Attachment, Parent–Child Discourse and Theory-of-Mind Development

Lenna L. Ontai and Ross A. Thompson, *University of California, Davis*

Abstract

This study investigated the relations among attachment, mother–child discourse, and theory of mind in a sample of 76 four-year-old children (mean age = 4.48 years; 36 boys). Mother–child conversations about a past event were coded for maternal use of elaborative discourse and mothers' references to mental states. Mothers completed the attachment q-sort and children completed four false-belief tasks. Results revealed that maternal conversational elaboration was a significant predictor of children's theory-of-mind performance, whereas maternal mental state references and attachment security were not. The findings provide further evidence for the importance of discourse in children's theory-of-mind development.

   Keywords: attachment; discourse; theory of mind

Introduction

The process by which children understand their social worlds is a topic of increasing interest to developmental researchers. A central component of this developmental process is children's understanding of mental states and how they contribute to behavior, otherwise known as 'theory of mind'. Recently researchers have begun to investigate how early experiences contribute to theory of mind, with accumulating evidence for the role of social experiences such as parent–child discourse about mental states (Brown, Donelan-McCall, & Dunn, 1996; Dunn, Brown, Slomkowski, Tesla, & Youngblade, 1991; Sabbagh & Callanan, 1998) and the quality of the parent–child relationship (Fonagy, Redfern, & Charman, 1997; Meins, Fernyhough, Russell, & Clark-Carter, 1998; Symons & Clark, 2000; see Thompson, 2006, for a review).

   The current study advances understanding of the growth of theory-of-mind understanding in two ways. Firstly, we explore the influence of two features of mother–child conversational discourse that have not previously been studied together: maternal mental state references and maternal elaborative discourse style. Each has been implicated in previous studies of the growth of psychological understanding in young children, but elaborative discourse has not been previously studied in relation to theory of mind, nor has it been studied together with mental state references.

Correspondence should be addressed to Lenna Ontai, University of California, Department of Human and Community Development, One Shields Ave., Davis, CA, 95616. Email: *lontaigrz@ucdavis.edu*.

Thus, our goal was to expand understanding of the conversational catalysts to the growth of theory of mind. Secondly, in light of current theories regarding the importance of the mother–child relationship in shaping conversational styles, we explore these conversational influences within the context of broader relational quality. By examining whether or not the security of attachment interacted with maternal discourse variables in predicting children's theory of mind, we sought to understand the role of mother–child conversation within the context of the broader relationship they share.

Parent–Child Attachment Relationships and Children's Theory of Mind

The view that the parent–child relationship assumes a primary role in children's evolving representations of their social worlds has long been held by attachment theorists who argue that the quality of the attachment relationship shapes children's understanding of themselves and others (Bowlby, 1969/1982). According to attachment theory, secure attachments facilitate children's formation of coherent and organized mental representations of the relationship that they can use effectively to predict attachment figures' behavior. This competence then provides children with the ability to engage in what Bowlby called 'goal-corrected partnerships', whereby they use their insights into attachment partners to align their own goals with those of the attachment figure. Therefore, attachment relationships offer children the means by which to attend to and use mental representations of others to guide behavior. This process shares many similarities to theory of mind, whereby children develop theories of people's beliefs and desires that account for their behavior. A mature theory of mind allows children to use information related to internal states, such as someone's beliefs and desires, to interpret behavior. Thus, a secure attachment may enhance children's sensitivity to internal states first within attachment partners and subsequently within others.

Research on attachment and theory of mind, however, provides mixed support for this view (see Carpendale & Lewis, 2004; Hughes & Leekam, 2004 for reviews). For example, several studies have found associations between attachment security and mental state understanding (Fonagy et al., 1997; Meins, Fernyhough, & Russell, 1998; Steele, Steele, Croft, & Fonagy, 1999), but other researchers have failed to find an association between security and theory-of-mind assessments (Meins et al., 2003). At least one study (Symons & Clark, 2000) found a relation concurrently at the age of five while failing to find one longitudinally from attachment at the age of two. One reason for these mixed results may be intervening variables that help to account for the association between attachment and theory of mind. Meins has argued, for example, that this association is mediated by differences in maternal sensitivity to the infant's mental states that enables mothers to comment appropriately and insightfully about psychological experiences with the child. In her research, mothers' use of mental state language when playing with their infants significantly predicted theory-of-mind performance at the age of four, but attachment security at 12 months was not predictive beyond the effects of mental state language (Meins et al., 2002).

In light of these mixed findings, and in view of current formulations (reviewed further in the text) concerning the importance of mental state language to psychological understanding beyond infancy, the current study was designed to explore whether or not shared conversations between mothers and children would also predict children's theory-of-mind performance, and whether or not attachment security would add

predictive value in addition to the influence of these linguistic contributions. It is possible that attachment security contributes to children's conceptual development by influencing more proximal interaction processes such as communication about mental states (Harris, 1999). For instance, attachment theorists have argued that conversations are a critical feature of the attachment relationship that can serve as a process by which security is established, experiences are shared and discussed, and psychological under-standing is achieved after infancy—especially if conversations are open and fluid (see Bretherton, 2005, for review). Thus, attachment security may not be predictive of theory of mind when intervening variables, such as the quality of mother–child dis-course related to mental states, are considered, and this is the first study to test for such an association in preschoolers. Alternatively, there may be a moderating effect of discourse in the relationship between attachment and theory of mind resulting in a meaningful interaction between these variables in predicting theory-of-mind understanding.

Parent–Child Communication and Children's Theory of Mind

Language is a unique factor in human interaction that allows for the transference of ideas and comparison of perspectives (Tomasello, 2000). The sharing and contrasting of perspectives in discourse interactions is common even in parent–child discourse. Engaging in this process forces children to take the perspectives of others and compare and contrast them with their own (Nelson, 1996). As children participate in more conversational interactions with adults, they cease to see them as merely animate agents and begin to see them as intentional and mental agents as the intentions and mental states of others are made clear through perspective taking (Tomasello, 2000). The frequency of mental state talk in the family has been found to be an important contributor to children's early talk about mental states (Furrow, Moore, Davidge, & Chiasson, 1992; Ruffman, Slade, & Crowe, 2002; Sabbagh & Callanan, 1998), as well as to children's performance on theory of mind tasks (Brown et al., 1996; Dunn, Brown, & Beardsall, 1991; Moore, Furrow, Chiasson, & Patriquin, 1994) and chil-dren's understanding of internal states such as emotion (Brown & Dunn, 1996; Denham, Zoller, & Couchoud, 1994; Dunn et al., 1991; Kuebli, Butler, & Fivush, 1995; Steele et al., 1999; see Thompson, 2006, for a review).

While this pattern of findings indicates that parent–child communication is impor-tant to children's developing psychological understanding, these investigations have focused narrowly on conversational references to mental states. Research on children's event representation suggests that a constructivist approach that incorporates multiple linguistic catalysts to children's mental state understanding, such as those included in adult elaborative speech, may offer additional insights into this process (Carpendale & Lewis, 2004). From this perspective, adult–child conversations are contexts that allow for the transfer of knowledge by engaging in conversational interactions about shared experiences that enable children to discover that others may have different beliefs from their own. Such interactions are common in parent–child conversations where parents elaborate on children's statements by presenting them with their own perspective (e.g., 'Did that make you scared? I thought it was funny. Daddy was just being funny') or by challenging them when they present a memory that is inaccurate ('No, we didn't go to the park with Caleb. Who was with us? It was Brian. Remember?'). These types of interactions actively engage children in the process of comparing and contrasting their own and others' beliefs and perspectives, and are likely to contribute to the growth of

mental state understanding in this manner (Nelson, 1996; Tomasello, 2000). There is some empirical support for this perspective. For example, one study found that children whose mothers responded to their children's utterances with an elaborative statement during conversations tended to do better at theory-of-mind tasks (Welch-Ross, 1997). Further, at least one experimental study has shown that perspective-shifting discourse (e.g., discussing mental deception or error) contributed to three-year-olds' improved performance on false-belief tasks (Lohmann & Tomasello, 2003), and Ruffman, Perner, and Parkin (1999) found that preschoolers' false-belief understanding was even predicted by mothers' efforts to cause preschool offspring to reflect on another's feelings in conflict situations.

This approach has also been used to study the contribution of discourse to children's memory development by analyzing the influence of elaborative discourse about events in the child's life. Unlike the use of mental state terms, elaborative discourse styles, marked by open-ended questions and expansion of information provided by children (vs. 'pragmatic' styles marked by closed-ended questions, frequent switching of topics and failures to follow up on information provided by children), often provoke young children to consider alternative points of view (Fivush & Fromhoff, 1988; McCabe & Peterson, 1991; Reese & Fivush, 1993). Engaging in conversational interactions highlighting that others have desires, thoughts, and beliefs that differ from one's own gives children opportunities to expand their emerging theories of mind through interactions that are meaningful to them (Dunn, 1998).

Recent research in this area suggests that these types of conversational contexts may be important to the growth of psychological understanding. Elaborative discourse has been found to be related to children's understanding of internal processes such as conscience development (Laible & Thompson, 2000), understanding of emotions (Ontai & Thompson, 2002), and event representation (Fivush & Fromhoff, 1988; Haden, Haine, & Fivush, 1997; McCabe & Peterson, 1991; Reese & Fivush, 1993; Tessler & Nelson, 1994). However, it remains unclear whether or not the use of elaborative discourse also facilitates preschool children's understanding of their own and others' mental states. Thus, one of the goals of this study was to examine the influence of maternal elaborative discourse in the context of maternal references to mental states and attachment security, on children's performance on theory of mind tasks. We were especially interested in the relative influence of elaborative discourse and references to mental states when both were included in the equation.

Joint Contributions of Attachment and Discourse on Children's Theory of Mind

Recent research indicates that the relational context in which conversations occur is an important factor to consider. Work in this area suggests that the quality of the mother–child relationship may affect the influence of conversational quality on the development of psychological understanding. Attachment security may shape discourse interactions to be more open and elaborative, consequently informing children's theory of mind. From this perspective, it may be more useful to move beyond investigating individual influences of these variables and toward consideration of conversations occurring within a larger context of family dynamics to offer a more integrative view of the process (Harris, 1999; Humfress, O'Conner, Slaughter, Target, & Fonagy, 2002). Such a view is consistent with attachment theory, which argues that secure dyads have a more 'open', fluid communication style that permits greater sharing of feelings and

thoughts (Bowlby, 1969/1982; Bretherton, 1990). There is suggestive evidence in support of this view. For instance, Ontai and Thompson (2002) found that the interaction of elaborative discourse and attachment security at the age of three predicted children's emotion understanding at the age of five. Similarly, Laible and Thompson (2000) found that the interaction of attachment and maternal elaborative discourse in reminiscing conversations predicted conscience development at the age of four beyond the effects of each of these variables alone. Thus, elaborative discourse and greater mental state references in conversations between securely attached children and their mothers may be more predictive of theory-of-mind understanding than these conversational features between insecurely attached children and their mothers. These findings point to a need to examine the interrelations between discourse and attachment in theory-of-mind development.

The present study aimed to expand on this field of research in a variety of ways. Firstly, the current study used measures of mothers' use of mental state terms in conversations with their children, as well as a measure of elaborative discourse style, in order to assess the relative contribution of each to children's theory of mind. Secondly, based on earlier findings of the joint role of attachment security and discourse style in predicting children's emotion understanding (Ontai & Thompson, 2002) and children's conscience development (Laible & Thompson, 2000), security of attachment was assessed in order to examine its direct association with theory of mind, and also how discourse interacts with attachment security in predicting children's theory of mind. Lastly, given that attachment relationships may benefit children's theory of mind by allowing them insight into their caregiver's beliefs and desires (Harris, 1997; Repacholi & Trapolini, 2004; Symons & Clark, 2000), we realized that the use of traditional theory-of-mind tasks—which require children to draw conclusions about the thoughts and feelings of unfamiliar story characters—may not provide the most valuable assessment of this relation. To ensure sensitivity to potential attachment-related influences, this study used traditional measures of theory of mind as well as measures that used mothers as the target character. The caregiver-specific tasks were modeled after a task developed by Harris and colleagues (Harris, Johnson, Hutton, Andrews, & Cooke, 1989) where children are asked to predict how their mother might feel in different situations where she holds a false belief. Lastly, due to relations found between gender and mother–child conversations in previous studies (Adams, Kuebli, Boyle, & Fivush, 1995; Cervantes & Callanan, 1998; Kuebli & Fivush, 1992; Kuebli et al., 1995), child gender was controlled for in the current analyses.

Method

Participants

A total of 83 four to five-year-old children and their mothers participated in the study. Participants were recruited from a medium-sized Midwestern city, primarily through targeted mailings sent to mothers of four-year-old children identified through birth announcement records. Five participants did not complete both visits and were dropped from the final analyses resulting in a final sample of 78 children (mean age = 4.48 years; 42 girls and 36 boys) and their mothers. The participants came from primarily White, middle-class families and were paid $10 upon completion of the second visit.

Procedure

Data were collected over the course of two visits with mothers and their children. The first visit was conducted at participants' homes, where children completed two standard theory-of-mind tasks and mothers filled out a brief demographic questionnaire. Mothers were also introduced to the attachment q-set items (Waters & Deane, 1985) in accordance with guidelines set forth by Teti and McGourty (1996). The first visits averaged 30 minutes in length. The second visits were conducted one week after the first visit at a university laboratory. During the second visit mothers completed the attachment q-set and children completed two theory-of-mind tasks with mothers as the target character. The second visits averaged one hour in length.

Measures

Children's Theory of Mind. Children's theory of mind was assessed using four tasks: one standard unexpected location task, one requiring the child to attribute an emotion to a story character holding a false belief, one unexpected location task involving the mother as the character, and one emotion attribution task involving the mother as the character. The two tasks that involved the mother as the main character were designed specifically for this study based on the view that attachment relationships may benefit children's theory of mind by allowing them insight into their *caregiver's* beliefs and desires, which they subsequently impute to others (Repacholi & Trapolini, 2004). The tasks were modeled after existing theory-of-mind tasks that have been established in the literature (Harris et al., 1989; Wimmer & Perner, 1983).

The unexpected-location task (Wimmer & Perner, 1983) and the emotion-attribution task (Harris et al., 1989) followed procedures used by previous researchers. For the unexpected-location task, children were asked to predict where a story character would look and why after his/her candy bar was moved to a new location without his/her knowledge. For the emotion-attribution task, children were asked to predict and justify how a character would feel before and after finding the contents of their favorite drink were switched with another beverage. Both stories included control questions to ensure that children understood the stories. Stories were retold for children who answered control questions incorrectly until they provided the correct answers (seven children in the unexpected location and three children in the emotion-attribution conditions were retold the stories). In all cases, the stories only had to be retold once before the children provided correct answers. For both stories, children who provided the correct answer with proper justification received a score of 1, and those who provided either the incorrect answer or the correct answer without proper justification received a score of 0.

The caregiver-specific theory-of-mind tasks were modeled after the emotion-attribution task (Harris et al., 1989) using mothers as the main characters and the child as the protagonist. Mothers were asked beforehand what her favorite snack food and bottled drink were for use in the stories. The first story described the child's mother putting her favorite snack in a kitchen drawer and her child later moving the snack to a new location without her knowledge. The second story described mothers putting their favorite beverage in the refrigerator and the child later changing the contents to another beverage without her knowledge. Children were asked how their mothers would feel before and after finding their candy bar had been moved, and before and after finding the contents of their drink had been switched, and why. Children who

answered correctly with the proper justification received a score of 1, and children who answered with the incorrect emotion or without a valid justification received a score of 0. Children's performance on each mother-oriented task was significantly correlated with their performance on the standard emotion attribution theory of mind task ($r = .33$ and .34, each $p < .001$), suggesting their validity as measures of theory of mind. Furthermore, consistent with previous research, crosstabs analysis revealed that children who passed the three emotion-attribution tasks were more likely to have passed the standard change-of-location task (22 vs. four; 20 vs. six; 17 vs. five). Based on these findings, and consistent with similar procedures by Repacholi and Trapolini (2004), scores on all four tasks were combined to create a *theory of mind* summary score for each child.

Mother–Child Elaborative Discourse. Mothers were asked to talk to their children about a past event in which they participated together. Following previous studies on event memory (Haden et al., 1997; Haden, 1998; Reese & Fivush, 1993), it was specified that the event should be a special, one-time event excluding birthdays (which tend to be routine to children this age) and events involving story lines such as movies (since children tend to focus on the story line rather than the event). The conversations were audiotaped and transcribed.

The transcripts were coded by two research assistants, who were blind to the hypotheses, according to guidelines used in previous research (e.g., Haden, 1998). Firstly, all off-topic talk was identified and excluded from coding. Mothers' conversational turns (i.e., each time the mother took a turn within the conversation) were coded for the following using independent clauses within each turn (e.g., phrases, statements, questions) as the coding units: *elaborations* = statement or question that moves the conversation to a new aspect of the event or adds more information about a particular aspect of the event; *fill in the blank* = provides all but a single piece of information and pauses expectantly for the child to supply the missing piece of information; *evaluations* = confirms or negates a child's previous utterance, including repetition of the child's previous utterance along with a 'Yeah' or 'No'; *repetitions* = repeats the gist or exact content of their own previous statement or question; *clarification questions* = asks for acoustical clarification (e.g., 'What did you say?'); *memory prompts* = requests that the child say more without providing any additional information (i.e., 'Tell me about it'; 'Do you remember?'); *preference* = questions that ask for the child's preference (i.e., 'Did you have fun?'; 'Did you like that?'). *Elaborative discourse* scores (Cohen's kappa = .75) were obtained by computing the proportion of clauses in which mothers used elaboration, fill in the blank clauses, or evaluations in relation to the total of all coded clauses used.

Mother–Child Mental State Discourse. Event conversations were also coded for maternal use of direct references to mental states by two coders blind to the hypotheses and to the elaborative-discourse coding (91 percent agreement). References to mental states were defined as references relating to will, mind, imagination, interest, intellect, desires, wishes, emotions, excluding likes/dislikes and behavioral tendencies (e.g., 'She'd like to go to the store'). A proportion score was calculated by dividing the total number of direct references to mental states by the total number of conversational turns taken by the mother to produce a *mental state references* variable.

Attachment Security.   To assess attachment security, mothers completed the attachment q-sort (AQS; Waters & Deane, 1985). The AQS consists of 90 descriptive statements

of young children's behavior during interactions with their primary caregivers. These items are designed to provide a comprehensive description of children's 'secure base' behavior with caregivers. Research by Teti and McGourty (1996) indicates that to assure the validity of the mother's sorts, they must be properly trained, kept naive to the construct being measured, given the AQS items to review in advance, and supervised during their sort in case questions arise. In the current study, mothers were introduced to the test items a week in advance of the final sort and encouraged to observe their children with the items in mind until her next visit. Mothers completed the sort one week later when the researcher was present to supervise the sort. The AQS is completed by sorting the 90 statements into nine categories using a fixed distribution. The statements are sorted into nine piles, ranging from 'Very much like my child' to 'Very much unlike my child', based on how characteristic the behavior is of the child in question. Attachment security scores were calculated from the mothers' sorts by assigning each card a score based on its placement in the sort (e.g., 1 = very much unlike my child; 9 = very much like my child). These scores were then correlated with the scores each card received in the criterion sort for the hypothetical 'most secure' child, which was devised based upon independent ratings by attachment experts (see Waters & Deane, 1985). Thus, scores can theoretically range from −1 to 1. The resulting correlation served as the *attachment security* score.

Results

Means and standard deviations for the variables of interest appear in Table 1. In Table 2, bivariate correlations among the predictor variables revealed a moderate but non-significant positive relation between age and attachment ($r = .22$, $p < .06$). Bivarate correlations among the predictor variables and theory of mind revealed a significant positive relation between elaborative discourse style and children's theory of mind ($r = .30$, $p < .01$) (see Table 2). There was no significant bivariate association between theory of mind and maternal mental state references. Interestingly, attachment security was not correlated significantly with either of the maternal discourse variables, and there was no significant association between maternal mental state references and maternal elaborative discourse.

Hierarchical multiple regression analysis was used to assess the independent contributions of discourse (mental state references and elaborative discourse) and attachment on children's theory of mind after controlling for gender and age (see Table 3).

Table 1. Means and Standard Deviations for Variables of Interest

Variables	Mean	Standard Deviation	Range
Age	4.48	.30	3.68–5.11
Attachment security	.43	.19	.02–.90
Elaborative discourse	.73	.14	.20–.95
Mental state references	.35	.16	.27–.80
Theory of Mind	1.55	1.31	0–4

N = 78.

Table 2. Bivariate Correlations between Variables of Interest

	2	3	4	5	6
(1) Child gender	.08	.04	.08	.17	.12
(2) Child age	—	.17	.08	.22*	.17
(3) Mental state references		—	−.05	.07	−.14
(4) Elaborative discourse			—	.11	.30**
(5) Attachment				—	.01
(6) Theory of mind					—

* $p < .06$, ** $p < .01$.

Table 3. Regression Analysis for Discourse and Attachment Predicting Theory of Mind

Variables Entered	Standardized Coefficients		
	Step 1	Step 2	Step 3
Gender	.16	.15	.14
Age	.12	.14	.15
Mental state references		−.16	−.16
Elaborative discourse		.27*	.27*
Attachment security		−.07	−.10
Attachment X elaborative discourse			−.14

Note: Females coded as 0, males coded as 1.
* $p < .05$.

Results revealed that gender and age accounted for approximately 4 percent of the variance on the first step ($F (2, 73) = 1.64$, NS). The addition of the discourse and attachment variables on the second step added 11 percent of accounted variance to the model ($F_{change} (3, 70) = 2.95$, $p < .05$). This full model was significant ($F (5, 70) = 2.48$, $p < .05$), accounting for approximately 15 percent of the variance. Mothers' elaborative discourse style ($\beta = .27$; $p < .05$) was a significant predictor in the model.

To explore the interactive effects of elaborative discourse and attachment security, both variables were centered and multiplied together to form an interaction variable that was entered into the hierarchical regression analysis. Results revealed that the addition of the interaction term between elaborative discourse and attachment did not add a significant amount of variance to the model ($F_{change} (1, 69) = 1.65$, NS). Because neither attachment nor maternal mental state references were significant direct predictors of theory of mind, the interaction between these variables was not tested.

Discussion

Results from this study expand our understanding of the influence of conversation and relationship quality in children's developing understanding of mental states. They suggest that maternal elaborative discourse is a stronger predictor of children's theory-of-mind understanding than explicit maternal references to the mind. However, contrary to previous research (Fonagy et al., 1997; Meins et al., 1998; Steele et al., 1999), attachment security did not independently predict theory of mind. Nor did the security of attachment interact with the maternal discourse variables in predicting children's theory-of-mind performance. These findings expand existing understanding in several ways.

Firstly, previous studies have established the influence of maternal mental state discourse on children's theory of mind, and the influence of elaborative discourse on other forms of psychological understanding, such as emotions and conscience development. This study is the first to include both kinds of maternal discourse in predicting children's mental state understanding. The findings suggest that elaborative discourse may be an important avenue by which young children derive an appreciation of mental states and their influence on behavior. This can occur when, for example, mothers explicitly or implicitly reflect on children's perceptions of events while contrasting them with alternative accounts, or when the mother enhances the child's understanding of an event by providing information about that person's feelings, desires, thoughts, motives, or other mental states. Moreover, elaborative discourse can enhance mental state understanding in young children by offering evaluations of the child's perspective: each confirmation or negation of a child's utterance underscores the two subjective orientations that contribute to the shared conversation. Importantly, while some of these forms of maternal elaborative speech are likely to also include mental state discourse, others are unlikely to do so, suggesting that fostering young children's understanding of the mind does not necessarily require explicit references to mental states. For all of these reasons, the current findings suggest that further exploration of the influence of maternal elaborative discourse on the development of young children's understanding of mental states is warranted.

In this study, maternal mental state references were not predictive of theory-of-mind performance. The low bivariate correlation between these maternal discourse measures suggests that this was not necessarily due to their shared variance. Instead, it is possible that the stronger predictive influence of elaborative discourse is indicative of the multiple avenues by which it provokes mental state understanding in young children, beyond explicit mental state references in maternal utterances. The process of engaging in elaborative discourse about a shared event encompasses many elements which may be beneficial to children's emerging theory-of-mind understanding. Moreover, because elaborative discourse is inherently interactive with the child's utterances, it provides avenues for provoking deeper conceptual understanding of mental states by building on the child's own conversational contributions in ways that are likely to provoke greater insight. However, it is also possible that the type of mental state language has important implications for different domains of understanding. For instance, Bretherton and Beeghly (1982) divided children's mental state language into cognitive-, emotional-, desire-, and perceptual-state references and found a developmental pattern in the emergence of word use across the different categories. Although the task used in the current study did not elicit a sufficient number of mental state references to divide them into these types of categories, this kind of analysis may be important to include in

addition to consideration of elaboration quality. This interpretation is speculative, however, and requires follow-up study of these types of discourse within the context of theory-of-mind development.

Secondly, based on previous research investigating contributions of discourse style to other developing domains of psychological understanding, and on the theoretical importance of the 'open communication' believed to be shared by securely attached children with their caregivers, this study examined the independent and combined effects of discourse and attachment security on children's theory of mind. Results revealed no significant independent or interactive effects of attachment security on children's mental state understanding. In light of the mixed prior literature on the association between attachment security and theory of mind, the inclusion of measures of maternal discourse in this study may be informative. More specifically, if the importance of a secure attachment to mental state understanding is in mothers' greater sensitivity to, and communication about, children's mental states (as suggested by Meins et al., 2002), then controlling for variability in maternal discourse may eliminate the predictive relation between attachment and children's mental state understanding. The findings of this study are consistent with those of a recent report by Raikes and Thompson (2006), who studied mother–child conversation, attachment security, and three-year-olds' emotion understanding in a longitudinal study. Consistent with other investigations, they noted that securely attached children were stronger on emotion understanding, but they also found that maternal conversational references to emotions mediated the predictive relation between attachment and emotion understanding, suggesting that the value of a secure attachment to young children's comprehension of feelings is the quality of discourse it promotes. Similarly, although mediation was not supported here, in the context of maternal discourse, attachment security did not have a significant relation to children's theory of mind. This is especially important in light of previous research that has found that mothers of securely attached children use a more elaborative discourse style with their children (see Reese, 2002).

Although this body of research finds increasing support for the importance of discourse, the value of conversation for acquainting children with divergent viewpoints may be accompanied by the risk that the child's viewpoint may be effectively rejected or negated by the mother. Instead, mothers may misconstrue children's experiences (e.g., inferring different emotions in the child than the child reports) and correct them rather than supporting and empathizing with them. Whereas their corrections may be done in an elaborative manner, it may not be considered sensitive within the context. Thus, it may be important to consider how parents balance providing different perspectives with their sensitivity and emotional availability to the child. This is an important area for future research.

It is less clear why there was no significant interaction between attachment security and maternal discourse in the current study, which has been found by other investigators (e.g., Laible & Thompson, 2000; Ontai & Thompson, 2002). It is possible that the restricted range of attachment scores may underlie the lack of associations found in the current study. Additionally, assessing maternal conversational style through one conversation may not adequately capture the style used across a range of discourse contexts, and may neglect attention to the importance of a secure attachment for helping children to understand negative or conflicting feelings (Thompson, 2006). For instance, most of the mothers in the current study chose to talk about a positive event. The style of mother–child discourse would be likely to vary if mothers were asked to talk about a negative event as well. This remains an important issue for future research.

It is worth noting that beyond the main variables of interest in the current study, age and gender accounted for little variance in the final regression. Although age tends to be a consistent predictor of theory-of-mind performance in preschool-aged children, the lack of predictive power in the current study may be due to the limited variance in age of the children. At least one child was five-years of age at the time of data collection, but the study targeted four-year-old children, resulting in a restricted age range of the sample. In addition, many previous studies of theory of mind have noted an important contribution of children's language ability in predicting theory of mind performance. Unfortunately, the task employed in the current study did not elicit children's language use to produce a reliable measure (e.g., mean length of utterance). The lack of a reliable estimate of children's language ability in the current study is a limitation. Future studies of this kind should employ a language assessment measure to accurately account for children's language ability.

Taken together, the findings of this study provide a new way of considering the conceptual contributions of conversational discourse to theory of mind understanding, and suggest that individual differences in relational quality may be important primarily through their association with mother–child conversation. Together, these findings provide further evidence concerning the social-interaction contributions to theory-of-mind development in preschoolers.

References

Adams, S., Kuebli, J., Boyle, P. A., & Fivush, R. (1995). Gender differences in parent-child conversations about past emotions: A longitudinal investigation. *Sex Roles*, *33*, 309–323.

Bowlby, J. (1969). *Attachment and loss: Vol 1. Attachment*. (Second edition published 1982). New York: Basic.

Bretherton, I. (1990). Open communication and internal working models: their role in the development of attachment relations. In R. A. Thompson (Ed.), *Socioemotional development. Nebraska symposium on Motivation, Vol. 36* (pp. 57–113). Lincoln: University of Nebraska Press.

Bretherton, I. (2005). In pursuit of the internal working model construct and its relevance to attachment relationships. In K. E. Grossmann, K. Grossmann, & E. Waters (Eds.), *Attachment from infancy to adulthood: The major longitudinal studies* (pp. 13–47). New York: Guilford Publications, Inc.

Bretherton, I., & Beeghly, M. (1982). Talking about internal states: The acquisition of an explicit theory of mind. *Development Psychology*, *18*, 906–921.

Brown, J. R., Donelan-McCall, N., & Dunn, J. (1996). Why talk about mental states? The significance of children's conversations with friends, siblings, and mothers. *Child Development*, *67*, 836–849.

Brown, J. R., & Dunn, J. (1996). Continuities in emotion understanding from 3–6 yrs. *Child Development*, *67*, 789–802.

Carpendale, J. I., & Lewis, C. (2004). Constructing an understanding of the mind: The development of children's social understanding within social interaction. *Behavioral and Brain Sciences*, *27*, 79–151.

Cervantes, C. A., & Callanan, M. A. (1998). Labels and explanations in mother–child emotion talk: Age and gender differentiation. *Developmental Psychology*, *34*, 88–98.

Denham, S. A., Zoller, D., & Couchoud, E. A. (1994). Socialization of preschoolers' emotion understanding. *Developmental Psychology*, *30*, 928–936.

Dunn, J. (1998). The Emanuel Miller memorial lecture 1995: Children's relationships: Bridging the divide between cognitive and social development. In M. E. Hertzig, & E. A. Farber (Eds.), *Annual progress in child psychiatry and child development* (pp. 45–62). Philadelphia, PA: Brunner/Mazel, Inc.

Dunn, J., Brown, J., & Beardsall, L. (1991). Family talk about feeling states and children's later understanding of others' emotions. *Developmental Psychology*, *27*, 448–455.

Dunn, J., Brown, J., Slomkowski, C., Tesla, C., & Youngblade, L. (1991). Young children's understanding of other people's feelings and beliefs: Individual differences and their antecedents. *Child Development*, *62*, 1352–1366.

Fivush, R., & Fromhoff, F. A. (1988). Two year olds talk about the past. *Cognitive Development*, *2*, 393–410.

Fonagy, P., Redfern, S., & Charman, T. (1997). The relationship between belief-desire reasoning and a projective measure of attachment security (SAT). *British Journal of Developmental Psychology*, *15*, 51–61.

Furrow, D., Moore, C., Davidge, J., & Chiasson, L. (1992). Mental terms in mothers' and children's speech: Similarities and relationships. *Journal of Child Language*, *19*, 617–631.

Haden, C. A. (1998). Reminiscing with different children: Relating maternal stylistic consistency and sibling similarity in talk about the past. *Developmental Psychology*, *34*, 99–114.

Haden, C. A., Haine, R. A., & Fivush, R. (1997). Developing narrative structure in parent-child reminiscing across the preschool years. *Developmental Psychology*, *33*, 295–307.

Harris, P. L. (1997). Between strange situations and false beliefs: Working models and theories of mind. In: W. Koops, J. B. Hoeksma, & D. C. van den Boom (Eds.), *Development of interaction and attachment: Traditional and non-traditional approaches. Proceedings from the colloquium, 'Mother-child interactions and attachment: Old and new perspectives'* (pp. 187–199). Amsterdam: North Holland.

Harris, P. L. (1999). Individual differences in understanding emotion: The role of attachment status and psychological discourse. *Attachment and Human Development*, *1*, 307–324.

Harris, P. L., Johnson, C. N., Hutton, D., Andrews, G., & Cooke, T. (1989). Young children's theory of mind and emotion. *Cognition and Emotion*, *3*, 379–400.

Hughes, C., & Leekam, S. (2004). What are the links between theory of mind and social relations? Review, reflections and new directions for studies of typical and atypical development. *Social Development*, *13*, 590–619.

Humfress, H., O'Conner, T. G., Slaughter, J., Target, M., & Fonagy, P. (2002). General and relationship-specific models of social cognition: Explaining the overlap and discrepancies. *Journal of Child Psychology and Psychiatry*, *43*, 873–883.

Kuebli, J., Butler, S., & Fivush, R. (1995). Mother–child talk about past emotions: Relations of maternal language and child gender over time. *Cognition and Emotion*, *9*, 265–283.

Kuebli, J., & Fivush, R. (1992). Gender differences in parent-child conversations about past emotions. *Sex Roles*, *27*, 683–698.

Laible, D. J., & Thompson, R. A. (2000). Mother–child discourse, attachment security, shared positive affect, and early conscience development. *Child Development*, *71*, 1424–1440.

Lohmann, H., & Tomasello, M. (2003). The role of language in the development of false belief understanding: A training study. *Child Development*, *74*, 1130–1144.

McCabe, A., & Peterson, C. (1991). Getting the story: A longitudinal study of parental styles in eliciting narratives and developing narrative skill. In A. McCabe, & C. Peterson (Eds.), *Developing narrative structure* (pp. 217–253). Hillsdale, NJ: Lawrence Erlbaum.

Meins, E., Fernyhough, C., & Russell, J. (1998). Security of attachment as a predictor of symbolic and mentalising abilities: A longitudinal study. *Social Development*, *7*, 1–24.

Meins, E., Fernyhough, C., Wainwright, R., Clark-Carter, D., Gupta, M. D., Fradley, E., et al. (2003). Pathways to understanding mind: Construct validity and predictive validity of maternal mind-mindedness. *Child Development*, *74*, 1194–1211.

Meins, E., Fernyhough, C., Wainwright, R., Das Gupta, M., Fradley, E., & Tuckey, M. (2002). Maternal mind-mindedness and attachment security as predictors of theory of mind understanding. *Child Development*, *73*, 1715–1726.

Meins, E. F. C., Russell, J., & Clark-Carter, D. (1998). Security of attachment as a predictor of symbolic and mentalising abilities: A longitudinal study. *Social Development*, *7*, 1–24.

Moore, C., Furrow, D., Chiasson, L., & Patriquin, M. (1994). Developmental relationships between production and comprehension of mental terms. *First Language*, *14*, 1–17.

Nelson, K. (1996). *Language in cognitive development: emergence of the mediated mind*. New York: Cambridge University Press.

Ontai, L. L., & Thompson, R. A. (2002). Patterns of attachment and maternal discourse effects on children's emotion understanding from 3- to 5-years of age. *Social Development*, *11*, 433–450.

Raikes, H. A., & Thompson, R. A. (2006). Family emotional climate, attachment security, and young children's emotion understanding in a high-risk sample. *British Journal. of Developmental Psychology*, *24*, 89–104.

Reese, E. (2002). Social factors in the development of autobiographical memory: The state of the art. *Social Development*, *11*, 124–142.

Reese, E., & Fivush, R. (1993). Parental styles of talking about the past. *Developmental Psychology*, *29*, 596–606.

Repacholi, B., & Trapolini, T. (2004). Attachment and preschool children's understanding of maternal versus non-maternal psychological states. *British Journal of Developmental Psychology*, *22*, 395–415.

Ruffman, T., Perner, J., & Parkin, L. (1999). How parenting style affects false belief understanding. *Social Development*, *8*, 395–411.

Ruffman, T., Slade, L., & Crowe, E. (2002). The relation between children's and mothers' mental state language and theory-of-mind understanding. *Child Development*, *73*, 734–751.

Sabbagh, M. A., & Callanan, M. A. (1998). Metarepresentation in action: 3-, 4-, and 5-year-olds' developing theories of mind in parent-child conversations. *Developmental Psychology*, *34*, 491–502.

Steele, H., Steele, M., Croft, C., & Fonagy, P. (1999). Infant-mother attachment at one year predicts children's understanding of mixed emotions at six-years. *Social Development*, *8*, 161–178.

Symons, D. K., & Clark, S. E. (2000). A longitudinal study of mother–child relationships and theory of mind in the preschool period. *Social Development*, *9*, 3–23.

Tessler, M., & Nelson, K. (1994). Making memories: The influence of joint encoding on later recall by young children. *Consciousness and Cognition*, *3*, 307–326.

Teti, D., & McGourty, S. (1996). Using mothers vs. trained observers in assessing children's secure base behavior: Theoretical and methodological considerations. *Child Development*, *67*, 597–605.

Thompson, R. A. (2006). The development of the person: Social understanding, relationships, self, conscience. In W. Damon, R. M. Lerner (Eds.) & N. Eisenberg (Vol. Ed.), *Handbook of child psychology, Volume 3. Social, emotional, and personality development* (6th ed., pp. 24–98). New York: Wiley.

Tomasello, M. (2000). *The cultural origins of human cognition*. Cambridge, MA: Harvard University Press.

Waters, E., & Deane, K. (1985). Defining and assessing individual differences in attachment relations: Q-methodology and the organization of behavior in infancy and early childhood. In I. Bretherton, & E. Waters (Eds.), *Growing points of attachment theory and research. Monographs of the Society for Research in Child Development, 50* (nos. 1–2, Serial No. 209, pp. 66–104). Boston, MA: Blackwell Publishing.

Welch-Ross, M. (1997). Mother–child participation in conversation about the past: Relationships to preschoolers' theory of mind. *Developmental Psychology*, *33*, 618–629.

Wimmer, H., & Perner, J. (1983). Beliefs about beliefs. Representations and constraining function of wrong beliefs in young children's understanding of deception. *Cognition*, *13*, 103–128.

Acknowledgments