Language and Children’s Understanding of Mental States

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ABSTRACT—Children progress through various landmarks in their understanding of mind and emotion. They eventually understand that people’s actions, utterances, and emotions are determined by their beliefs. Although these insights emerge in all normal children, individual children vary in their rates of progress. Four lines of research indicate that language and conversation play a role in individual development: (a) Children with advanced language skills are better at mental-state understanding than those without advanced language skills, (b) deaf children born into nonsigning families lag in mental-state understanding, and (c) exposure to maternal conversation rich in references to mental states promotes mental-state understanding, as do (d) experimental language-based interventions. Debate centers on the mechanism by which language and conversation help children’s understanding of mental states. Three competing interpretations are evaluated here: lexical enrichment (the child gains from acquiring a rich mental-state vocabulary), syntactic enrichment (the child gains from acquiring syntactic tools for embedding one thought in another), and pragmatic enrichment (the child gains from conversations in which varying perspectives on a given topic are articulated). Pragmatic enrichment emerges as the most promising candidate.

KEYWORDS—mind; emotion; language; conversation

In the past 20 years, a large body of research has shown that normal children progress through a series of landmarks in their understanding of mental states. At around 4 years of age, children understand that people’s actions and utterances are guided by their beliefs, whether those beliefs are true or false. At around 5 to 6 years of age, they come to realize that people’s emotions are also influenced by their beliefs (Pons, Harris, & de Rosnay, 2003). This gradual acquisition of what is now routinely known as a theory of mind can be illustrated with the classic fairy tale of Little Red Riding Hood. When 3-year-olds are told that the wolf is waiting for Little Red Riding Hood, they typically fail to realize that she mistakenly expects to be greeted by her grandmother as she knocks at the cottage door. By contrast, 4- and 5-year-olds understand Little Red Riding Hood’s false belief. Yet many 4-year-olds and some 5-year-olds say that when she knocks, she must be afraid of the wolf—the very wolf that she does not know about! By the age of 6 years, however, most children fully grasp Little Red Riding Hood’s naiveté. They understand not only that she fails to realize that a wolf is waiting to eat her, but also that she feels no fear. An illustrative test of children’s understanding of the relationship between belief and emotion is shown in Figure 1.

Children’s acquisition of a theory of mind emerges in orderly steps (Wellman & Liu, 2004; Pons et al., 2003), but individual children vary markedly in their rate of progress. In this article, we review four lines of evidence indicating that language and conversation play a key role in helping children develop an understanding of mental states. We then ask about the causal mechanism involved.

CHILDREN’S LANGUAGE SKILL AND MENTAL-STATE UNDERSTANDING

Among normal children and children with autism, accuracy in the attribution of beliefs and emotions has been correlated with language skill (Happé, 1995; Pons, Lawson, Harris, & de Rosnay, 2003). It could be argued that this correlation shows that a theory of mind facilitates language acquisition. However, longitudinal research has offered little support for such an interpretation. Astington and Jenkins (1999) found that preschoolers’ theory-of-mind performance was not a predictor of subsequent gains in language. Rather, the reverse was true: Language ability was a good predictor of improvement in
theory-of-mind performance. Children with superior language skills—particularly in the domain of syntax—made greater progress over the next 7 months than other children did in their conceptualization of mental states.

Restricted Access to Language: The Case of Deafness

Does a child's access to language, as well as a child's own language skill, affect his or her theory of mind? When children are born deaf, they are often delayed in their access to language, including sign language. Late signers are particularly common among deaf children born to hearing parents because the parents themselves rarely master sign language. Late signers—like children with autism—are markedly delayed in their understanding of mental states. By contrast, deaf children who learn to sign in a home with native signers are comparable to normal children in their performance on theory-of-mind tasks (Peterson & Siegal, 2000).

Even when efforts are made to bypass problems that late signers might have in grasping the language of such tasks—for example, by substituting a nonverbal (Figueras-Costa & Harris, 2001) or pictorial (Woolfe, Want, & Siegal, 2002) test of mental-state understanding—late signers still have marked difficulties. By implication, late-signing children are genuinely delayed in their conceptualization of mental states; it is not simply that they have difficulty in conveying their understanding when the test is given in sign language.

Maternal Conversation and Mental-State Understanding

Two recent studies show that, even when children have normal access to language, mothers vary in their language style and this style appears to affect children's mental-state understanding. Ruffman, Slade, and Crowe (2002) studied mother–child pairs on three occasions when the children ranged from 3 to 4 years of age. On each occasion, they recorded a conversation between mother and child about a picture book and measured the child's theory-of-mind performance and linguistic ability. Mothers' use or nonuse of mental-state language—terms such as think, know, want, and hope—at earlier time points predicted children's later theory-of-mind performance. Moreover, the reverse pattern did not hold.

The experimental design used in this study allowed the role of maternal conversation to be clarified in important ways. First, it was specifically mental-state references that predicted children's theory-of-mind performance; other aspects of maternal discourse, such as descriptive comments (e.g., "She's riding a bicycle") or causal comments (e.g., "They have no clothes on because they're in the water"), had no impact on children's theory-of-mind performance over and above the effect of mental-state utterances. Second, children's earlier language abilities also predicted their later theory-of-mind performance independently of their mothers' mental-state discourse.

The study by Ruffman et al. (2002) focused on false-belief tasks mastered somewhere between 3 and 4 years of age. We investigated whether mothers' mental-state discourse is linked to children's performance on a more demanding task typically mastered at around 5 or 6 years of age. Recall the story of Little Red Riding Hood: Only around the age of 5 or 6 years do many

Fig. 1. A test of children's understanding of the relationship between belief and emotion. Children are shown the picture at the top (a) and told that the rabbit is eating a carrot. A fox is hidden under a flap depicting a bush. Children are then invited to lift the bush, to see the fox hidden behind it (b), and then to replace the bush "so that the rabbit can't see the fox." Next, the children are asked whether the rabbit knows there is a fox hiding behind the bush and how the rabbit feels—happy, just alright, angry, or scared—by selecting one of the four face choices (c). Four- and five-year-olds often acknowledge that the rabbit does not know that the fox is hiding behind the bush, but still claim that the rabbit is scared (Pons, Lawson, Harris, & de Rosnay, 2003).
children realize that Little Red Riding Hood feels no fear of the wolf when she knocks at the door of grandmother’s cottage. In a study of children ranging from 4 1/2 to 6 years (de Rosnay, Pons, Harris, & Morrell, 2004), we found that mothers’ use of mentalistic terms when describing their children (i.e., references to their children’s psychological attributes as opposed to their behavior or physical attributes) and their children’s own verbal ability were positively associated not only with correct false-belief attributions, but also with correct emotion attributions in tasks utilizing stories akin to that of Little Red Riding Hood. Moreover, mothers’ mentalistic descriptions predicted children’s correct emotion attributions even when the sample was restricted to children who had mastered the simpler false-belief task. So, even after children have mastered the false-belief task, there is still scope for maternal discourse to help the child make further progress in understanding mental states.

Four important conclusions emerge from these studies. First, mothers who talk about psychological themes promote their children’s mental-state understanding. Second, it is unlikely that psychologically precocious children prompt more mental-state language in their mothers; rather, the direction of causation is from mother to child. Third, mere talkativeness on the part of a mother does not promote mental-state understanding— it is the mother’s psychological language that is critical. Fourth, mothers’ psychological orientation has sustained influence: This influence is evident among 3-year-olds and 6-year-olds alike. The effect of maternal language is not restricted to false-belief understanding. It also applies to the later understanding of belief-based emotions.

Language-Based Interventions
So far, we have summarized correlational findings demonstrating a link between language and mental-state understanding. However, experimental language interventions also produce gains in mental-state understanding. In one study, Lohmann and Tomasello (2003) pretested a large group of 3-year-olds. Those who failed a standard test of false belief received various types of intervention and were then retested using other false-belief tasks. The most effective intervention for improving children’s understanding of false belief combined two factors: (a) the presentation of a series of objects, some of which had a misleading appearance (e.g., an object that looked initially like a flower but turned out to be a pen); and (b) verbal comments on what people would say, think, and know about the perceptible properties and actual identity of these objects. Hale and Tager-Flusberg (2003) also found that language-based interventions were effective in improving children’s false-belief understanding. In one intervention, children discussed story protagonists who held false beliefs. In a second intervention, they discussed story protagonists who made false claims. In each case, the children were given corrective verbal feedback if they misstated what the protagonists thought or said. Both interventions proved very effective in promoting 3-year-olds’ grasp of false belief.

These intervention studies confirm that conversation about people’s thoughts or statements has a powerful effect on children’s understanding of belief. One additional finding underscores the critical role of conversation. When Lohmann and Tomasello (2003) presented children with various misleading objects but offered minimal verbal comment—other than a request to look at the objects—the impact on children’s mental-state understanding was negligible.

HOW DOES LANGUAGE HELP?

Given the converging evidence just described, the claim that language makes a difference for children’s developing theory of mind is convincing. Not only do children’s own language abilities predict their rate of progress in understanding the mind, but their access to conversation, especially conversation rich in mentalistic words and concepts, is an equally potent and independent predictor.

Despite this solid evidence for the role of language, there is disagreement over how exactly it helps. Consider the type of comments that a mother might make as she and her preschool child look at a picture book—“I think it’s a cat” or “I don’t know whether it’s a dog” (Ruffman et al., 2002, p. 740). It could be argued that such comments help the child develop an understanding of mental states because the words think and know draw the child’s attention to mental processes. But there are other possible explanations. For example, such comments are also syntactically distinctive: They embed a proposition (“. . . it’s a cat” or “. . . whether it’s a dog”) in another clause containing a mental verb (“I think . . .” or “I don’t know . . .”). Mastery of the way propositions can be embedded in other clauses might help children to conceptualize mental states that take particular states of affairs as their target. Mental-state understanding often calls for an appreciation of the way in which a mental state such as a thought, a belief, or a hope is targeted at a particular state of affairs. But also, such comments play a role in the pragmatics of conversation. More specifically, they set out a claim (e.g., “. . . it’s a cat”) and they convey the particular perspective of the speaker toward that claim. Accordingly, such comments might underline the way people can vary in the mental stance or perspective they adopt toward a given claim. In short, mentalistic comments contain distinctive words (e.g., think and know), grammatical constructions (e.g., embedded propositions), and pragmatic features (e.g., the enunciation of individual perspectives). Which factor is critical? It is too early to draw firm conclusions, but the evidence increasingly points to the importance of pragmatic features.

First, two recent studies with children speaking languages other than English suggest that the syntax of embedded propositions is not the reason why language skill correlates with theory-of-mind understanding. In German, want sentences such as “Mother wants George to go to bed” must be rendered with a that proposition—“Mutter will, dass George ins Bett geht”
(literally, “Mother wants that George into the bed goes”). Perner, Sprung, Zauner, and Haider (2003) studied whether early exposure to, and understanding of, the want—that structure is associated with good performance on standard theory-of-mind tasks, but they found no evidence supporting such a relationship. Similarly, a study of Cantonese-speaking children failed to uncover any link between mastery of verbs that can serve to embed another proposition and theory-of-mind understanding, once general language competence had been taken into account (Cheung et al., 2004).

Second, our findings (de Rosnay et al., 2004) make both the lexical and the syntactic explanations problematic. Maternal usage of terms like think and know together with their embedded propositions might plausibly help children to understand false beliefs because when they attribute a false belief to someone children will need to use the same linguistic constructions. For example, to describe Little Red Riding Hood’s mistaken belief, it is appropriate to say: “She thinks that it’s her grandmother” or “She doesn’t know that it’s a wolf.” However, the attribution of emotion, including belief-based emotion, does not call for the use of mental-state terms with embedded propositions. It simply calls for appropriate use of particular emotion terms. “Little Red Riding Hood felt happy as she knocked at the cottage.” Yet we found that mothers’ mental discourse not only helped children understand false beliefs, but also helped them move on to understand belief-based emotions. An emphasis on pragmatics can readily explain this twofold impact: Mothers disposed to talk about varying individual beliefs regarding a given situation will probably also articulate the feelings that flow from those individual beliefs.

CONCLUSIONS

People often observe other people’s facial expressions and bodily postures for clues to their mental life. Indeed, a great deal of research on the early development of a theory of mind has focused on infants’ skill at interpreting these nonverbal clues. However, in contrast to any other species, human beings are also able to talk to each other about their mental lives. They can talk about their feelings, compare their beliefs, and share their plans and intentions.

The research reviewed here shows that such conversations play a key role in helping children to make sense of mental states. We are on the brink of designing longitudinal and intervention studies that will help us determine just how conversation helps children in this endeavor. So far, research on children’s mental-state understanding has mainly focused on the milestone of understanding false beliefs. We have shown here, however, that maternal discourse is also linked with how well children attribute belief-based emotions to other people, and specifically that this link holds true even among children who have already mastered false beliefs.

In the future, it will be important to study various other milestones in children’s mental-state understanding. For example, only around age 5 or 6 do children understand that the emotions people actually feel may not correspond to the emotions that they express. Also, it is not until middle childhood that children fully understand self-conscious emotions such as guilt—or understand that it is possible to feel conflicting emotions about the same situation. In the future, researchers can focus on these developmental advances to better understand the influence of parents’ conversation on children’s mental-state understanding. If it is found that the same type of parental conversation style (e.g., coherent psychological discourse) has a pervasive influence across different aspects of mental-state understanding, then it will become less likely that specific lexical or semantic features of discourse are the crucial factor. Instead, as we have noted, it will be more plausible to assume that some parents elucidate a variety of mental states in conversation with their children. That elucidation is not tied to particular lexical terms or syntactic constructions. Instead, it reflects a wide-ranging sensitivity to individual perspectives and nurtures that same sensitivity in children.

Researchers may also consider the implications of mental-state understanding for children’s behavior and social relationships. An increasing body of evidence indicates that good performance on theory-of-mind tasks is correlated with the ability to form relationships with peers (Pons, Harris, & Doudin, 2002). A plausible—but as yet untested—interpretation is that children’s mental-state understanding helps them both to initiate and to maintain friendships. This hypothesis can be tested by assessing the impact of a discourse-based intervention not just on children’s mental-state understanding, but also on their relationships with peers.

Finally, researchers may look forward to an important bridge between developmental and clinical psychology. The mother who is alert to her child’s mental states, who accurately puts thoughts and feelings into words, and who nurtures her child’s sensitivity to different mental perspectives may have an effect on her child that is not unlike that of a clinician or therapist who fosters a reflective stance in his or her patients.

Recommended Reading

de Rosnay, M., Pons, F., Harris, P.L., & Morrell, J. (2004). (See References)
Peterson, C.C., & Siegal, M. (2000). (See References)
REFERENCES


