Maternal Discussions of Mental States and Behaviors: Relations to Emotion Situation Knowledge in European American and Immigrant Chinese Children

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Abstract

This study examined in a cross-cultural context mothers' discussions of mental states and external behaviors in a story-telling task with their 3-year-old children and the relations of such discussions to children's emotion situation knowledge (ESK). The participants were 71 European American and 60 Chinese immigrant mother-child pairs in the U.S. Mothers and children read a storybook together at home, and children's ESK was assessed. Results showed that European American mothers made more references to thoughts and emotions during storytelling than did Chinese mothers, who commented more frequently on behaviors. Regardless of culture, mothers' use of mental states language predicted children's ESK, whereas their references to behaviors were negatively related to children's ESK. Finally, mothers' emphasis on mental states over behaviors partially mediated cultural effects on children's ESK.

Children's understanding of emotions has emerged as an important foundation for a range of adaptive behaviors related to social competence and school readiness (Denham, 2006; Izard et al., 2001). The development of the abilities to grasp the causes and consequences of one's own as well as others' emotions begins early. Children start to use basic emotional terms at about 20 months (Bretherton, McNew, & Beeghly-Smith, 1981), and are able to match emotional terms with facial expressions at age 2 (Russell & Bullock, 1986). During the preschool years, children come to be increasingly adept at understanding the situational antecedents of feeling states and can identify individual emotions and the situations that provoke them (Denham, 1986; Dunn, Brown, Slomkowski, Tesla, & Youngblade, 1991; Harris, Olthof, Terwogt, & Hardman, 1987). Furthermore, preschoolers have come to understand how perception, desire, and emotion are related in a causal way (Wellman, Phillips, & Rodriguez, 2000), and how thinking about past situations can influence current emotions (Lagattuta & Wellman, 2001).

A burgeoning field of research has focused on early socialization as playing a critical role in children's developing emotional understanding (Denham, 1993; Dunn, Bretherton, & Munn, 1987; Dunn, Brown, & Beardsall, 1991; Eisenberg, Cumberland, & Spinrad, 1998). Specifically, parent-child conversations about emotions and mental states have been shown to be pivotal in predicting children's later understanding of emotion (Dunn, Brown, & Beardsall, 1991; Taumoepeau & Ruffman, 2006, 2008). Most of these studies, however, have focused on children of European descent. Less is known about the socialization of emotional understanding in different cultural contexts and its implications for developmental outcomes. In this study, we examined early narrative practices in European American and

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Chinese immigrant families in the U.S. and the impact of these practices on children's developing emotion situation knowledge.

Socialization of Emotional Understanding

In general, collaborative conversations rich in mentalistic terms with adults, peers and siblings may aid children's social-cognitive development in various ways. Naming psychological states makes the states explicit, which draws attention to and encourages reflection on these states (Dunn, Brown, Slomkowski et al., 1991; Ornstein, Haden, & Hedrick, 2004; Wellman, Harris, Banerjee, & Sinclair, 1995). Furthermore, during such conversations children are often exposed to the possibility of differing perspectives and conflicting emotions between the self and others, which may further facilitate their perspective-taking and emotional understanding (Harris, 1999).

In line with these theoretical proposals, longitudinal research has shown that early exposures to discussions of mental states contribute to children's emotional understanding (Dunn, Brown, & Beardsall, 1991; Taumoepeau & Ruffman, 2006, 2008). Furthermore, Meins and her colleagues have identified maternal mind-mindedness as a particular type of interaction style that seems to be an important mechanism underlying children's development of complex social cognitive abilities (Meins & Fernyhough, 1999; Meins et al., 2002; Meins et al., 2003). Mothers who are high on mind-mindedness treat their children as autonomous, independent individuals with desires, feelings, and thoughts. During conversations, they pay great attention to their children's mental attributes as opposed to physical appearance or behavioral tendencies. While mind-mindedness was originally conceptualized as having both behavioral (e.g., looking at the object at which the infant's gaze was directed) and linguistic components (e.g., appropriate references to mental states), further research has shown that the specific aspect of mind-mindedness that appears to facilitate children's social-emotional understanding is the frequency with which mothers refer to mental states, desires, and emotions (Ruffman, Slade, & Crowe, 2002; Taumoepeau and Ruffman, 2006, 2008).

A study by Taumoepeau and Ruffman (2006) provided further evidence for the effects of maternal usage of mental states language on children's emotional understanding. In this study, mothers were asked to describe picture books to their children when children were 15 and 24 months old. Children's emotional understanding was assessed at the second time point by their ability to match emotional faces with a variety of affect-eliciting situations (e.g., a boy being chased by a lion) and by their ability to determine how a person was feeling by their body position. Mothers' references to desires predicted children's later usage of mental state terms, as well as children's emotional understanding. These effects were independent of children's language skills, family SES, and mothers' performance on an emotion recognition task. In a follow-up study (Taumoepeau & Ruffman, 2008), the researchers visited the children at 33 months and found that mothers' references to thoughts and knowledge were a more consistent predictor of children's emotional understanding at this later age. The researchers suggest that mothers scaffold children's understanding of mind through their use of specific mental state terms, starting first with desires and progressing to cognitions when children's understanding of mental states are more nuanced.

Thus, family discussions of mental states appear to play an important role in the socialization of emotional understanding. Notably, however, this suite of research has mainly focused on children and families of European descent. At its core, mental states language conveys individual realities and experiences to others, with the emphasis being placed on the internal (e.g. the psychological states of the individual) as opposed to the external (e.g. social and contextual factors). Such an emphasis may be further related to the

Western cultural value of individualism, autonomy, and independence. Despite research documenting divergent cultural value systems (Greenfield, Keller, Fuligni, & Maynard, 2003; Kagitcibasi, 2005; Markus & Kitayama, 1991) and their effects on communication styles and preferences (Kim, 2002), there is no study to date that directly examines family discussions of mental states in different cultural contexts and their consequences for children's emotional understanding.

Early Narrative Practices in Cultural Contexts

Narrative practices may reflect the theory of language upheld in a culture (Hansen, 1983, 1989). In Western cultures, language often maps onto "belief psychology," with the function of language being descriptive or representative. In this context, the communicative use of language tends to convey meaning, including ideas, thoughts and concepts. This is in contrast with traditional Chinese culture where the use of language often serves a regulative function in guiding behavior and coordinating social interactions. As Hansen (1983) claims, in the Chinese context "…the function of words is to engender and express attitudes with implications for action rather than to express some 'content' such as the speaker's thoughts…" (p. 61). Consistent with this view, recent research examining the way in which mothers communicate with their children has found that during personal storytelling, European American parents more frequently encourage children to describe their thoughts, preferences, wishes, and perceptions than Japanese, Korean, and Chinese parents, who are more didactic, focusing on children's behaviors and moral obligations (Martini, 1998; Wang, Leictman, Davies, 2000; Wang, 2001).

Particularly relevant to the current research, Wang and her colleagues found that compared with Chinese mothers, European American mothers often made more comments on mental states and were more likely to refer to the child's personal needs, preferences, judgments and opinions when sharing memories and telling stories (Wang, Leichtman, & Davies, 2000). These cultural differences in mother-child conversations appear to play out even when the subject under discussion is emotional. For example, Fivush & Wang (2005) examined Chinese and European American mothers' conversations about positive and negative emotionally salient events (e.g., birthday parties, conflict with parents or peers). They found that while the sheer volume of conversations did not differ between cultures, American mothers provided more causal explanations for both their children's and others' emotions than did Chinese mothers, who tended to emphasize social norms and behavioral expectations when discussing emotions with their children.

These different beliefs and practices pertaining to the functions of language in communicative contexts are further echoed in the value systems across cultures. In European American culture where a great emphasis is placed on individuality and agency, individuals are encouraged to express their thoughts, ideas, and emotions, which, in turn, help to affirm their autonomous sense of self. In contrast, Chinese culture prizes group harmony and interrelatedness; emphasis is placed on an individuals' overt behavior and its regulation because it may have direct consequences on group functioning. Individuals' thoughts and emotions, in this context, are often de-emphasized as they may be socially divisive (Markus & Kitayama, 1991). Indeed, research has shown that East Asian adults and children rely more on behavior-descriptive verbs in person descriptions than their Western counterparts, who tend to prefer trait adjectives (Maas, Kurasawa, Politi, & Suga, 2006; Wang, 2004). East Asian children have been shown to justify another person's false beliefs by overt behaviors and social rules rather than mental states (Naito & Koyama, 2006). Furthermore, Chinese parents tend to view their children's behavior as highly malleable rather than genetically determined, which leads to their emphasis on focusing on and regulating behaviors in the child (Stevenson, Chen, & Lee, 1993).

The cultural difference in emphasizing mental states versus external behaviors may have important consequences for children's developing emotional understanding. When asked to judge the emotional nature of story situations or to describe situations likely to provoke various emotions, European American preschoolers scored higher than their Chinese peers regardless of age, and they made more rapid progress in emotion situation knowledge over time (Wang, 2003; Wang, Hutt, Kulkofsky, McDermott, & Wei, 2006). Conceivably, the emphasis on mental states and affect in early narrative practices in European American families may have facilitated European American children's emotional understanding. Nonetheless, there has been no direct evidence concerning the influence of maternal references to mental states on children's developing emotional understanding across cultures. Also, no cross-cultural data are available about family discussions of external behaviors and how they may be related to children's emotional understanding. Conceivably, a focus on external behaviors may draw children's attention outwards and render inner psychological states less salient. As a result, it may hinder the development of emotional understanding.

Purposes of the Current Study

The purpose of this study is threefold. First, we examine references to mental states and overt behaviors during mother-child storytelling in European American and Chinese immigrant families. Second, we examine the relation of mental states and behavioral references to children's emotional understanding. We focus on children's understanding of situations that elicit specific emotions, namely, emotion situation knowledge (ESK; Denham, Zoller, Couchoud, Holt, 1990; Harris et al., 1987). This aspect of emotional understanding may be critical for the actual emotional experience within event situations (Fridja, 2008) and may play an important role in affecting how children understand and represent significant personal experiences (Wang, 2008). Furthermore, the ability to understand how situational cues can be used to infer others' emotions is crucial for children's navigation of social relationships and their social-emotional well-being (Fine, Izard, Mostow, Trentacosta & Ackerman, 2003; Izard, Fine, Schultz, Mostow, Ackerman & Youngstrom, 2001).

Finally, we test a mediation model examining whether the emphasis on mental states rather than behaviors during mother-child storytelling mediates cultural influences on children's ESK. We hypothesized that during storytelling, Chinese mothers would make more references to behaviors than European American mothers, who would make more references to mental states. And consistent with previous findings (Wang, 2003; Wang et al., 2006), European American children would score higher on ESK than Chinese children. Furthermore, maternal emphasis on mental states relative to behaviors in conversations would have a facilitative effect on children's ESK, regardless of culture. Finally, we hypothesized that mental states language would serve as an important mediator that gave rise to cultural differences in children's ESK.

Method

Participants

The participants were 60 Chinese immigrant (30 boys; age range = 30 to 43 months, $M =$ 35.00 months) and 71 European American (37 boys; age range = 30 to 42 months, $M =$ 35.49 months) children and their mothers from a university town and suburban areas in upstate New York. The mean age was not significantly different across the two cultures. Children were recruited through local schools and by word of mouth, and were taking part in a larger longitudinal study of sociocognitive development across the preschool years. All children came from middle-class backgrounds, with the majority of the mothers (Chinese

immigrant, 98%; European American, 93%) having obtained a college degree or beyond. Chinese immigrant families were originally from mainland China, Hong Kong and Taiwan, with the majority from mainland China (93%). Most (80%) of the children were born in the U.S.

Procedure

Two female researchers visited mothers and children in their homes. Chinese-English bilingual researchers visited the Chinese immigrant families. Of the 60 Chinese immigrant children, 80% spoke only Chinese and the rest spoke English or a mixture of English and Chinese. Before commencing with children's interviews, the researchers established familiarity and rapport with the children by chatting about non-relevant events. All materials were written in both English and Chinese and translation and back-translation procedure was carried out to ensure their equivalence in both literal and sense meaning. Mothers were asked to engage the child in a series of free play and semi-structured tasks, followed by a researcher-child session. The entire home visit took approximately one and a half hours and was video tape-recorded. Only the tasks relevant to the current study are described here.

Measures

Mother-child storytelling—Mothers' use of mental states language and references to behaviors were assessed in a storytelling task. Joint picture book reading has been found to be a common practice among middle class families in both European American and Chinese cultures (Johnston & Wong, 2002; Li, 2006). Mothers received a book entitled, "Bear Goes to the Market," a children's book with illustrations but no words. The storybook is 17 pages long and contains culturally neutral themes. It has been developed for and has been used in previous cross-cultural research with European American and Chinese samples (Han et al., 1998; Wang et al., 2000). The story depicted a mother bear and a baby bear dropping off mail, going to the grocery store (where the baby bear briefly loses his mother, and gets upset because he wants a cake but is not allowed to have it), and playing in a playground. Mothers were asked to tell the story with their children and to make up the text as they went along. They were also told that they could tell the story in any way they would like and take as long as they wanted to. For Chinese mother-child dyads, time spent on the storytelling task ranged from 3.35 to 15.35 minutes ($M = 7.29$ minutes, $SD = 2.79$). For European American mother-child dyads, it ranged from 2.03 to 18.52 minutes ($M = 7.09$ minutes, $SD = 3.25$). There was no difference in the mean length of the storytelling between the two cultural groups.

Coding of the story narratives was done in the original language. A native English speaker coded the American data and a native Chinese speaker coded the Chinese data. Repeated training sessions were held to ensure that both coders were applying the same definitions of the coding scheme to the two datasets. A third coder, who was bilingual and fluent in both Chinese and English, independently coded 20% of each dataset for reliability estimate. Any disagreements were resolved through discussion.

Following Ruffman et al., (2002), mothers' references to cognitions (e.g., think, know), desires (e.g., want, like, love), modulations of assertions (e.g., might, maybe), emotional states (e.g., sad, pleased), and other mental states (e.g., remember, decide) were separately tabulated. These references were then combined to form a composite category of *mental states language*. Coding for the Chinese data was further informed by research examining mental states language in Chinese children (Lu, Su, & Wang, 2008; Tardiff & Wellman, 2000). Terms were counted as referring to mental states when the usage was judged, in context, to be indicative of desires (e.g., 要 yao4), emotions (e.g., 生气 sheng1qi4), cognitions (e.g., 想 xiang3, 知道 zhi1dao4), other mental states (e.g., 得 ji4de), and

modulations of assertions (e.g., 可能 ke2neng2). Terms that could be interpreted as behavior or mental states (e.g., 看 kan4, equivalent to "see" in English, but may be understood as "think" in Chinese) were coded based on the context. Intercoder reliability indexed by Cohen's kappas ranged from .96 to 1 for the Chinese data ($M = .98$) and from .87 to .96 for the American data ($M = .93$).

Mothers' references to overt behaviors, including physical actions depicted in the book (e.g., running, playing) and potential actions that were not necessarily seen in the book (e.g., he's going to go home now) were coded as *behavioral descriptions*. Cohen's kappa was .83 for the Chinese data and .95 for the American data. This variable further included a subcategory of mothers' references to the behavioral/descriptive manifestations of emotions (e.g., "The bear is crying" and "aw, the bear has tears on his face"). Compared to references to internal emotional states (e.g., "The bear is sad"), behavioral descriptions of emotions focused on external or physical aspects of emotions (Ruffman et al., 2002). Cohen's kappa for this subcategory was .98 for the Chinese data and .87 for the American data. Finally, a "mental state-to-behavior" ratio was calculated for each mother to form a composite score of *mental states focus*, which controlled for possible influence of narrative length. Children's references to mental states and external behaviors were also coded. However, the frequencies were too low to warrant analysis (see also Slaughter, Peterson, & Mackintosh, 2007), and therefore not considered further.

Language ability—Mothers filled out a shortened version of the Child Development Inventory (Ireton, 1992) that assessed children's language skills. Both expressive language and language comprehension were assessed (possible score range 0–100; Cronbach's α= . 93). The questionnaire was translated and back-translated by two English-Chinese bilingual research assistants and checked by a native Chinese speaker in order to ensure a balance of literal and sense meaning, as well as natural sounding expression. English words and grammatical rules that were not used in Chinese were exchanged for the Chinese equivalents. The inventory was then pilot-tested with seven European American families and five Chinese immigrant families to ensure equivalence. Because children's expressive language score and language comprehension score were highly correlated $r = .80$, $p < .0001$, they were combined for later analysis. The language measure was included because language ability has been shown to be related to the understanding of emotions and mental states (Happé, 1995).

Maternal education level—As a measure of socioeconomic status, maternal education was coded on a 3-point scale: 1 = high school qualification, 2 = four-year college degree, 3 = postgraduate degree.

Children's emotion situation knowledge—Children's ESK was assessed using an emotion production task adapted from previous research examining in different cultures children's ability to understand situations that provoke various emotions (Harris et al., 1987). This task has been used with European American and Chinese preschoolers (Wang et al., 2006, Wang, 2008) and has been shown to be effective in eliciting children's responses regarding the situational antecedents of emotions. Children were asked to describe situations likely to provoke fearful, sad, angry, and happy emotions. The researcher presented each term to the child and asked the child to describe situations that would elicit such an emotion in people (e.g., "What makes people feel sad?") and in the child (e.g., "What makes you feel sad?"). For each question, the researcher prompted the child to provide as many situations as possible (e.g., "What else makes people feel sad?") until the child indicated that that he or she was finished. The researcher rewarded children with stickers to motivate them to come up with as many situations as possible. This task took approximately 10 minutes.

The number of responses children provided was tallied. Responses were considered correct if the situation described by the child was judged to be able to elicit the presented emotion (e.g., "What makes you feel happy?" "My teddy bear"). This included situations that would elicit the emotion in a child but not necessarily in an adult. In both cultural groups, responses provided by children were mostly correct. Incorrect responses were rare, whereby there was on average less than one incorrect response in each group. On the other hand, not all children could provide a correct response to every emotion. In a few cases, children randomly named objects in the room (e.g., "what else makes people feel happy?" "table, chair, cup…"), and these responses were not coded.

The number of correct responses children provided for the four emotions was summed to form a composite score of ESK. A second research assistant coded 20% of the data for reliability. Cohen's kappa, calculated for each child, ranged from .71 to 1.00 ($M = .84$) for the Chinese children and from .66 to 1.00 ($M = .75$) for the European American children.

Results

Preliminary Analyses

Analyses of mother-child storytelling variables were based on frequencies. Previous research on mother-child interaction has shown that compared with proportion, frequency is more informative in reflecting the sheer amount of different types of information that children are exposed to, and is also more predictive of child outcome (e.g., Fivush, 1988; Han et al., 1998; Reese et al., 1993). Ruffman et al., (2002) further argue that each utterance potentially has a direct bearing on children's understanding of mental states because it provides additional input, just in the same way that having multiple older siblings or spending more time with older individuals has a beneficial effect on children's theory of mind (Lewis et al., 1996; Ruffman et al., 1998). In addition, in studies where both frequency and proportion were analyzed, the analyses yielded similar patterns of results (Meins, 2003; Meins et. al., 2003; Wang, 2006).

Nevertheless, to ensure that the number of maternal references did not simply reflect overall maternal involvement or verbosity, and hence contributing to children's ESK, we examined the sum of behavioral and mental states references ($M = 63.28$, $SD = 27.08$) as well as the total amount of time spent on the storytelling task ($M = 7.18$, $SD = 3.04$) in relation to children's ESK. Results revealed no significant correlation between the sum of references ($r = .10$, $p = .26$) or the total time spent on the task ($r = .09$, $p = .29$) and children's ESK, thus ruling out the possibility that the overall linguistic input was influencing children's ESK. In addition, there was no significant cultural difference in mothers' total references to mental states and behaviors combined (EA: $M = 66.43$, $SD = 29.01$; Chinese: $M = 59.49$, $SD = 25.26$), $F(1, 128) = 2.14$, $p = .15$, nor in the amount of time mother-child pairs spent on the storytelling task (EA: $M = 7.02$, $SD = 3.15$; Chinese: $M = 7.30$, $SD = 2.79$), $F = (1, 128) = .38$, $p = .50$. Nonetheless, to ensure that cross-cultural differences were not driven by overall maternal involvement or verbosity, we included the amount of time spent on the task as a covariate in analyses wherever appropriate.

Scores for both the composite mental state and behavioral references were positively skewed. Logarithmic transformations were thus performed on these variables before they were submitted to analysis. To facilitate comparisons with previous research, untransformed means are reported.

The following results are presented in accordance with our three hypotheses. The first group of analyses examined group (culture and gender) and individual variations (child age, language skills) in maternal references to mental states and behaviors, as well as in

children's ESK. The second set of analyses aimed at determining the relation between types of maternal references (i.e., mental states and behaviors) and children's ESK, independent of other group and individual factors. The final set of analyses tested the mediational role of a mental states focus for cultural influences on children's ESK. Some of the children did not complete all the tasks, thus the degrees of freedom varied slightly across tests.

Maternal References to Mental States and Behaviors and Child Emotion Situation Knowledge

Table 1 lists the means and standard deviations of mother and child variables by culture. To test our first hypothesis that European American mothers would focus more on mental states whereas immigrant Chinese mothers would focus more on behaviors, we first ran a 2 (culture) $\times$ 2 (gender) multivariate analysis of covariance (MANCOVA) on the subtypes of maternal references to mental states (e.g., desires, cognitions), with child age, language ability, maternal education, and time spent on the task as covariates. Consistent with our prediction, the effect of culture was highly significant, $F(6, 116) = 15.67$, $p < .001$, $\eta_p^2 = .45$. There was also an effect of time, $F(6, 116) = 14.19$, $p < .001$, $\eta_p^2 = .42$, suggesting that more time spent on the task was associated with increased maternal input. No other main effects or interactions reached significance.

We then ran separate ANCOVAs to determine the effect of culture on each type of mental state input. As expected, European American mothers made significantly more references to cognitions (think/know), $F(1, 122) = 54.20$, $p < .001$, $\eta_p^2 = .31$, modulations of assertions, $F(1, 122) = 29.97$, $p < .001$, $\eta_p^2 = .20$, emotional states, $F(1, 122) = 5.28$, $p = .02$, $\eta_p^2 = .04$, and other mental states, $F(1, 122) = 10.10$, $p = .002$, $\eta_p^2 = .08$, than did Chinese immigrant mothers. There was no cultural difference in the number of references to desires, $F(1,122) = 1.23$, $p = .27$, $\eta_p^2 = .01$. There was a main effect of time for references to cognitions, $F(1, 122) = 31.57$, $p < .001$, $\eta_p^2 = .20$, desire, $F(1, 122) = 21.83$, $p < .001$, $\eta_p^2 = .15$, modulations of assertions, $F(1, 122) = 23.14$, $p < .001$, $\eta_p^2 = .16$, emotional states, $F(1, 122) = 6.63$, $p = .01$, $\eta_p^2 = .05$, and other mental states, $F(1, 122) = 6.00$, $p = .02$, $\eta_p^2 = .05$. There were no significant effects or interactions pertaining to gender, age, language, and maternal education.

Consistent with our hypotheses, analysis of the composite mental states language score showed that even after controlling for mothers' education level, time spent on task, child language ability, child age, and gender, European American mothers made significantly more references to mental states than did Chinese mothers, $F(1,122) = 78.02$, $p < .001$, $\eta_p^2 = .39$.

Next, we analyzed the overall score of behavioral descriptions, with the same covariates. Results showed that Chinese immigrant mothers made more references to behaviors than did European American mothers, $F(1,122) = 24.83$, $p < .001$, $\eta_p^2 = .16$. Chinese immigrant mothers were also more likely to describe more emotional behaviors than did European American mothers, $F(1,122) = 23.43$, $p < .001$, $\eta_p^2 = .16$. European American mothers scored higher on mental states focus than did Chinese immigrant mothers, $F(1,122) = 56.76$, $p < .001$, $\eta_p^2 = .32$. Finally, it is important to note that across both cultures, references to behaviors were more common than references to mental states.

With regard to children's ESK, a 2 (culture) $\times$ 2 (gender) ANCOVA with child age and language ability as covariates showed that European American children scored significantly higher than did their Chinese peers, $F(1, 127) = 48.15$, $p < .001$, $\eta_p^2 = .28$. No effects pertaining to gender, age, and language neared significance.

Relation of Maternal References to Mental States and Behaviors to Children's Emotion Situation Knowledge

The second goal of the current study is to examine the relation of maternal mental states language and behavioral references to children's ESK. Zero-order correlations were first calculated to examine the interrelations among maternal references to mental states and behaviors and children's ESK score for each culture. Table 2 reports the zero-order correlations among mother and child variables for each culture. For the European American sample, ESK was positively related to mothers' references to cognitions, the sum total of mental states, and mental states focus. For the Chinese sample, ESK was positively related to total mental states references and mental states focus; albeit the correlations did not reach significance. In addition, ESK was negatively correlated with maternal references to behaviors in the European American sample and negatively correlated with references to emotional behaviors in the Chinese sample. Language was not significantly correlated with ESK in either sample.

Partial correlations were further calculated between maternal variables and children's ESK, controlling for culture, child age, gender, language, maternal education, and time spent on task. Table 3 reports the partial correlations. Independent of the group and individual variables, maternal references to cognitions and maternal mental states focus were positively correlated with children's ESK. In addition, maternal references to behaviors were negatively related to children's ESK score.

Next, *hierarchical* regression analyses were conducted to examine the effects of mental states language (composite score) and behavioral references on children's ESK, independent of culture, gender, age, language skills, time spent on task and maternal education. Table 4 reports the summary of results from the regression analyses. We were interested in whether maternal inputs could account for variance in children's ESK independent of group and individual differences. Therefore in the first step of the regression, demographic variables including culture, gender, age, language, and maternal education, along with time spent on task were first entered. These variables combined predicted 34% of the variance in children's ESK, $F(6, 123) = 10.65$, $p < .001$. Next, in order to see if maternal input would increase the variance explained above these control variables, we added maternal references to mental states and behaviors to Step 2 of the model. Maternal references to mental states and behaviors increased the variance explained to 40%, $F(8, 121) = 9.87$, $p < .001$. Finally, to test whether culture moderated the effects of mental states language and behavioral references, we added the interaction terms of culture × mental states and culture × behaviors to the model. Neither interaction reached significance, suggesting that the effects of internal states and behaviors were not moderated by culture.

A second set of regression analyses was conducted to examine if the proclivity to focus on mental states over behaviors (i.e., mental states focus) would predict children's ESK. In the first step of the regression, demographic variables including culture, gender, age, language, and maternal education, along with time spent on task were first entered. Mental states focus was then added in the second step. Mental states focus significantly predicted children's ESK, $\beta = .22$, $F(6, 123) = 10.22$, $p < .001$, and significantly increased the proportion of variance explained in ESK, $\Delta R^2 = .03$, $F(1, 122) = 10.22$, $p = .02$. Again, we found no moderation effect of culture.

In sum, the results indicated that regardless of culture, maternal use of mental states language positively predicted children's ESK while maternal references to overt behaviors were negatively related to children's ESK.

Did Mental States Focus Mediate Cultural Effects on Emotion Situation Knowledge?

Our final set of analyses tested the hypothesis that mothers' proclivity to focus on mental states rather than behaviors would mediate the cultural effect on children's ESK. All regression models controlled for child gender, age, language, maternal education, and time spent on task. The mediation results are summarized in Figure 1. First, to establish conditions for mediation (Baron & Kenny, 1986), culture (i.e., the independent variable) was examined as a predictor of children's ESK (i.e., the criterion); the result was significant, $F(6, 122) = 10.65$, $p < .001$. European American mothers also scored higher than Chinese mothers on mental states focus (i.e., the mediator), $F(6,123) = 12.62$, $p < .001$, and mental states focus positively predicted children's ESK independent of culture, $F(6, 123) = 7.3$ $p < .001$. Finally, when both mental states focus and culture were entered into the model as predictors, the effect of culture on ESK was reduced in size, although still significant, $p < .001$. The reduction was significant by the stringent Sobel (1982) test for mediation, $Z = -4.29$, $p < .001$. In sum, maternal mental states focus mediated, at least partially, the effect of culture on children's ESK.

Discussion

The present study is the first to examine, in a cross-cultural context, maternal references to mental states and external behaviors during narrative interactions with their children and the relations of these maternal references to children's emotion situation knowledge. The results revealed varied narrative practices across cultures, which further differentially affected emotion situation knowledge in children. As predicted, European American mothers used significantly more mental states language than did Chinese immigrant mothers, whereas Chinese immigrant mothers made more references to behaviors than did European American mothers. The differences held true even when mothers were talking about emotions; European American mothers referred more frequently to internal emotional states, whereas Chinese immigrant mothers described more physical and behavioral manifestations of emotions.

The results are consistent with previous research demonstrating that during conversations with their young children, Chinese mothers often place an emphasis on external behaviors and actions, whereas European American mothers tend to focus on the child's internal attributes, thoughts and feelings (Fivush & Wang, 2005; Wang, 2001). European American mothers' tendency to emphasize thoughts and feelings may reflect the cultural assumption that language is a mechanism for expression, specifically of one's mental states, whereas Chinese mothers' focus on behaviors may exemplify the importance of language as a mechanism for "guiding actions and social interaction" (Hansen, 1983, p. 85). In addition, the emphasis on mental states places importance on individual realities and states of being, reflecting European American cultural values of individuality and autonomy (Wang et al., 2000). On the other hand, behavior-descriptive terms emphasize individuals' explicit actions and relations to the physical and social context (Maas, Kurasawa, Politi, & Suga, 2006).

Notably, although there were cultural differences in most aspects of mental states references, there was no difference in maternal references to desires. While desires are considered a mental state, they have clear implications for behaviors. Because of this advantage, children acquire verbs for desires before they acquire verbs for thoughts and beliefs (Bartsch & Wellman, 1995), and by the early preschool age children have demonstrated an understanding of simple desires (Repacholi & Gopnik, 1997; Wellman et al., 2000). Given that desire terms have important implications from both a psychological and a behavioral perspective, it makes sense that mothers from both cultures would readily use desire terms in conversations with their young children. Interestingly, research examining Chinese children's use of mental states language has shown that while they acquire desire terms

earlier than their European American peers, they lag behind in terms related to cognitions (Tardif & Wellman, 2000). Furthermore, there is some evidence to suggest that Chinese children's early vocabulary contains more verbs than nouns (Choi & Gopnik, 1995; Tardif, 1996). These findings may be explained by the Chinese pattern of maternal input found in our study. The maternal emphasis on behaviors and desires may facilitate Chinese children's learning of verbs and desire terms, respectively, whereas the lack of maternal references to cognitions may impede the children's acquisition and hence expression of thoughts and beliefs.

As expected, across the cultural groups, mothers' use of mental states language was positively associated with children's emotion situation knowledge, consistent with previous research with Western samples (Taumoepeau & Ruffman, 2006, 2008). Furthermore, our results showed that maternal references to behaviors were negatively associated with children's emotion situation knowledge. Indeed, mothers' proclivity to focus on mental states as opposed to behaviors partially mediated the cultural effect on children's emotion situation knowledge. While mental states language encourages children to reflect on thoughts, desires, and feelings of themselves and others and thus facilitates their understanding of cognitive and affective states (Symons, 2004), behavioral descriptions may draw children's attention to external and contextual factors and therefore may hinder their emotional understanding. Furthermore, the emphasis on mental states argues for the notion that individual behavior can be understood in terms of inner desires, emotions, and thoughts, and that people can be understood in terms of their psychological states (Flavell, 1988). By using language to make explicit the connections between the internal and the external, maternal references to mental states may aid in children's understanding of the psychological causes and antecedents of emotions. References to behaviors are more likely to draw attention to physical realities and social relations and thus may undermine the importance of psychological states, including one's own and others' emotions.

The differential focus on mental states versus behaviors in socialization practices may reflect cultural variations in folk psychology (Lillard, 1998; Miller, 1984). In Western cultures, the locus of the self is thought to lie in mental attributes of the person, such as attitudes, preferences and motives, and mental states are considered important means of understanding others' behaviors (Choi, Nisbett, & Norenzayan, 1999). In contrast, Eastern cultures place the self in context and stress the importance of proper behaviors and actions based on interpersonal norms and social rules (Shweder, 1998). The different narrative practices found in our study suggest that children's attention is directed towards different aspects of the individual, with Chinese mothers emphasizing behaviors whereas European American mothers stressing psychological states. It is important to note, however, that cultural differences in the emphasis on internal versus external attributes are relative rather than absolute – mothers in both cultures used more behavioral descriptions than mentalistic descriptions.

Consistent with a host of recent studies (Adrian, Clemente, and Villanueva, 2007; Ensor & Hughes, 2008; Taumopeau & Ruffman, 2008), we found maternal references to cognitions to be the strongest correlate with preschool children's emotional understanding. Also similar to some previous work (Ensor & Hughes, 2008; Taumoepeau & Ruffman, 2006, 2008), our study did not find a significant link between maternal references to emotions and children's emotional understanding. We speculate that this might be related to the particular task context involved in the studies. In particular, our book-reading task was not inherently emotional in nature, and mothers might focus on children's thoughts and opinions concerning the story happening rather than their emotions. Indeed, mothers in our study referred to cognitions more than four times as often as emotions. Thus, references to cognitions may be more indicative of maternal mind-mindedness in this particular context

(Meins et al., 2002), and is therefore more related to children's emotional understanding. Additionally, in the current study maternal mental state language in reference to emotions mainly captured mothers' labeling of emotions. It is possible that explicit discussion of the causes of feeling states is more effective in helping children understand the situational antecedents of emotions. Future research should directly examine the effect of different contexts in which specific mental state references are used, as well as the different *ways* that parents use mental state language. This will help to further our understanding of the contribution of mental state language to children's emotional understanding.

Results from the current study further demonstrate that the relative emphasis on mental states versus behaviors in mother-child narrative interactions was an important mechanism underlying cultural differences in children's emotion situation knowledge. Nevertheless, the mediation was only partial and culture remained a highly significant contributor to children's emotion situation knowledge after maternal mental states focus was controlled. Thus, while maternal mental states language may aid children's emotional understanding, it may be only one of a host of factors that may play important roles. For example, research has demonstrated cross-cultural differences in emotional experience including intensity, expression, and evaluation of emotions (Matsumoto, Kudoh, Scherer, & Wallbott, 1988; Scherer, Matsumoto, Wallbott, & Kudoh, 1988). There have been very few studies examining how these differences may play out in socialization practices and further affect children's developing emotional understanding.

Furthermore, our study only utilized one ESK task and which required verbal responses. Perhaps Chinese children were unable or unwilling to speak out their thoughts and, as a result, cultural differences in children's performance on the task might reflect their expressiveness or willingness to communicate rather than their actual emotional understanding. This interpretation is unlikely, however, given that past research has shown that Chinese children are as verbal as European American children in tasks that require self-expression (Han, Leichtman, & Wang, 1998; Wang & Leichtman, 2000; Wang, 2004). In addition, controlling for language ability in analysis did not change the pattern of results. Nevertheless, it is important for future cross-cultural studies to use a variety of emotion tasks, including the ones that require only behavioral responses. Also notably, knowledge of emotion is a broad term involving a host of factors, and we only examined one aspect. In a recent review, Pons and colleagues (2004) point out that there are at least nine distinct components of emotion knowledge in relation to emotion recognition, perception, and regulation. It is unclear from extant data the extent to which mothers' mental states language has an effect on these various components. Furthermore, the type of maternal input that may be useful is likely to vary as a function of developmental period. For example, maternal emotional expression may be more important than linguistic inputs (such as mental states language) for early understanding of emotions during infancy because of limited language abilities in infants (Friend, 2001). Future research should examine possible interactions among types of maternal input, periods of development, and how they relate to different aspects of emotional understanding in children. In addition, research in the area of mental states language would benefit by examining the extent to which maternal references to mental states may have an effect on children's social cognition (e.g., theory of mind and emotional understanding) or a broad effect on cognitive abilities in general.

It should also be noted that our study only examined one time point. The data were therefore correlational in nature and causal conclusions cannot be drawn with regard to the influences of maternal use of mental states language and behavioral references on children's emotion situation knowledge at either individual or cultural level. In addition, previous research suggests that mothers tend to increase their references to cognitions as children get older, thus pitching their talk to the developmental level of the child (Taumoepeau & Ruffman,

2008). While, it is possible then that mothers (or Chinese mothers as a group) made fewer references to cognitions because their children (or Chinese children as a group) had lower level of general cognitive abilities or language skills, this interpretation is unlikely, however, given that maternal references to cognitions were not related to child age or language skills in the current sample and that they were positively related to emotion situation knowledge independent of child age and language. Additionally, previous research examining maternal talk with pre-verbal infants (Meins et al., 2002) and studies that controlled for children's conversational input (Ruffman et al., 2002) have shown that the type of maternal input cannot be entirely attributed to child characteristics. Nevertheless, the bidirectional influence between mother and child cannot be completely ruled out from the current data. Further research with longitudinal approaches and experimental designs is called for. Such research will not only help to establish causality but also reveal trajectories of different mental states language usages as children develop in different cultural contexts.

Finally, it is important to further examine the effects of differential socialization emphases on immigrant children straddling two cultures. How does acculturation influence the ways in which immigrant parents interact with their children? What are the sociocognitive consequences of being raised in a family context that is different from the mainstream? These questions will help us further understand the dynamic processes of human development as taking place within multiple contexts and settings where children actively acquire cultural knowledge and eventually become competent members of their society.

Acknowledgments

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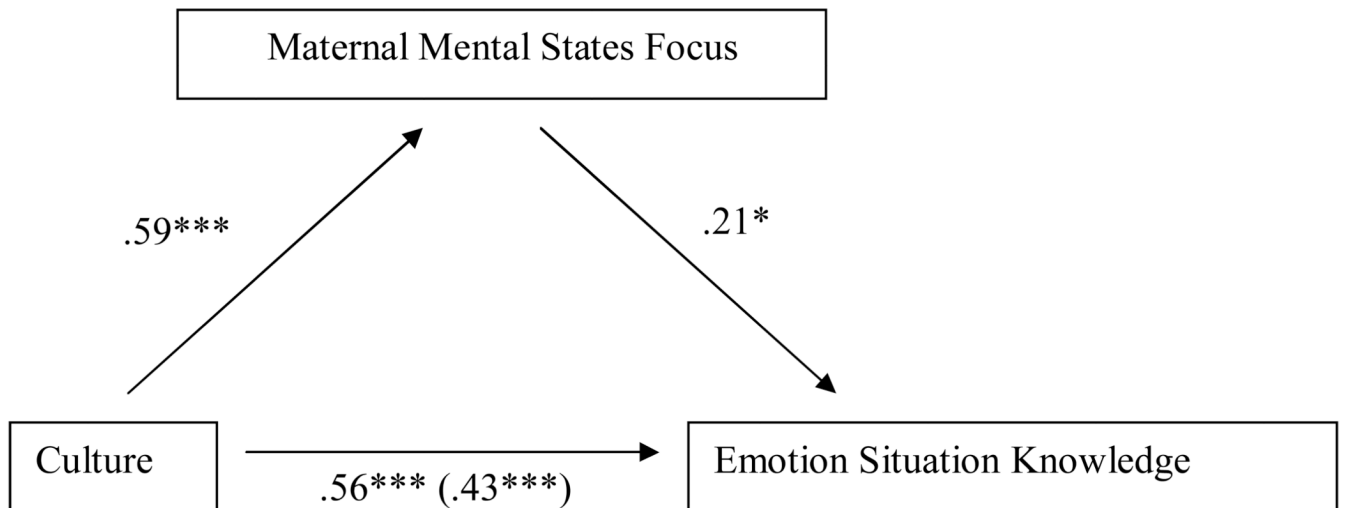
Figure 1.
Mental states focus mediated the effect of culture on children's emotion situation knowledge. Regression models controlled for child gender, age, language, mothers' education and time spent on task. The coefficient in parentheses was from the regression when the mediator (mental states focus) was included in the equation. * $p<.05$, *** $p < .001$.

Table 1

Means and Standard Deviations of Mother and Child Variables by Culture

	Chinese Immigrant		European American	
	M	*SD*	*M*	*SD*
Child Variables				
Age (months)	35.00	3.43	35.49	3.30
Language***	71.15	16.44	82.48	11.64
Emotion situation knowledge***	3.77	5.19	13.86	8.58
Mother variables				
Education	2.65	0.52	2.52	0.63
Mental States Language***	10.25	7.12	29.76	18.11
Cognitions ***	3.44	4.47	17.46	14.81
Desires	3.40	3.41	4.23	4.00
Modulations of assertions***	0.95	1.92	3.58	3.31
Emotional states **	1.74	2.21	3.11	2.71
Other mental states***	0.73	1.60	1.70	1.47
Behavior Descriptions ***	49.23	20.45	36.68	14.60
Emotional behavior***	2.73	2.27	1.00	1.15
Mental States Focus***	0.21	0.12	0.84	0.59

Note. Significant differences between cultures are indicated by *p < .05; **p < .01,***p < .001 (all significance tests are one-tailed).

Table 2

Zero-Order Correlations among Mother and Child Variables by Culture

	1	2	3	4	5	6	7	8	9	10	11	12	13
European Americans													
1. Age	-	.37**	-.05	.08	.09	.13	.05	-.13	-.01	.12	.05	-.08	.14
2. Language skills	.31**		.03	.20*	.03	.10	.05	.10	.18	.07	.12	-.02	.07
3. ESK	-.02	.16		.05	.22*	.02	.09	-.07	.13	.19*	-.23*	.01	.24*
4. Mother's education	.03	-.06	-.08		.06	.02	-.02	-.20*	-.08	.03	-.15	.15	.15
5. Cognitions	.11	.06	-.09	-.06		.26*	.41***	.21*	-.16	.94***	-.07	.02	.72***
6. Desires	.38**	.14	-.06	-.25*	.00		.10	.24*	.27*	.47***	.24*	-.08	.12
7. Modulations of assertions	.08	-.06	.10	-.01	.03	.01		.02	.15	.54***	.18	.08	.26*
8. Emotional states	-.01	.17	.12	.03	.04	.07	.02		.17	.34**	.08	-.19	.06
9. Other mental states	.08	-.04	-.06	-.16	.17	.07	-.09	.37**		.27*	.15	.04	.13
10. All mental states	.29*	.13	.10	-.19	.69***	.52***	.27*	.46***	.45***		.06	.01	.68***
11. Behavior Descriptions	-.04	.23*	-.06	-.15	.02	.33**	.05	.16	.11	.26*		-.03	-.37**
12. Emotional Behavior	-.14	-.04	-.24*	-.05	.11	.19	-.07	.23*	.12	.24*	.28*		.03
13. Mental States Focus	.34**	.09	.11	-.07	.64***	.29*	.38**	.32**	.37**	.81***	-.20	-.09	
Immigrant Chinese													

Note. European American correlations are above the diagonal, and Immigrant Chinese are below.

ESK = emotion situation knowledge,

*
p < .05;

**
p < .01,

***
p < .001 (all significance tests are one-tailed).

Table 3

Partial Correlations Between Mother References to Mental States and Behaviors and Children's Emotion Situation Knowledge

Mothers' utterances	Child's emotion situation knowledge
Cognitions	.15[*]
Desires	−.04
Modulations of assertions	.06
Emotional states	−.05
Other mental states	.03
Behavior Descriptions	−.18[*]
Emotional Behavior	−.14
Mental states focus	.20[*]

Note.

[*]
$p < .05$, (all significance tests are one-tailed).

[a]Partialing out culture, mother's education, child's language abilities, age, time and gender.

Table 4

Hierarchical Regression Analyses for Variables Predicting Children's Emotion Situation Knowledge

		Emotional situation knowledge			
Model	Variable	B	$SE\ B$	β	R^2 and ΔR^2
1	Culture ***	9.81	1.41	0.56	.34***
	Gender	−.90	1.33	−.05	
	Age	−.16	.20	−.06	
	Language skills	.04	.05	.07	
	Mother's education	.31	1.12	.02	
	Time spent on task	.23	.22	.08	
2	Culture **	5.20	2.05	.30	.05 **
	Gender	−1.38	1.29	−.08	
	Age	−.31	.20	−.18	
	Language skills	.05	.05	.08	
	Mother's education	−.08	1.09	−.01	
	Time spent on task	.26	.27	.09	
	Mental states language *	2.67	1.12	.28	
	Behavioral descriptions **	−5.70	1.92	−.29	

Note. Immigrant Chinese and females were set as the reference group.

*
$p < .05$;

**
$p < .01$,

***
$p < .001$.