as predictors of internal state language in parental speech during naturalistic family interaction. In addition, the model predicted that (a) parenting quality would influence the extent to which child factors predicted the *amount* of ISL spoken by parents, and (b) parenting quality would account for relations between child factors and the *quality* of parental ISL.

As will be discussed below, the findings provide partial support for the model. In regard to child factors, the more an 18-month-old could express words, the more likely parents were to use higher quality internal state language. However, the prediction that a child's degree of emotionality would increase the likelihood that the child was exposed to

higher quality parental internal state language was not supported. In fact the opposite was found whereby child emotionality decreased the quality of parental internal state language. Moreover, child gender was not related to the extent with which parents used internal state terms, with one exception for fathers who were less sensitive. The model also included parent factors that were argued to influence the use of internal state language with toddlers. The findings for these factors were somewhat unexpected, with parent education having little effect on parents' internal state language, parental positive affect decreasing the likelihood of internal state language, and parental sensitivity increasing its likelihood.

What is particularly interesting about the pattern of findings in this model is the fact that child and parent factors predicted different aspects of parent internal state talk depending on which parent was speaking. When these factors are considered in concert, parenting quality clearly emerged as the most important predictor of mothers' internal state language whereas child characteristics accounted for fathers' ISL. Furthermore, parent factors were generally related to the *amount* of ISL for mothers and child factors were associated with the *quality* of ISL for fathers.

In regard to the predicted moderating and mediating effects of parenting quality on relations between child factors and parental ISL, partial support was found. Mother and father sensitivity influenced the degree to which toddlers were exposed to internal state language but the effects depended on which child factor was considered as will be discussed. However, the question of whether parenting quality accounts for relations between child factors and the quality of parental ISL could not be tested due to the absence of the prerequisite relations among variables.

Understanding the Nature of Parental Internal State Talk in the Home

References to internal states comprise a small, but perhaps significant, amount of parental speech. Whether parental ISL with 18-month-olds is important to language learning and/or social competencies, as is suggested by studies of ISL with older children, is unknown. In addition, because this sample had a lower income than is typically studied, the amount of ISL may have been lower than that found in higher income samples (Hart & Risley, 1995).

When internal state talk occurs, it is generally in regard to what someone wants or wishes, i.e. desire terms. This pattern of findings is consistent with the literature on parent-child internal state communication. Specifically, when parents are talking with 2-year old children, they use more desire terms than cognitive and emotion terms; however by the time children are 4 years old, parents talk more about cognitions than desires and emotions (Jenkins et al., 2003). In a similar vein, other studies have documented a decrease in parents' talk about desires accompanied by an increase in talk about cognitions when children are between 3 and 4 years old (Taumoepeau & Ruffman, 2006; Ruffman, Slade, & Crowe, 2002). When children are beginning to use ISL around age 2, their internal state references parallel that of their parents, as they master desire and perception terms first, followed by emotion and cognition terms (Bretherton & Munn, 1982).

The present study adds to our understanding of parental internal state language by examining the discourse of both mothers and fathers with younger children whose language skills are emerging at a time of heightened emotionality. Although the frequency of internal state references varies as a function of parent gender, the nature of

this communication is similar across genders, which indicates that parents may be taking their cues from each other and their children. Much of young children's daily life involves using their emerging cognitive and motor abilities in an attempt to get their wants and needs fulfilled. Although parents are often the ones who take on the role of helping children attain their desires, they are also the ones who impede this process. From a functional perspective of emotions, when one's goals are attained, the resulting emotions are positive, but when one's goals are blocked or given up the result is anger and sadness, respectively (Barrett & Campos, 1987). Therefore, at this stage in a child's life, when desires are highly salient and closely connected with emotional states, it is easy to see how parents may capitalize on children's developing language abilities and make frequent references to desires during conversations. In addition, the majority of parental references to internal states involve others' states, often posed in the form of a question. Putting these findings together, parents seem to use ISL to try to understand what their family members want and need. Because most 18-month olds do not have the language skills to articulately express what they want, think, or feel, parents must ask questions to determine what the child's internal states are and how to help the child manage them. In addition, parents are probably not using higher quality internal state talk frequently because their children do not have the linguistic, attentional, or cognitive capabilities to benefit from conversations contrasting two or more internal states, explaining the cause or consequence of internal states, or predicting how one will think or feel in the future.

Child Factors that Predict Parental Internal State Talk

Child gender. Although it was expected that parents would use more and a higher quality of internal state talk with girls compared to boys, this was not found. In fact,

there was only one marginal direct relation between child gender and parent internal state talk, where mothers used a slightly higher percentage of internal state language with boys; however this relation was nonexistent after controlling for maternal education. This runs contrary to research with older children that found parents used a greater frequency and variety of emotion words with daughters than with sons (Adams et al., 1995). Because the children in the current study were only 18 months old, perhaps parents were not yet using language as an instrument for gender socialization. Moreover, children at this age may be less likely to engage in gender-typed behavior, thereby eliciting less gender-typed language from parents (Lanvers, 2004). In addition, this study examined internal state language, not just emotion talk; therefore, it is possible that talking about emotions is viewed by parents as a gendered activity, whereas talking about one's desires, perceptions, and cognitions is more gender neutral.

Child temperament. It was predicted that children who were more emotional would provide their parents with opportunities for more and higher quality internal state talk. The findings indicated that while children's temperamental emotionality did in fact increase the amount of internal state references, the quality of these conversations was lower. Specifically, child surgency increased the likelihood of being exposed to internal state language through mothers' speech, whereas child surgency and negative emotionality decreased the quality of fathers' internal state language. Children higher in surgency who initiate more social interaction might increase the willingness of parents to talk about internal states, but these surgent children may have higher levels of activity and impulsivity, and therefore be less able to tolerate longer and more elaborative conversations about inner states. Thus, parents may not be able to talk about the child's

internal experiences in a more sophisticated way that would require longer periods of attention from the child. Children who are more positive may also provide less content for elaborative internal state discussions. In order for parents to have higher quality internal state conversations with surgent children, these children may also need well-developed regulatory skills that allow them to sustain attention, engage in focused activity, and reduce impulsivity. A similar relation was also found in research by Laible (2004b) with older children (ages 3 to 5 years) where mothers used more elaboration during a reminiscing activity when their child was rated lower in surgency.

In terms of negative emotionality, perhaps children who are prone to experiencing intense periods of anger and sadness actually give their parents less opportunity to discuss internal states than children who are more often in positive or neutral states. Talking to children when they are in high distress is likely to be ineffective in decreasing negative emotionality, as well as unproductive for teaching children about emotional awareness and regulation.   Therefore, even though children high in negative emotionality may provide ample content for discussion about internal states, there may be less opportunity to do so in an effective manner. Parents of these children may be more likely to spend time soothing and comforting highly emotional children rather than talking with them. Children who are usually calm or easy-going may afford their parents with more opportunity to talk about internal states, but seem to provide less content for these discussions, given that parents talk about negative states more frequently and in more sophisticated ways than positive states (Burger & Miller, 1999; Lagatutta & Wellman, 2002). The possibility remains that there may be an optimal level of negative emotional expression displayed by children such that parents are provided with enough content for

meaningful internal state discussions with their children and their children are able to maintain neutral or calm emotional states long enough to have a conversation about inner states. This may be especially pertinent for children at 18 months of age who may be unlikely to benefit from conversations about hypothetical or future emotional events.

Child language status. Although child receptive language did not predict parental ISL, child expressive language ability was predictive of fathers' use of high quality ISL. This is evidence that internal state conversations can provide a scaffold for children's emerging linguistic and regulatory abilities. When children are developing the ability to express themselves verbally and are experiencing periods of heightened emotional arousal, parents' internal state language may provide a means for children to begin to understand their inner states, as well as encourage children to talk about their experiences. This type of communication draws attention to inner states by making these processes explicit. In addition, children with more advanced language skills may be seen by their parents and others as more attractive conversation partners and more likely to benefit from conversations about internal states. In a similar vein, Hoff-Ginsberg (1994) has shown that when children are able to continue their parent's topic of conversation thereby demonstrating their turn-taking ability and communication skills, their parent talked more to them.

Taken together, the findings suggest that child emotionality and expressive language abilities are predictive of the quality of fathers' internal state language. Specifically, child emotionality decreased the likelihood of high quality ISL, whereas expressive language ability increased the likelihood of high quality ISL. It appears child characteristics are triggering internal state talk for fathers, and fathers are using the

child's cues to make decisions about the appropriate level of sophistication for conversations about internal states. Because all of the data come from a single time point, it may also be the case that fathers who have a history of talking about inner states through explanations, predictions, and contrasting states facilitate earlier advances in emotional and cognitive development such that their children are more verbal, better regulated, and perhaps already forming the neurological connections between language and emotion areas. It may also be the case that the fathers in this sample are unique because they are members of two-parent families and are deeply involved in the everyday lives of their children. These types of fathers may be especially aware of their child's abilities, cues, and internal states. What is still uncertain is why the selected child and parent characteristics did not predict fathers' amount of internal state language. It may be that characteristics of the family that were not measured, such as average time spent interacting with the child daily, would have been predictive of the amount of internal state language in fathers' speech. On the other hand, it appears that child characteristics are not triggering mothers' talk about internal states, but rather mother's internal state talk is based on aspects of her parenting.

Parent Factors and Parental Internal State Talk

Parent gender. As expected, mothers used more ISL in their speech than fathers but they also spoke more during the observation. When ISL was considered as a percentage of all speech, mothers used a greater percentage of ISL in their speech than fathers, but mothers and fathers used similar percentages of high quality ISL. Interestingly, when indexed as a percentage, mothers and fathers generally used similar amounts of each type of internal state reference, except mothers used a greater percentage

of ISL references for explanation than fathers. The differences found in word use and ISL as a function of parent gender are in accordance with the literature on parent gender differences in communication (Fivush et al., 2000; Leaper, Anderson, & Sanders, 1998). The similarities are perhaps more interesting, however, because they suggest that mothers and fathers are providing their children with matching linguistic input about certain aspects of ISL, which may promote children's awareness and eventual self-regulation of internal states.

Parent education. In general, and contrary to predictions, parental education was not associated with the amount or quality of parents' internal state talk. Only a trend in which father education was related to high quality ISL emerged. Research in this area is inconclusive with some work showing that maternal education is related to increases in cognitive references, but not desire or emotion references (Jenkins et al., 2003) and other studies demonstrating that maternal education was not predictive of internal state language (Thompson & Williams, 2006). It may be that other unmeasured parent characteristics potentially related to education, such as knowledge of child development, are more predictive of parental internal state language than educational attainment. For example, Garrett-Peters and colleagues (2006) found that for parents who are not African American, parent knowledge of infant development is a robust predictor of discussions about emotion (Garrett-Peters, Mills-Koonce, Adkins, Vernon-Feagans, & Cox, 2007). Alternatively, because mothers who are more educated also use more conversation-eliciting speech and more diverse vocabulary (Rowe et al., 2005), perhaps parent education will be related to the quality of their internal state language at later time points

as children are better able to verbally contribute to conversations and benefit from more elaborate and sophisticated speech.

Parenting quality. As expected, for mothers, sensitivity was positively related to their amount of ISL. Mothers' positive affect was also related to amount of ISL but in the opposite direction. Because sensitive parents adjust their behavior in response to cues from the child, perhaps part of being a sensitive mother is questioning children about their internal states in order to better understand, read, and respond to their cues. Alternatively, sensitive mothers may use more internal state language in order to help their children become aware of their own internal states, to aid their children in understanding their emotional experiences, and as a tool for emotion regulation. Additionally, the present study demonstrated that mother sensitivity moderated the relation between child negative emotionality and the amount of ISL mothers used. Specifically, the findings show that for mothers lower in sensitivity, child negative emotionality decreased the likelihood that mothers used ISL in their speech. This suggests that having a sensitive mother may be especially important for children who experience frequent and intense episodes of anger and sadness. In addition, father sensitivity moderated the relation between child gender and amount of ISL. Specifically, fathers low in sensitivity used more ISL with girls than with boys, which may indicate more gender-stereotyped parenting among fathers who are less sensitive. This finding also supports the prediction that sensitivity may be a key factor in internal state talk.

In addition, although it appears that mothers' positive affect is a key component for engaging in verbal communication in the home, this does not mean that it leads to more talk about internal states; in fact, this study demonstrated that mothers who are

higher in positive affect actually talk proportionately less about internal states. This finding runs contrary to expectations because Dix (1991) has posited that parents who are in a good mood have the cognitive resources to be more engaging with their children, both verbally and behaviorally. It may be important to remember that just because mothers may be rated low in positive affect that does not mean they are higher in negative affect. Therefore, it may be that mothers who are more affectively neutral or calm are better able to convey verbal messages about internal states. In addition, the need to talk or inquire about children's internal states may be brought about by children's cues of distress or uneasiness, and thus a sensitive mother may try to remain calm so as not to further exacerbate the situation. In contrast, during periods of play or cognitive stimulation, maybe parents' positive engagement is more important in order to capture and maintain the child's attention and interest.

Taken together, it appears that parenting quality is particularly important in predicting mothers' amount of internal state language, but neither parent nor child factors were predictive of mothers' quality of internal state language.

Limitations and Future Directions

The findings suggest that there are additional questions to be asked about the topic of parents' ISL. Several features of the present study could be improved in ways that would enhance research on this topic. Because naturalistic home observations were used to gather the speech sample, it could not always be discerned by transcribers whether internal state language was directed toward the toddler. Therefore, the internal state references captured in the present study more generally represent ISL spoken to or in the vicinity of the target child. Although parents' ISL may at times have been

addressed to someone other than the target child, there was probably still an advantage for the target child as a result of overhearing the language spoken around her, as research has shown that 18-month-old children can learn words through overhearing (Floor & Akhtar, 2006). The naturalistic home observation also allowed parents and children to engage in diverse activities within and between the homes. Because ISL varies depending on the interaction (Laible, 2004b; Laible & Song, 2006), the variability in activity in different homes may have affected the amount and quality of parental ISL. Also, a 20-minute speech sample is a very brief window into the nature of family conversations about internal states.

On the other hand, it is worth noting that naturalistic observations allow for a real glimpse into the daily experiences of children. When researchers design laboratory tasks to elicit conversations about internal states, they may witness conversations that do not normally occur between the parent and child. Second, most studies of language development have small sample sizes with middle to upper-middle class participants. Although these studies have the advantage of being able to provide in-depth information about how children's language abilities emerge, the small sample size limits the generalizability of the findings. The present study, however, included a large sample of families who are economically strained. This population is particularly unique in that these families were just above the poverty line so they do not qualify for government assistance, but they fall below the median income for their community. Studies have shown that families lower in socioeconomic status are less talkative, have shorter conversations, and use a more limited vocabulary than families higher in SES (Hart & Risley, 1995; Hoff-Ginsberg, 1991). Third, the fact that fathers were included recognizes

that fathers make substantial and unique contributions to their children's development (Cabrera, Tamis-LeMonda, Bradley, Hofferth, & Lamb, 2000). It is hoped that the findings gathered from this investigation will add to the existing literature on internal state talk, given the unique characteristics of the sample (i.e., economically-strained, mothers *and* fathers of 18-month olds) and procedure (i.e., naturalistic home observation).

Future work in this area should examine how parent-child conversations about internal states change and develop over time.   In addition, future work should investigate whether these early conversations about internal states predict emotion regulation for children at later ages, and the mechanisms underlying this process. It would be interesting to know which aspects of internal state language are important in promoting the flexible and effective use of emotion regulation strategies.

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Appendix A

Parent-Child Interaction Rating System (Abridged Version)

Belsky, Crnic, & Woodworth (1995)

PARENT RATINGS

<u>Opportunity for Interaction</u>

This scale measures the amount of time during each 10-minute epoch in which the mother and father have the opportunity to interact with the child in both a visual and verbal sense. That is, does the parent remain in visual proximity of the child and is the parent within proximity to vocally interact with the child? For example, when families are preparing for the evening meal, it may be that mom remains in the kitchen, out of both visual and verbal proximity to the child for the entire 10-minute epoch, while dad stays with the child in another room, in both visual and verbal proximity to the child for the entire 10-minutes epoch. This code applies strictly to feasible opportunities for interaction, <u>regardless</u> of the quality of that opportunity (e.g., a mom with her child in her lap for 10 minutes vs. a mom within visual proximity of child for 10 minutes - both receive a rating of 5).

Opportunity for Interaction Ratings

1 = 0-20 seconds: No time spent within visual/verbal proximity to the child; absolutely no opportunities for interaction with child.***

2 = 20 seconds-4 minutes: At least one opportunity for interaction occurs, or the parent spends a couple of minutes within visual/verbal proximity to the child.

3 = 4-6 minutes: Parent spends about half of the 10-minute epoch within visual/verbal proximity to the child.

4 = 6 minutes to 9 minutes 40 seconds: Parent spends most of the 10-minute epoch within visual/verbal proximity to the child. parent out of visual/verbal proximity only briefly.

5 = 9 minutes 40 seconds to 10 minutes: Parent spends the entire 10-minute epoch within visual/verbal proximity to the child.

*** = if a parents receives a rating of 1 for Opportunity for Interaction, no more child-parent ratings are done for that parent in that 10-minute epoch; one may still be able to code parent-parent- Dyadic Relations.

Sensitivity

The key defining characteristic of a sensitive interaction is that it is child-centered. The sensitive parent is tuned to the child and manifests awareness of the child's needs, mood, interests, and capabilities, and allows this awareness to guide his/her interaction with the child.

If the child is upset, the parent takes time to soothe and calm the child. The parent responds to signals of the child's distress (e.g., crying, fretting, frowning) by acting a) promptly; b) appropriately; and c) consistently. (Mild fussing does not require the parent to respond as quickly as does the child's acute distress).

If the child initiates social gestures and expressions (e.g., looking at the parent, smiling at the parent, talking, reaching toward the parent, waving, clapping hands, handing objects), or makes demands, demonstrates desires or requests (e.g., stretching arms to be picked up, reaching for toys the parent is holding, asking for something), the parent responds appropriately.

If the child is uninterested, the parent takes time to re-engage the child in a manner that demonstrates sensitivity to the child's mood. When the child is bored or frustrated, the parent offers toys or other distractions. When a child is interested and involved with toys, the sensitive parent allows the child to independently explore the toys. During play, the sensitive parent provides one toy or game at a time and bases continuation on the child's response. How the parent gears the play and what they gear the play towards is determined by whether or not the child seems to be enjoying the activity. The parent does not persist with an activity or toy that the child is obviously not enjoying.

A sensitive parent provides stimulation that is developmentally appropriate and facilitates exploration and actions that the child is capable of achieving. She/he may encourage the child to develop new skills, but does not evidence expectations that are clearly beyond the child's developmental capabilities. A sensitive parent provides the child with contingent vocal stimulation and acknowledges the child's interest, efforts, affect, and accomplishments.

Sensitive parents can spend some time watching the child, but the difference between them and the detached parent is that the sensitive parent seems to be actively taking an interest in the child's activities, as evidenced by comments and embellishments when the child loses interest. It is at these times-- when the child loses interest or is detached-- that the difference between the sensitive parent and the detached, under-stimulating parent is most easily seen. The detached parent is either not responding, responding in a listless manner, or responding with developmentally inappropriate comments and behavior.

Sensitive interaction is well-time and paced to the child's responses, a function of its child-centered nature. The parent paces games or toy presentation to keep the

child engaged and interested, but also allows him/her to disengage, to calm down, and reorganize his/her behavior. Sensitivity involves judging what is a pleasurable level of arousal for the child and helping the child to regulate arousal and affect. When the child loses interest, the sensitive parent switches to a new tactic or toy and observes the child's reaction.

Markers of sensitivity include acknowledging child's affect; contingent vocalizations by the parent; facilitating the manipulation of an object or child movement; appropriate soothing and attention focusing; evidence of good timing paced to child's interest and arousal level; picking up on the child's interest in toys or games; shared positive affect; encouragement of the child's efforts; providing an appropriate level of stimulation when needed; sitting on floor or low seat, at child's level, to interact.

Thus, the <u>sensitive parent demonstrates the ability to adapt interactions to child's mood and level of development</u>. The parent neither over- nor under-stimulates. The parent knows when it is time to increase or reduce the amount of stimulation the child is experiencing. For example, parent discontinues an activity that is beyond the child's capacity for response or introduces a new activity when child appears bored.

Ratings for sensitivity should be conceptualized as falling on a continuum of low to high levels of sensitivity. Insensitivity, as opposed to a lack of sensitivity, is captured elsewhere.

<u>Sensitivity Ratings</u>

1 = Not all characteristic-- There are almost no signs of parent sensitivity. The parent rarely responds appropriately to the child's cues.

2 = Minimally sensitive/responsive-- Parent is occasionally sensitive; maybe 1 or 2 instances of sensitivity.

3 = Parent is moderately sensitive and responsive to child; Inconsistently sensitive, hard to categorize.

4 = Mostly sensitive/responsive-- Here the balance shifts to the parent being more often sensitive than not.

5 = Highly sensitive/responsive-- The parent displays consistent sensitivity to the child throughout the rating period.

Positive Affect

Expression of positive regard or affect, warmth, affection. The parent's positive feelings toward the child, expressed during interaction with the child, taking into account particularly the intensity of these feelings. Speaks in warm tone of voice, has expressive face, smiles, laughs, with child, is relaxed and at ease, is enthusiastic about child, praises child, seems to enjoy child, listens, watches, remains attentive, looks into child's face when talking to him/her, spontaneity refers to taking advantage of an opportunity for interaction as it is presented. Keep in mind the uniformity of positive affect, and also be aware of the "brightness" in vocal quality.

Positivity Ratings

1 = Not at all positive -- Parent does not display true positive regard for the child, either in words or expressions. If positive expressions (laughing, smiling) do occur, they appear to be inappropriate to the situation or an inaccurate reflection of the parent's feelings.

2 = Minimally positive (lukewarm) -- Infrequent or weak signal(s) of positive affect are shown. The intensity and frequency are low.

3 = Moderately positive -- greater frequency and intensity of positive affect is shown, as compared to the rating of 2, but the parent demonstrates virtually no spontaneity.

4 = Very positive -- greater frequency and intensity of positive affect is shown, compared to the rating of 3, also evidence of some spontaneity is observed in parent's demonstration of positive affect. What makes this rating different than a score of 5 is that the parent is not characteristically positive; there may be rare moments of flat negative affect.

5 = Predominantly positive -- Parent is predominantly positive, both in terms of facial and vocal expressiveness. The parent does not appear to be bored, discontent, or vocally harsh, and disruptive. Affect is consistently positive and spontaneity is characteristic and appropriate. Parent shows a range of expressions that are virtually always positive.

GENERAL GUIDELINES FOR HOME OBSERVATION CODING SYSTEM
* Sensitivity is a difficult code to capture and should be remembered that this rating, even more so than the others, is a relative code. A child can be very happy and content without "asking" for a lot of structure or intervention from the parent. If the parent is aware of this contentment, and thus responds appropriately and sensitively to the child's comfort level (by not intervening too much) the parent can still (and probably should) receive a high rating for sensitivity. Thus, a parent who does not have as much opportunity to physically display overt and direct sensitive intervention,

because of child's contentment, can earn just as high a sensitivity rating as compared to the parent whom needs to provide (and does so sensitively) more restructuring or embellishing actions, contingent upon this second child's behavior.

Appendix B

Inner State Coding Manual

Dunn and Hughes (2004)

1. Inner state TERMS include:

DESIRE TERMS
    WANT (wanna, wanted…)
    LIKE (only if it used in the sense of desire e.g. "would like")
    DREAM
    HOPE
    WISH
    KEEN ON
    PREFER
    CARE
    NEED
    FAVOURITE
    DESIRE

EMOTIONAL TERMS
    AFRAID
    ANGRY
    ANNOYED
    BORED
    CROSS
    CURIOUS
    DISAPPOINTED
    EMBARASSED
    ENJOY
    EXCITED
    FEAR
    FED UP
    FEEL plus an adjective (feel good, bad, all right)
    FRIGHTENED
    GLAD
    HAPPY (unhappy)
    HATE
    HAVE FUN (in the sense of 'enjoy')
    INTERESTED
    JEALOUS
    JOY
    LIKE (as in "I like ice cream")
    LONELY
    LOVE

MAD
MISS
OK (to be ok)
PLEASED
POOR
PROUD
SAD
SCARED (SCARY)
SURPRISE
ALL RIGHT / ALRIGHT (in the sense 'to feel OK')
UPSET
WORRIED

PERCEPTUAL TERMS
SEE (saw, seen)
LOOK
WATCH
PAY ATTENTION
HEAR
LISTEN
SMELL
TASTE
FEEL
TOUCH
OBSERVE
PERCEIVE
DISTINGUISH
RECOGNIZE
APPEAR
NOTICE

Sensation
NB: A person has to be the object
Be / feel X – see examples…
AWAKE
DIZZY
SLEEPY
TIRED
SQUEEZED
SCRATCHED
HOT / COLD / WARM
SICK
HURT
NOISE

<u>COGNITIVE TERMS</u>

      BELIEVE
      BET   (only in the sense of "I think")
      CHEAT   (but not as rule-break; only as deception)
      DECIDE
      DREAM
      EXPECT
      FORGET
      GUESS   (guessed...)
      KNOW
      IDEA
      IMAGINE
      LIE   (as in to tell a lie)
      MEAN   (only if implies thought: e.g., "No, not that one, I meant this
          one", but not "That's not meant to be there")
      MIND - but not as verb (e.g., NOT as in - never mind, mind out)
      NIGHTMARE - but not as colloquial exp. for 'bad time'
      PRETEND
      REALLY (only if the context suggests an appearance / reality contrast)
      REMEMBER
      SUPPOSE   (as in "It goes there, I suppose - but NOT in the sense of
          'should' e.g., 'That's supposed to go in there')
      SECRET
      THINK   (thought, thinking, thoughtful...)
      UNDERSTAND
      WONDER

C) Adjectives: (These are less clear, and are coded as 'other' in the functional coding)

      SURE   (e.g., "are you sure?")
      PRETEND   (e.g., "This is just a pretend sword")
      REAL   (if implies contrast with appearance, e.g., "This is a real one")
      MAGIC   (but <u>not</u> if part of a proper noun, e.g., "magic wand" or as an
          expression like "Great!" or "Wow!". Magic can also be a verb, e.g. "I'm
      going to magic you into a princess")

Exclude:
- <u>Repetitions,</u> unless there is a change of emphasis or meaning (however subtle). If the child repeat exactly his own utterance only the FIRST occurrence can be coded (e.g.: "I want it, I want it")
- The use of desire term to describe <u>motivational state with no specified </u>object ("Wanna"; "Don't wanna") because desires are about a specified object by definition
- <u>Imitative use</u> of mental-state talk (e.g. cases in which the mother repeats child's utterance and vice versa - Mother:"tell him you know where it is". Child: "I know where it is")

- INTERESTING   BORING   MIND/CARE (e.g., I don't mind/care)
WORRY   DARE

2. Speaker and Addressee

1 = Toddler 2= sibling selected 3 (4 - 5) =Other siblings; 6=Mother; 7=Father; 8=Researcher; 9=All

Note that children often speak out loud, to no one in particular - code this as if addressed to all unless transcriber has marked it as self-speech

3. Referent (whose ms)
1 = own mental state (first person statement)
2 = other's mental state (usually addressee, but could be 3rd party, including talk about the researcher)
3 = shared (e.g., "we're pretending)

A slightly ambiguous case is when children are setting up a script: (e.g., "Pretend it's raining" or "Pretend I was dead, yeah?"). Code these as having a shared referent.
Also nouns or adjectives (e.g., this is a magic car) should be coded as shared referent - since the pretend status is complicit between the children.

4. Play Context

Include talk within pretence, plans for pretence, neutral commentary on other child's pretend play, but not comments about pretend status of toys, or comments in pauses between bouts of pretend play.

2 = pretend play
1 = non pretend play

5. Affect
Only for the emotional term (-77 for other IST categories)

Code if the term refers to a positive or a negative emotion
2=negative
     hate, don't like
0 = neutral
1 = positive
     love, etc.

6. Form

People sometimes use mental state talk to facilitate mutual understanding – to make sure that they've understood another person's beliefs or intentions, or to make sure that their own feelings and/or intentions are understood. This kind of mental state talk is especially

interesting to us, so we'd like to code the different ways in which mental state talk can be used to ensure connected conversations. The main types are:

1 = question

Note that transcribers don't always put a question mark on utterances that, from their syntax, are obviously questions.

2 = contrastive

The clearest case of a contrastive is when someone makes an <u>explicit reference</u> to the contrast between different beliefs, or between belief and reality (e.g., "You thought I was dead, but I'm not, I'm alive").
But include also <u>implicit contrastives</u>.
In the case of desire terms they can be:
- individual contrastives in which a speaker refers to a mental state that contrasts with another mental state that has just been mentioned (e.g., A: I like meat; B: Daddy doesn't like meat / Daddy likes fish)
- desire-outcome contrastives between a desire and a reality (e.g. A: " I am playing with this"; B: "I wanted to have a go with this").
Do not include the nouns 'pretend / real' as contrastives, unless there is reference to what the child / other thought.

3 = explanation

Usually these will be explanations of actions, or unexpected events
e.g., to resolve a conflict - I didn't mean to do it / I didn't do it on purpose
e.g.2 – to clarify a misunderstanding 'I thought you had finished / your cup was empty
Explanations can also refer to non-events…
e.g.3 – 'I was hoping we could go to the park, but it's raining'
Explanations can also refer to emotion and action (e.g.: "she is hiding because she is scared"):
       by a response to a causal question (e.g. A: "Why is he hiding?"; B: "because he is scared")
       By an implicit causal relationship (e.g. "He is hiding". "He is scared")

4 = prediction

If someone makes an explicit reference to how they or another will feel following an action or to how another will behave following a certain emotion or belief (e.g. I'd be so sad if you ran away / e.g. Your brother might not want to share his toys because you did not share your toys with him) .

5 = other

The most frequent category. Code mental state terms as this if they are none of the above.

7. Function
77 = not applicable (e.g., for desire terms)
1 = genuine mental state reference*:*

If speaker refers to his or her own or another's thoughts, beliefs, memories etc (e.g., "Do you think Captain Hook could be a policeman?").

The use of the cognitive term KNOW is coded as a genuine mental references if it refers to a lack of knowledge (ex: "I don't know how to do it"; "I don't know what it is") or if it is used in a question that answered for the source of a knowledge (ex: "How do you know that?") The phrase "I don't know" without a predicate complement is also included in this category if the speaker is an adult or an older child. For toddlers, who may use these phrases without a full understanding of the meaning, coding in this category needs to be supported by contextual evidence.

The use of the cognitive term think is coded a s a genuine reference if it refers to a belief ("I think it is a monster"), to an imagined state of affairs ("I think my hands are paper"),or to a mental activity ("I was thinking")

"Pretend" is also coded as a genuine mental reference, if it occurs as a verb (see 3) and is followed by a proposition.

2 = conversational: modulation of assertion/ acknowledgement/ attention grabbers. In for
        emotion terms if children are singing

Mental-state terms employed to strengthen or weaken an assertion (e.g. "It's Casper the ghost, I think"). Acknowledgements of the other child's utterance using mental-state terms also included in this category (e.g. "Yes I know"; "I think so" because it means just "yes" or "I don't think so" because it means "no"). Also, use of mental-state terms as an attention grabber (e.g., Do you know what?..."What do you think? "You know")

3 = directing interaction:

If child introduces an activity with a mental-state term. The most common example is "I know, you can be ...". Here a comma or 3 dots after the "I know" are good clues. Note that "pretend" could be coded both as directing activity (e.g., "pretend you're the bad guy") and as a genuine mental state reference (pretence is the paradigmatic example of how mental states float free from reality). After some thought, I've applied the rule that genuine mental state talk trumps directing interaction.

4 = other:

Several less frequently occurring categories of mental-state term functions included clarifications (e.g. "Do you mean this one?), nouns, adverbs and adjectives (e.g., "It's not a real shark; it's only a pretend one). Know how also coded in this category, as are terms that are ambiguous (e.g., because part of utterance is unintelligible.)