Children’s Use of Mental State Information in Selecting Persuasive Arguments

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Whether and when children use information about others’ mental states to invent or select persuasive strategies were examined. In Study 1, preschoolers, 3rd-graders, and 6th-graders (ns = 11, 12, and 16, respectively; 17 girls) were told about story characters’ persuading parents to buy pets or toys. Children were either given or not given information about story parents’ beliefs and asked to invent or select appropriate arguments. Older children, but not preschoolers, used belief information to select arguments. Results were replicated in Study 2 (16 kindergartners, 16 3rd-graders; 19 girls). In Study 3, kindergartners and 1st-graders (N = 16; 6 girls) reasoned well on false-belief tasks but not on persuasion tasks, suggesting that failure to consider mental states in persuasion was not due to lack of a belief concept. Findings suggest that mental state understanding may continue to develop after the preschool years; methodological qualifications are also considered.

Early Understanding of Mental States

A recent flood of empirical research on early understanding of mental states has generated consensus that children have an appreciable grasp of persons’ mental lives by at least the age of 4 or 5 years (representative collections and reviews include Astington, Harris, & Olson, 1988; Butterworth, Harris, Leslie, & Wellman, 1991; Flavell & Miller, 1998; Lewis & Mitchell, 1994; Moses & Chandler, 1992), a view that contrasts sharply with characterizations of childhood thought that were articulated decades ago (e.g., Piaget, 1929). The conceptual acquisition most studied by researchers has been the achievement of an understanding of belief, the first focus of “theory of mind” researchers (e.g., Premack & Woodruff, 1978). Wimmer and Perner (1983) set the stage in terms of methodology for testing young children by devising the now well-known unexpected change tasks: In these tasks, children were shown the doll-figure “Maxi” hiding his chocolate in a blue cupboard and leaving the room. Then Maxi’s mother moved the chocolate to a green cupboard. On Maxi’s return, children were asked where he would look for his chocolate. Consistent correct responses (i.e., the blue cupboard) were regarded as evidence that children recognized the existence of beliefs that could guide behavior. To succeed, children had to recognize the existence of beliefs as independent of reality (i.e., Maxi is misled by his false belief). Wimmer and Perner reported that consistent correct responding emerged between the ages of 4 and 5 years. Ensuing investigations largely replicated this finding, in some cases reporting appropriate belief reasoning among even younger children (e.g., Bartsch & Wellman, 1989; Mitchell & Lacohee, 1991; Moses, 1993; Siegal & Beattie, 1991). The current consensus, even among researchers holding very different theoretical perspectives, is that by at least 4 or 5 years of age, most children can attribute beliefs, even false beliefs, to both self and other (e.g., Astington & Gopnik, 1991; Gopnik & Wellman, 1994; Harris, 1994; Leslie, 1994; Perner, 1991; Wellman, 1990).
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But what do children actually do with their understanding of belief and other mental states, widely admitted to be available at 4 or 5 years of age? The literature is replete with investigations of mental state concept understanding but offers little information about how children use their understanding of mental states. An indirect source of information are studies of children's use of mental state language in natural settings. Bartsch and Wellman (1995), for instance, examined nearly 12,000 uses of desire and belief terms (e.g., want, think, and know) found in transcripts of at-home conversations of 10 children between the ages of 2 and 5 years (data provided by the Child Language Data Exchange System [CHILDES] database; MacWhinney & Snow, 1985, 1990). Researchers identified instances in which children used terms in a genuinely mental sense (e.g., "I thought that was broken"), as opposed to in a conversational sense (e.g., "You know what?") or simply to refer to behavior (e.g., "I know my ABCs"). Overall, analyses of children's genuine mental state references suggested that 2- to 4-year-olds used their understanding of belief in at least a limited set of social contexts, such as when actions required explanation or in expressing opinions in a dispute about facts.

Researchers of children's psychological understanding have reasoned that mental state conceptions play a critical role in social interaction (e.g., Chandler, 1988; Harris, 1989; Perner, 1991; Wellman, 1990). It has even been implied that without such understanding, children would resemble autistic individuals, who routinely fail false-belief tasks (e.g., Baron-Cohen, Leslie, & Frith, 1985; Baron-Cohen, Tager-Flusberg, & Cohen, 1993). Research on the behavioral correlates of false-belief understanding in normal children attests to the importance of mental state understanding in social functioning. Moderate positive correlations have been reported between false-belief scores and teachers' ratings of social skills (Watson, Nixon, Wilson, & Capage, 1999). More specifically, Lalonde and Chandler (1995) reported that 3-year-olds who scored higher on a battery of false-belief tasks were significantly more likely than low scorers to be rated as socially competent by teachers on items involving some aspect of intentionality (e.g., "able to comment on differences between his/her own feelings and those of another") as opposed to items involving mere social convention (e.g., "apologizes for hurting feelings of others"). Similarly, Astington and Jenkins (1995) found significant correlations between 3-5-year-olds' scores on false-belief tasks and their production of joint proposals and explicit role assignments during a 10-min session of pretend play. Although such findings globally support the possibility that children use their understanding of belief in some social situations, they are vulnerable to the usual concerns about correlational data. By not revealing directly the role of belief (or other mental state) understanding in social interactions, they leave open the possibility that some third factor accounts for both false-belief understanding and advanced social competence.

Indeed, the large research literature on developing social cognition casts doubt on whether young children immediately and comprehensively apply newly acquired conceptions of mental states to their social interactions (e.g., Flavell & Miller, 1998; Shantz, 1983). A specific claim in this regard is made by Chandler (e.g., 1988; Chandler & Lalonde, 1996), who has long contended that children's understanding of belief undergoes an extended course of development throughout middle childhood. Supporting this claim, Carpendale and Chandler (1996) reported that 5-8-year-olds reasoned better on standard false-belief tasks than on tasks requiring an understanding that ambiguous stimuli may be interpreted differently by different people. Many social tasks similarly involve considering different perspectives, either narrowly in terms of interpreting one-and-the-same event or more broadly in terms of simply focusing on different aspects of the same event. For instance, a child wishing to persuade his or her parents to buy a puppy would be wise to consider that for Dad the prospect of a puppy raises concerns about cleanliness, whereas for Mom the worry is that the puppy will bark at night. If Chandler is correct in his general contention that mental state understanding is not fully mastered during the preschool years, many aspects of social reasoning, including persuasion, might reflect that extended development.

Direct Examination of Children's Use of Mental State Information in Persuasion

To examine directly the role of mental state information in children's social reasoning, we adopted the general strategy of varying information about people's beliefs while measuring children's performance on a social skill that we reckoned should vary as a function of belief information use—persuasion. We believe that there are three reasons why an examination of children's persuasion strategies, scrutinized as a function of belief information use, would be valuable.

One reason we focused on persuasion as a target social task was that it is a ubiquitous human activity. Wilkinson (1986, p. 137) contended that persuasion is one of two "natural or universal genres rooted in the human psyche" (the other is narrative). Younger as well as older children attempt to persuade parents and friends to buy presents, relinquish favorite toys, play games, abandon bedtime rules, and so forth. Moreover, a variety of persuasion strategies are used even by preschoolers (Trawick-Smith, 1992; Weiss & Sachs, 1991), allowing for the possibility that children's tactics may vary from ones that use mental state information to ones that do not.

A second reason we targeted persuasion was that empirical evidence suggested that persuasion skills develop considerably throughout childhood and are important in children's academic and social experience. Although some educators worry about children's relatively slow growth in the area of persuasive and argumentative writing (e.g., Knudson, 1992), others point to the quicker but still leisurely pace of the development of oral persuasion skills (e.g., Erftmier & Dyson, 1986). R. A. Clark and Delia (1976), for example, presented children in Grades 2-9 with three hypothetical persuasive communication situations (e.g., asking a parent to buy a gift) and asked them to say everything they could think of to gain agreement. Responses were then categorized as to the extent to which they involved taking the perspective of the person being persuaded (e.g., a simple request was coded as low level, whereas saying why the gift might be useful to the parent was high level). Generally, the youngest children demonstrated very little perspective-taking, and the oldest showed considerably more, which the researchers interpreted as being consistent with a Piagetian constructivist perspective and seminal findings concerning social role-taking (Flavell, Botkin, Fry, Wright, & Jarvis,
1968). Such findings suggest the possibility that mental state information may not be used in persuasion by children who almost certainly could demonstrate a grasp of belief on a standard false-belief task. However, only a deliberate manipulation of belief information would test this hypothesis directly.

With that consideration in mind, a third reason we selected persuasion as the target social task was that we could design persuasion tasks in which mental state information varied systematically. For this purpose, it was necessary to focus on a limited set of persuasive activities, the sort for which mental state information was relevant, as opposed to, for example, persuasion through flattery. But it was easy to imagine a variety of situations in which belief information in particular would cue a particular persuasive strategy (at least for adults), whereas the absence of that information either suggested another strategy or at least left open a range of possible strategies. For example, if a boy who wanted a kitten knew his mother to believe that cats scratched furniture, he might point out that the kitten in question was declawed. Such an argument would be more relevant than, for example, the argument that the kitten was potty trained. However, a child unable to appreciate the role of beliefs in this situation might view the two arguments as equally persuasive. To gain preliminary information about children’s use of mental state information in persuasion, we conducted Study 1, in which we tested children on tasks based on the rationale described above.

Study 1

Method

Participants. Children in three grades (11 preschoolers, 5 girls, mean age = 4 years 10 months, SD = 7 months; 12 third-graders, 6 girls, mean age = 8 years 5 months, SD = 8 months; and 16 sixth-graders, 6 girls, mean age = 12 years 6 months, SD = 10 months) were recruited from a university laboratory school serving children representing diverse socioeconomic backgrounds and ethnicities in a small town in the western United States.

Task design. We designed persuasion tasks that permitted us to measure children’s use of varied belief information. Specifically, we created hypothetical story tasks about children who wanted to persuade their parents to buy something, a format which permitted complete control over belief information while presenting a familiar situation to children. The following is an example of a task that was presented to the children:

This is Jeff. At the store, Jeff sees a bird that he wants. This is Jeff’s mother. She thinks a bird would be noisy. What should Jeff tell his mother, to get the bird? This is Jeff’s father. He thinks a bird would be messy. What should Jeff tell his father, to get the bird?

We were interested in whether and when children would invent arguments that were relevant to each parent’s belief. We presented two parents who had different beliefs because an appropriate response regarding only one parent could result from something other than a consideration of parental belief. For instance, children might simply happen to prefer the argument that the bird is quiet and so they would respond in an apparently belief-relevant way to the first question in the previous example. But that preference would not result in a belief-relevant answer to the second question.

Tasks involving open-ended questions, like the one above, were designed to measure children’s sensitivity to belief information by presenting a situation resembling one in real life. That is, children who want a parent to buy something probably hear about the parent’s attitude (e.g., Mom says, “I think birds are noisy”) and then must devise suitably persuasive arguments. Insofar as this task resembles a real situation, of interest is the age at which children can respond appropriately, regardless of how they do so.

But how children could respond appropriately is also an important issue. In the task above, it is conceivable that children could respond appropriately to questions about both mother and father without necessarily thinking about mental states—that is, they might simply get an idea of what to say from the terms “noisy” and “messy” (whichver was recently mentioned), which would lead them to generate respective arguments about how quiet and clean the bird is. This could occur without the child’s having to conceive of mental states at all. Thus, although the task above could provide interesting data about children’s persuasive skills in general, it could not provide indisputable evidence that those skills were the result of the consideration of mental states. Therefore, to provide more compelling evidence on this point, we devised a second version of the task, involving forced-choice questions, exemplified below:

This is Jeff. At the store, Jeff sees a bird that he wants. This is Jeff’s mother. She thinks a bird would be noisy. Should Jeff tell her that this bird is clean or that this bird is quiet? This is Jeff’s father. He thinks a bird would be messy. Should Jeff tell him that this bird is clean or that this bird is quiet?

If children simply got an idea for an argument from the last term mentioned by the experimenter, then the forced-choice offerings should result in an appropriate response to only one of the questions. Correct responses to questions about both the mother and the father would thus be more clearly reflective of a use of information about the parents’ mental states.

Materials and procedure. Children were interviewed individually in a quiet area near each classroom in a session lasting approximately 10 min. Each child was told eight stories—four involving open-ended questions and four involving forced-choice questions—about child protagonists who wanted specific items; each child was then asked to invent or select an argument that the protagonist should use to convince his or her parents to obtain the item (as in the earlier examples). Half the stories concerned protagonists who were boys, and half concerned protagonists who were girls. To assess the effect of including any belief information at all in half of the stories we provided information about the parents’ beliefs (as above), and in half we did not (simply by omitting the “thinks” statements). In sum, children were presented with two each of four types of stories: belief open-ended, belief forced-choice, no-belief open-ended, no-belief forced-choice. Desired items included a bird and a puppy (believed to be messy or noisy) and a bike and a play oven (believed to be dangerous or that the child would not take care of it); each item played a role in two stories. These items and beliefs were used across the four types of stories in an attempt to equate story content as closely as possible.

The no-belief stories were presented first so that responses to them would not be influenced by belief information from the belief stories. Within that constraint, the open-ended stories were presented before the forced-choice stories so that the proffered choices in the latter would similarly not influence responses to the former. Within those constraints, the remaining story orders were counterbalanced across children.

Each story was accompanied by a sketch of the protagonist’s face, the mother’s face, the father’s face, and the desired item, all presented on a single page. All interviews were audi-taped.

Coding. Responses to open-ended questions were coded as being relevant to one or more of the beliefs ascribed to parents in the belief-information tasks (messiness—e.g., “he should tell his mom the bird is not messy”—noisiness, danger, caretaking) or as being references to simple requests (e.g., “he should tell her to get it”), desires (e.g., “tell her he wants one”), or “other” (e.g., references to gifts, money, etc.). Two independent judges, blind to children’s ages and story type, agreed unanimously on categorizations of all responses.
Results

Scoring. The belief forced-choice tasks provided the model for scoring responses to all tasks. For each belief forced-choice task, children were credited with a score of 1 or 0; 1 indicated belief-relevant choice for both parents (e.g., suggesting that Jeff tell his mom and dad, said to think the bird would be noisy and messy, respectively, that the bird was quiet and clean, respectively), and 0 represented any other pattern of responses. Thus, children were credited with belief-relevant responses only if they advocated different (but appropriate) arguments for each parent. The two no-belief forced-choice tasks were scored similarly, allowing us to determine whether children might have simply preferred that pattern of responses by chance, even in the absence of belief information. That is, recall that the two no-belief forced-choice tasks involved content directly parallel to that in the two belief tasks (e.g., one story of each type involved the child’s wanting a bird that the mother thought noisy and that the father thought messy), so responses were scored in a parallel fashion: 1 indicated a choice that would be belief relevant on the belief task (e.g., suggesting that the child tell his or her mom and dad, respectively, that the bird was quiet and clean), and 0 represented any other pattern. Children occasionally chose both forced-choice responses. Of the total 312 responses to individual forced-choice questions, 22 (7%, including responses from one preschooler, 4 third-graders, and 3 sixth-graders) referred to both choices. Such “both” responses were counted as belief relevant.

Belief open-ended task responses were coded similarly (1 or 0) following the initial coding into descriptive categories (described earlier). A belief-relevant response was one judged as addressing each parent’s belief (e.g., suggesting telling Mom the bird was quiet when she was said to think the bird was noisy and telling Dad the bird was clean when he was said to think the bird was messy); irrelevant responses included all other patterns. Again, parallel scoring was conducted on the no-belief open-ended task responses to permit a direct comparison between belief and no-belief conditions. The number of children who received each of the possible scores on each task is shown in Table 1.

Open-ended task analyses. We analyzed children’s responses to the open-ended tasks separately from responses to the forced-choice tasks because of the different task demands.

A preliminary examination of responses to individual questions about mothers and fathers on the no-belief open-ended tasks showed that most responses referred to simple requests or desires (89%, 83%, and 73% of responses from preschoolers, third-graders, and sixth-graders, respectively). For example, a common response was a recommendation that the protagonist say “Can I please get a dog, Mom?” In contrast, on belief tasks, most individual responses were belief relevant (62%, 80%, and 94%, respectively; e.g., “he’ll keep the birdcage clean”).

For the primary analyses of open-ended task responses, we used the more stringent scoring of responses (i.e., according a score of 1 only to stories garnering belief-relevant responses for both the mother and father). Not surprisingly, these data showed that no child ever responded to the no-belief tasks with the precise combination of responses that would be correct for the parallel belief tasks. In other words, without belief information, children did not mention, by chance, the arguments that were credited as being belief relevant on the belief tasks. In contrast, on the two belief tasks, mean correct responses for preschoolers, third-graders, and sixth-graders were 0.91 (SD = 0.70), 1.42 (0.79), and 1.75 (0.58), respectively. A one-way analysis of variance (ANOVA) conducted on these belief task scores revealed a significant effect of age group, F(2, 36) = 4.93, p < .05; follow-up tests showed a significant difference only between the youngest and oldest groups, t(25) = 3.29, p < .005.

Thus, on the open-ended tasks, all age groups were helped by the provision of belief information about the parents. But children may have used such information merely as a way to get an idea for a response rather than reasoning about beliefs specifically. For example, perhaps merely the mention of “noisy” (as in “She thinks a bird would be noisy”) provoked children to suggest saying that the bird was quiet without necessarily involving children in a consideration of the mother’s belief as such. For that reason, it was important to examine responses to the forced-choice tasks, in which each question offered children two ideas about responses they could make, only one of which addressed the belief of the parent.

Forced-choice tasks. A repeated measures ANOVA conducted on responses to the forced-choice tasks showed no effect for age group but a significant effect for belief information, F(1, 36) = 43.05, p < .001, in which the mean score for the no-belief tasks was 0.46 of a total possible score of 2 (SD = 0.64), compared with the mean score for the belief task of 1.44 (0.72). This effect must be interpreted in light of a significant interaction between belief condition and age group, F(2, 36) = 4.06, p < .05. The mean number of belief-relevant responses given by children in each age group to each type of task is shown in Figure 1, which depicts the nature of the interaction. The t tests used to explore differences between the belief and no-belief conditions for each age group showed that significant differences existed for third-

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<th>Table 1</th>
<th>Study 1: Number of Children in Each Age Group Receiving Scores of 0, 1, or 2 on Each Task Type</th>
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<td>Open-ended tasks</td>
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<td>Age group</td>
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<tr>
<td>Preschool</td>
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<td>Third grade</td>
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However, preschoolers were unreliable in their use of belief information, as indicated most convincingly by their forced-choice belief responses (see Table 2). No single error pattern dominated performances on these tasks. Children did not, for example, always select the same argument for both parents—3 of 11 preschoolers did this across both tasks and 4 of 11 did so on one but not on both tasks. Overall, about half of preschoolers’ responses were of this sort (i.e., correct for only one parent), exactly what would be expected by chance. Moreover, question order did not appear to affect these “same argument” responses. That is, if children were capable of attending to belief information but felt compelled to present the same argument to both parents, they should have selected the belief-relevant response for the question about the first parent and then the same argument (incorrectly) for the second parent. This pattern characterized 5 of the 22 total responses of preschoolers, but there were also 5 responses of the opposite sort, where children responded incorrectly to the first question and correctly to the second. Only one child on one task selected both incorrect responses; overall, preschoolers did not appear to uniformly oppose confronting parents’ beliefs (32 of 44 responses to individual questions were belief relevant).

Discussion

Children’s use of belief information to select appropriate persuasive arguments increased markedly during the elementary school years. Although preschoolers made some use of belief information, as indicated by their reasoning on the open-ended tasks, as a group they did not use the information consistently to select arguments appropriate to specific individuals, as was evident from their forced-choice task performances. In contrast, most sixth-graders—and even third-graders—used belief information consistently.

In open-ended tasks children in all age groups were guided toward belief-relevant arguments when provided with information about the target’s beliefs; even preschoolers were more likely to produce belief-relevant arguments after hearing about the story

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<th>Open-ended tasks</th>
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Figure 1. Study 1: Mean belief-relevant scores (+SE) on belief and no-belief forced-choice tasks for preschoolers (n = 11), third-graders (n = 12), and sixth-graders (n = 16).

Table 2: Preschoolers’ Belief-Relevant Responses to Individual Questions About What to Tell Mothers (M) and Fathers (F)
parents' beliefs. Indeed, more than a third of the preschoolers' responses consisted of answers that combined an appropriate response for the mother with a different, but appropriate, response for the father. As noted earlier, such data may reflect children's real-life behaviors. However, appropriate responses to the open-ended questions may or may not reflect considerations of mental states; such responses might simply reflect that children were supplied with an idea of something to say by the statement about the beliefs of the mother or father that immediately preceded the interviewer's question rather than that they viewed the belief information as providing critical information about the arguments that would sway a particular person.

In this regard, data from the forced-choice tasks were necessary to interpret children's responses, as explained earlier. On the forced-choice tasks, if children were simply using the interviewer's most recent statements to get ideas about what to say, they should be equally likely to select either of the two choices. And, in fact, with tasks in this format, preschoolers as a group did not reason better on tasks that provided belief information compared with those tasks that did not. In contrast, both older groups continued to benefit from information about beliefs. An examination of individual performance patterns in preschoolers revealed no single error pattern on the forced-choice belief tasks. Preschoolers did not always select the same argument for the mother and the father—they did so in about half of their responses, exactly what would be predicted by chance. Nor did they always (or even frequently) select the opposite arguments (i.e., the arguments not relevant to the parents' beliefs) as though reluctant to confront parents' beliefs.

Results from Study 1 were thus consistent with the notion that use of belief information in a task of persuasion may develop relatively slowly, a finding consistent with those regarding oral and written persuasion (e.g., R. A. Clark & Delia, 1976; Knudson, 1992) and with the notion that mental state understanding continues to evolve in middle childhood (e.g., Chandler, 1988; Flavell & Miller, 1998). Our findings do not easily reconcile with demonstrations of belief understanding in 4- and 5-year-olds (and sometimes 3-year-olds) on false-belief reasoning tasks (e.g., Gopnik & Astington, 1988; Mitchell & Lacohee, 1991; Wimmer & Perner, 1983). Attempting a replication of the findings on these new tasks was therefore imperative, particularly for the younger groups of children, whose performances differed the most and whose initial sample sizes were small.

In addition to requiring replication, Study 1 left unanswered two sorts of issues: (a) questions about the possible roles of at least two task features (explained below) and (b) a question concerning whether the youngest children in fact had any understanding of belief (as the false-belief literature implies). Studies 2 and 3, respectively, tackled these issues.

In Study 2 we attempted to replicate the apparent development of belief-oriented persuasion skills between preschool and elementary school while addressing two concerns about the tasks as presented in Study 1. A general possibility was that the youngest children, unlike the older children, did not understand one or more aspects of the story tasks. For instance, maybe the youngest children did not understand that each parent who was a target of persuasion did not want the child to get the desired item. Older children apparently inferred that the statement "Jeff's mother thinks birds are noisy" meant that Jeff's mother did not like noise. However, perhaps young children did not make this inference. To control for this possibility, we used persuasion tasks in Study 2 in which the parent’s dislike of the characteristic in question was more explicit (e.g., "Jeff's mom thinks birds are too noisy").

Another possible problem for the youngest children concerned their assumptions regarding whether the two competing arguments were equally true. This issue was raised by the fact that several children spontaneously wondered whether both claims (e.g., "this bird is quiet" vs. "this bird is clean") were true. Relatedly, some researchers have suggested that the "reality" aspects of reasoning tasks may be very influential for younger children (e.g., Robinson & Mitchell, 1995). To test whether this factor played a role in children’s performances, we presented two versions of the belief persuasion tasks in Study 2; one version explicitly stated the truth of both arguments, and the other was identical to one of the stories presented in Study 1.

**Study 2**

**Method**

**Participants.** Children in two grades (16 kindergartners, 11 girls, mean age = 5 years 9 months, SD = 4 months; 16 third-graders, 8 girls, mean age = 9 years, SD = 5 months) were recruited from a public school serving a mostly White but economically diverse population in a small western town. The youngest group was deliberately chosen to represent children slightly older than those sampled in Study 1 in order to reduce the chance of testing children who had not yet acquired any belief understanding.

**Materials and procedure.** Interviews were similar to those conducted in Study 1 with the following exceptions. First, each child was presented with only four tasks. Second, all the tasks were forced-choice because, as noted earlier, open-ended tasks could be solved without a consideration of mental states. Third, all tasks included belief information because those were the items that revealed development in Study 1. Fourth, in contrast to Study 1, all tasks made the parents' desires clear by adding the word too to the belief statements (e.g., "Jeff's mother thinks a bird would be too noisy"). Otherwise, two stories were identical in form to the belief forced-choice stories in Study 1, and two contained additional statements making explicit the truth of the proffered arguments (truth-control stories), illustrated in the following example (the added truth element appears in italics):

This is Meg. At the toy store, Meg sees a toy oven that she wants. The toy oven is nice, very safe, and doesn't cost too much. Meg's mother thinks the toy oven would be too expensive. Should Meg tell her that the toy oven is safe or that it doesn't cost too much? Meg's father thinks the toy oven would be too dangerous. Should Meg tell him that the toy oven is safe or that it doesn't cost too much?

Each child heard exactly the same four stories designed to include comparable context across standard belief forced-choice and truth-control conditions. In one standard story, Terri desired a toy volcano, and in one truth-control story, Meg desired a toy oven (as in the previous example). For both, the mother thought the item too expensive, and the father thought the item too dangerous. In the other standard story, Harry desired a puppy, and in the other truth-control story, Jeff desired a bird. For both, the mother thought the pet too noisy, and the father thought the pet too messy (argument choices were saying the pet was quiet or clean, as in Study 1). Presentation orders of the four stories were counterbalanced across children in each age group; half heard both standard belief forced-choice stories first and half heard both truth-control stories first. Within conditions, individual story order was also counterbalanced across children.
Results

Children's responses to each of the four tasks were scored in the same manner as the belief forced-choice tasks in Study 1: Specifically, correct responses for questions about both parents within each story were required to obtain a score of 1 for that story. Thus, a total of 4 points was possible: 2 for the standard tasks and 2 for the truth-control tasks. The number of children who received each of the possible scores for each type of task is shown in Table 3.

A repeated measures ANOVA treating age group as a between-subjects variable and condition (belief forced-choice vs. truth-control) as a within-subjects variable revealed a significant main effect for age group, $F(1, 30) = 44.35, p < .001$, but no significant effect for condition nor any interaction between the factors. As before, third-graders outscored the younger children ($M = 3.75, SD = 0.77$ vs. $M = 1.44, SD = 1.15$, respectively). An examination of individual performances revealed that 3 of 16 kindergartners responded correctly to three of four stories (only 1 was perfect), compared with 15 of 16 third-graders (14 were perfect).

A subsequent analysis was motivated by the possibility that children who heard the truth-control stories first might have experienced a carryover effect of the truth statements in the first two stories and assumed parallel information in the last two. We checked for this possibility by administering a test that compared standard and truth-control mean scores for only those children who heard the standard stories first; no significant difference was indicated.

An examination of the kindergartners' individual performances across the tasks revealed no single dominating error pattern, consistent with the findings for preschoolers in Study 1. Young children did not always select the same arguments for both parents—less than half of kindergartners' responses (44%) were of this type. Only 1 child responded this way to all four tasks, another did so for three of the four tasks, and 9 others did so on at least one task. Similarly, kindergartners did not always select arguments unrelated to the parent's belief—no child responded this way to more than two of the four tasks, although 10 did so at least once. In total, a quarter of the children's responses were of this type.

Discussion

Study 2, in which we replicated the developmental pattern suggested by Study 1, revealed better application of belief information to a forced-choice hypothetical persuasion task in third-graders than in younger children. Performances across the two studies were similar: Third-graders were 93% correct, compared with 88% on comparable tasks in Study 1; kindergartners in Study 2 were 36% correct, compared with 50% for preschoolers in Study 1. Individual performances also indicated improvement with age: Most third-graders in each study performed nearly perfectly on tasks providing belief information, whereas only a few preschoolers and kindergartners achieved a similar level of performance. Note that a difference in performance between younger and older children in Study 2 was found despite the administration of fewer tasks overall and considerably shorter interview sessions.

Study 2 data revealed no support for two possible (albeit mundane) explanations for younger children's relatively poor performance. First, the attempted clarification of story parents' desires by adding the word *too* to statements containing belief information (e.g., "Jeff's mother thinks a bird would be too noisy") made no difference to children's reasoning, consistent with the suspicion that the youngest children's difficulties in Study 1 did not derive from misunderstanding on this count. Of course, it is possible that this clarification effort was simply ineffective and that the youngest children still did not comprehend the parents' reluctance to get the desired items. On this point, it is perhaps worth mentioning that all children appeared emphatic in their responses, giving the impression that they grasped the need to convince the story parents. Second, a direct test showed that children's reasoning was not affected by clarification of the truth of both argument choices; neither age group performed differently on standard versus truth-control tasks.

As mentioned earlier, a more substantive explanation for the poor performance of the youngest groups might be that some children lacked a concept of belief at all. In view of the considerable body of literature suggesting that 4- and 5-year-olds can predict and explain action appropriately in terms of false beliefs (e.g., Bartsch & Wellman, 1989; Gopnik & Astington, 1988; Mitchell & Lacohee, 1991; Moses, 1993; Wimmer & Perner, 1983), this prospect seemed unlikely to account for the current findings. Nevertheless, considerable individual variation in children's belief reasoning has been reported: For instance, even in Wimmer and Perner's seminal work, 4- and 5-year-olds were nearly evenly split in each experiment between those who failed the unexpected change task consistently and those who passed it consistently. It was therefore conceivable that children in Studies 1 and 2 included individuals who were unable to reason about beliefs at all.

Thus, a comparison of children's reasoning on the belief-relevant persuasion tasks and typical false-belief reasoning tasks was in order and in fact served two additional purposes. First, it provided yet another opportunity to replicate findings with the new measurement. Second, it permitted a comparison of young children's responses to two sorts of hypothetical belief-reasoning problems that shared important task demands.

Table 3

<table>
<thead>
<tr>
<th>Age group</th>
<th>Belief forced-choice tasks</th>
<th>Belief forced-choice truth-control tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Kindergartners</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Third graders</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

Study 3

Method

Participants. Kindergartners and first-graders ($N = 16$, 6 girls, $M = 6$ years, $SD = 5$ months) were recruited from the university laboratory school described in Study 1. As in Study 2, children slightly older than those in the youngest group in Study 1 were targeted to increase the likelihood that they would reason well on the false-belief tasks. No children had participated in Study 2.

Materials and procedure. Children were interviewed individually in a quiet area near their classroom in a session lasting approximately 10 min.
Each child was presented with four tasks: two belief forced-choice persuasion tasks (as in Study 1) and two explicit false-belief tasks (as used by Wellman & Bartsch, 1988). The persuasion tasks were stories about children who wanted the bird (thought to be messy and noisy) or the toy oven (thought to be messy and dangerous) and were accompanied by sketches, as described in Study 1. The false-belief tasks, selected for their similarity to the persuasion tasks, involved stories in which a protagonist’s false belief about a desired item’s location was explicitly stated, and the child was asked to predict where the character would search. As a memory check, children were also asked to report the true location of the desired item. For example, one story was as follows:

Annie wants to find her kitten. Annie’s kitten is really in the playroom. Annie thinks her kitten is in the garage. Where will Annie look for her kitten, in the playroom or in the garage? Where is the kitten really, in the playroom or in the garage?

The other story involved Sam’s thinking his puppy was in the playroom when the puppy was really in the garage. Stories were accompanied by sketches of the protagonist’s face and the two locations (neither showing the desired item). Task orders were fully counterbalanced across children, within the constraint that the two persuasion tasks be presented together and the two false-belief tasks be presented together.

Results

Scoring. Persuasion task responses were scored as before; children were thus accorded belief-relevant scores from 0 to 2. Responses to the false-belief tasks were judged to be belief relevant if they involved both a belief-relevant action prediction (e.g., that Annie would look in the garage) and a correct response to the question about the item’s real location (e.g., Annie’s kitten is really in the playroom); again, children were accorded scores of 0–2. Scores of 0, 1, and 2 were obtained on the persuasion tasks by 8, 2, and 6 children, respectively, and on the false-belief tasks by 3, 2, and 11 children, respectively.

Persuasion and false-belief reasoning performances. On average, children scored 0.88 (SD = 0.96) on the two persuasion tasks, thus replicating the poor performances of the youngest groups on comparable tasks in earlier studies (i.e., 44% correct compared with 50% in Study 1 and 36% in Study 2). The mean was not significantly different from a chance-level performance of .5 on the two tasks (each posing two 2-choice questions), t(15) = 1.57, p > .05. On the two false-belief tasks, the same children averaged 1.50 (SD = 0.82), or 75% correct. This generally good performance accorded with expectations based on the extent false-belief literature, as it was significantly better than a chance-level performance of .5 (again, based on two tasks, each posing two 2-choice questions), t(15) = 4.90, p < .0001. The mean was also better than chance when we assumed a chance-level score of 1 out of 2, as is common in extant false-belief studies, t(15) = 2.45, p < .05. An examination of individual performances showed that 6 of the 16 children achieved identical scores on the two types of tasks (5 scored 2 out of 2 on both, 1 scored 0 out of 2 on both). Of the 10 children whose scores differed across task types, 8 scored higher on the false-belief tasks.

The persuasion and false-belief tasks, though similar in many ways, were sufficiently different to discourage a direct statistical comparison. Of particular concern was disparity arising from the fact that the persuasion tasks involved reasoning about two beliefs held by two people, whereas the false-belief tasks required consideration of only one person’s belief. We reasoned that if children were hindered on the persuasion tasks by the need to consider two people, their responses regarding the first person mentioned should be more belief relevant than their responses regarding the second (on the assumption that until the second person is mentioned, the task from the child’s perspective is a one-person task). An examination of correct responses to first questions on the persuasion tasks showed the mean to be 2.06 (SD = 0.89), whereas correct responses to second questions averaged 2.00 (SD = 0.93), an insignificant difference.

Discussion

Study 3 contributed in two ways to a characterization of children’s use of mental state information in persuasion. First, young children’s poor performances on persuasion tasks in Studies 1 and 2 were replicated: 5- and 6-year-olds showed the mixed and overall poor performance characteristic of 4-, 5-, and 6-year-olds in the two previous studies. Although a third of the group selected belief-relevant responses for the two persuasion tasks, the rest did not use belief information in a consistent manner. Indeed, 5- and 6-year-olds in this study performed even worse than preschoolers in Study 1, though not significantly so, t(25) = 0.36, p > .05. Second, Study 3 results suggested that young children’s failure to use belief information in persuasion tasks was not due to lack of belief understanding altogether. Overall, children performed well on the false-belief tasks, as would be expected for this age group according to extant reports, but poorly on the persuasion tasks.

Two disparities between the persuasion and false-belief tasks warrant consideration in attempting to explain performance differences. The first concerns the need to consider the beliefs of two story characters in the persuasion task but the belief of only one story character in the false-belief task, a disparity that might account for poorer persuasion task performances. However, contrary to what would be expected on this account, we found that belief-relevant responses on the persuasion tasks elicited with similar frequency by questions about the first and second parent. A second disparity concerns the nature of the beliefs involved in the two types of tasks. In the persuasion tasks, parents’ beliefs concerned the characteristics of pets and toys (e.g., “noisy”), beliefs with evaluative overtones. In contrast, the false-belief tasks involved beliefs about objects’ locations. Conceivably, it was easier for young children to reason appropriately about the latter than the former. Yet in an experiment comparing children’s abilities to infer different types of beliefs, Flavell, Flavell, Green, and Moses (1990) reported that even 3-year-olds were more, not less, able to appropriately infer value beliefs than fact beliefs. Future comparisons of belief reasoning on persuasion and false-belief tasks should equate belief types to clarify this matter.

General Discussion

The question motivating our research was whether and when children make use of an understanding of others’ mental states in social tasks such as persuasion. In three cross-sectional studies that assessed reasoning through hypothetical story tasks, we found that consistent use of belief information in selecting a persuasive argument emerged sometime between kindergarten and the middle of elementary school. Only a minority of children in preschool and
kindergarten used belief information consistently; a substantial majority did so by third grade. In what follows, we explore the implications of our findings for characterizations of children’s developing social cognition, an exercise that will necessarily involve assessing the strengths and limitations of our methodology.

Why Did Young Children Not Use Belief Information to Select Persuasive Arguments?

As noted earlier, a consensus from recent research is that most 4- and 5-year-olds have acquired a basic understanding of mental states such as desires and beliefs, an understanding reflected most convincingly in predictions of action from knowledge of an actor’s false belief (e.g., Wimmer & Perner, 1983) and in explanations of a misguided action by reference to the actor’s false belief (e.g., Bartsch & Wellman, 1989; Robinson & Mitchell, 1995). Our tasks arguably required little more than this basic understanding (although we consider an alternative view shortly); children merely had to select the persuasive message relevant to the story parent’s stated belief so that the parent would act to obtain the desired object. Children were not required to predict actions from beliefs that were false; in fact, on one analysis they could have solved the problems without an understanding of beliefs qua beliefs at all (we discuss this argument shortly). Yet 4-, 5-, and 6-year-olds mostly failed to use belief information consistently to solve the problems.

Indeed, one might have supposed that the persuasion context would enhance rather than depress children’s tendency to reason in accordance with belief information. The stories depicted situations that were surely familiar—stories of children trying to get their parents to give them puppies and other desirable items. Even much younger children have been reported to exhibit considerable manipulative skills in real-life situations in which they were trying to get their own way (e.g., Dunn, 1991; Dunn & Munn, 1985; Reddy, 1991). Drawing on extensive observations of young children talking at home with family and friends, Dunn (1988) reported that children as young as 18 months teased and comforted siblings and parents in ways that appeared to reflect a surprising grasp of those individuals’ internal states. Older children, similarly observed, have exhibited impressive verbal persuasion: One youngster, Sarah (47 months old), determined to wear the “princess” crown also desired by her friend, said, “I should have the crown. Because it matches my dress. It looks ugly on you” (Dunn, 1996, p. 192). According to Dunn (1996, p. 192), “the exchange suggests that Sarah’s grasp of what will carry weight with her companions is quite subtle.” Certainly, one interpretation of Sarah’s utterance is that she knows that her friend believes that having matching clothes is good and that looking ugly is bad. Yet it is also possible that Sarah is making her argument without considering her friend’s beliefs or desires at all and that her strategy arises from her own ideas, or from past successes with similar tactics. If so, Sarah might use a similar argument on anyone fighting her for a crown, regardless of their attitude. Although observational research is necessarily limited in pointing to one causal interpretation over another, our experimental studies were not so disadvantaged. To explore the causal role of belief information, we made two critical comparisons—a comparison of reasoning in the presence versus absence of belief information and a comparison of reasoning in regard to parents who had differing beliefs about the same item.

Perhaps more convincingly at odds with our results is the phenomenon of deceptive behavior in young children. Like persuasion, at least some acts of deception involve understanding what to say or how to arrange circumstances so as to give another person a particular belief (which then leads to action that accords with the deceiver’s objectives). Such deception is akin to persuasion in aiming to give someone a particular belief, distinct in that the belief is false. A variety of seemingly deceptive behaviors has been reported in young children, ranging from 16½-month-old Jacqueline’s “expressing a certain need” (that she clearly no longer had) as a ruse to get out of the playpen (Piaget, 1937/1954, p. 297) to 2-year-olds’ lying false trails in a game so that competitors could not find the “treasure” (Chandler, Fritz, & Hala, 1989). Insofar as such behaviors are viewed as deliberate attempts to plant false beliefs in another person in order to influence behavior, they seem at odds with our findings, which suggest that most 4–6-year-olds do not reason about another person’s beliefs in attempting to persuade that person to act a certain way. However, whether the behaviors in question are deceptive in this psychological sense is controversial (e.g., Perner, 1991; Wellman, 1990). Perner noted that some deception may reflect mere tendencies to engage in particular behaviors in particular settings. For example, children who make and erase ink footprint trails in a game paradigm (Chandler et al., 1989) may tend to make and erase trails regardless of the game objective (see Sodian, Taylor, Harris, & Perner, 1991). Also, some tactics may be learned from experience (Perner, 1991); Piaget’s daughter’s behavior was probably reinforced through previous sequences of events.

In a clearer demonstration of psychological deception, Peskin’s (1992) first had each child tell a friendly puppet which of four stickers he or she preferred, whereupon the puppet picked another sticker for its own. Then the child was introduced to a competitive puppet who, on learning the child’s preference, took that sticker for its own, leaving the child to select from only the nonpreferred stickers. In four ensuing trials, 3-year-olds continued to tell the truth about their preferences, despite mounting frustration, whereas 5-year-olds immediately concealed their first choices from the competitive puppet through silence or lying (most 4-year-olds learned to do this rather quickly). The 5-year-olds’ behavior, at least, is hard to explain away in terms of either behavioral tendencies or experience; Perner (1991, p. 194) concluded from it that “by the age of 5 years most children (and even at the age of 4 years many children) understand how to influence a competitor’s action by manipulating information.”

In view of Peskin’s (1992) report, one might suppose that 5- and 6-year-olds, given our persuasion tasks, would readily select arguments relevant to the story parents’ beliefs. But we found that they did not do so consistently. Of course, task differences might account for the disparity. In our persuasion tasks, children were essentially asked to replace the parent’s belief (e.g., that the bird is messy) with a contradictory belief (e.g., that the bird is clean), whereas in Peskin’s deception study, children merely gave the puppet a belief about their own preference that presumably replaced ignorance. Perhaps young children, especially, have some problem with understanding that one belief can be replaced with a contradictory one. Also, in our tasks children had to match the belief topic (e.g., messiness) with the relevant argument (e.g., cleanliness), a task requiring comprehension of the opposing terms (i.e., messy/clean, noisy/quiet, getting hurt/be being careful). 

R-
searchers have shown that young children understand some antonym pairs better than others and that antonym mastery increases with age (e.g., Abkarian, 1988; E. V. Clark, 1972). In regard to this concern, it was encouraging that a majority of preschoolers, in response to the open-ended belief questions in Study 1, spontaneously produced one or more relevant arguments to questions about individual mothers and fathers in the stories (see Table 2), suggesting a reasonable degree of term comprehension. Young children’s occasional but inconsistent belief-relevant questions to both the open-ended and forced-choice questions also disabused a third possible account—that is, that the youngest children simply doubted that a parent convinced about one attribute could be swayed by his or her own child and so deliberately chose arguments concerning other attributes. A possible fourth explanation was that our tasks were not sufficiently motivating, whereas Peskin’s task involved alluring stickers. We discuss this hypothesis shortly.

In considering the reported prowess of young children in teasing, comforting, and even deceiving others, it is worth noting one aspect of our data, alluded to earlier, that reflected what may be a related competence. In Study 1, when children were asked open-ended questions (such as “What should Jeff tell his mother?”), preschoolers responded to 62% of such questions (i.e., questions about mothers and fathers in individual stories) with an argument relevant to the parent’s belief. But they were not consistent in their application of belief information; in only 35% of cases did preschoolers make a relevant argument for both the father and mother in the same story. This pattern suggests that children simply used mention of a parental belief as a cue for argument selection rather than treated each belief as critical to the believer’s action. Thus it is not surprising that in responding to forced-choice questions that presented two options, many preschoolers opted for arguments inappropriate to specific parental beliefs. In this respect, the youngest children may not have used the belief information as belief information but rather as a source of ideas for arguments.

Our analysis implies that seemingly sophisticated social behavior may reflect abilities other than reasoning about mental states as such. It also suggests an interesting mechanism by which children might eventually learn about the full import of mental state information and its application in social tasks such as persuasion. Perhaps initially children do not attend to others’ beliefs specifically, except insofar as belief expressions give them an idea about what to say next. When they do respond to such information, persuasion is effective, and in time children can focus on beliefs quite specifically. Such a mechanism accords with the general argument that everyday social interactions are not just the product of an understanding of mind but also contribute to that understanding (Dunn, 1988; Tomasello, Kruger, & Ratner, 1993).

Methodological Considerations

In exploring the implications of our findings, we have so far noted that extant research on children’s early social skills and deception, although suggestive of an early use of mental state awareness, has frequently failed to definitively test the role of mental state information in social activities. Our tasks, in contrast, permitted direct manipulation of that information and assessment of that manipulation. However, our results cannot be evaluated without considering the limitations associated with the particular methods we used. Could the apparent developmental pattern be explained by one or more methodological limitations?

Consider first the specific properties of the tasks. Study 2 produced data that discouraged two relatively mundane explanations for the apparently slow development of a consideration of beliefs in persuasion—that the youngest children had concerns about the truth of the arguments or that they misunderstood parental attitudes. Nor was the need to consider beliefs at all the root of poor persuasion performance. Study 3 showed that most of those who failed at persuasion tasks were able to predict a story character’s action from information relevant to the character’s belief. It is important to note that the persuasion and false-belief tasks were similar in format: Both involved hypothetical story characters, explicit statement of beliefs, and two forced-choice questions that each offered two options. These similarities reduce the number of task-demand explanations that can be offered for failure on the persuasion tasks.

One remaining possibility of this sort is that considering two people with different beliefs in the persuasion tasks taxed the youngest children’s capacities, either in terms of conceptualization or information processing. However, an examination of children’s belief-relevant responses to questions about the first parent in each story revealed these to be no better than their responses to questions about the second parent, a finding inconsistent with an account arguing that the requirement to reason about a second person added difficulty to the task. Moreover, other researchers have reported no differences on one- versus two-person belief-reasoning tasks. Robinson and Mitchell (1995), for instance, in their examinations of false-belief reasoning, compared performances on one- versus two-protagonist tasks and found no differences. Similarly, Pillow and Weed (1995) found no difference in performances on one- versus two-person tasks that tested children’s understanding of biased interpretations.

Reports of savvy social behavior in very young children raise the further question of whether the hypothetical story tasks used in our studies were sufficiently motivating to elicit young children’s best social–cognitive skills. Observational research suggests that young children’s social sophistication varies with contexts and partners (e.g., Dunn & Munn, 1987; Eisenberg, 1987; Hartup, Laursen, Stewart, & Eastenson, 1988; Slomkowski & Dunn, 1992; Stocker & Dunn, 1990), perhaps as a function of motivation level. In particular, by having story parents as the persuasion targets, our tasks may have elicited a specific, rather than a more general, pattern of reasoning development. Extant research offers mixed evidence on this issue. On the one hand, for instance, Kline and Clinton (1998) reported no differences in 2nd-, 4th-, and 6th-grade children’s persuasion practices in responses to tasks involving peers, parents, or teachers. On the other hand, R. A. Clark and Delia (1976) and Delia, Kline, and Burleson (1979) inferred from their extensive investigations of children ranging from kindergarten through 12th grade that target familiarity positively affected the sophistication of children’s persuasive strategies. It is not clear what the latter finding implies for our current studies. Perhaps the presentation of story parents facilitated children’s reasoning because the task resembled a situation involving a very familiar listener; alternatively, because the targets were actually unfamiliar story characters, perhaps children were disadvantaged.

Finally, it is possible that the youngest children were especially hindered by the need to tell parents two different messages. Telling
both parents the same thing was the most common error pattern on the forced-choice tasks; however, such responses were no more frequent than would be expected by chance. Even on the open-ended belief tasks in Study 1, preschoolers did not seem especially compelled to say the same thing to both parents—that pattern occurred in less than one third of responses.

Despite our inability to discover within these data an obvious explanation for young children’s failure to use belief information on these persuasion tasks, caution is warranted in interpreting the results, particularly insofar as they seem to indicate reasoning deficits in the youngest children. Future studies, to maximally motivate children, should involve dynamic, real-life situations and a variety of social partners, including familiar people. However, the present studies present the following two challenges to future conclusions: First, even the youngest children were sufficiently motivated to offer arguments of some sort, even in answer to open-ended questions. Second, it is unclear why children would not be motivated enough to consider belief information in the persuasion tasks but sufficiently inspired to draw on belief understanding in false-belief tasks of a similar hypothetical format.

Along with trying to understand the failure of young children on our persuasion tasks, we must consider how to interpret the successes of older children. A simple account is that they used the information that varied across tasks—information about the beliefs of story characters—to select arguments. But did they view the belief information as belief information? One could comprehend “Jeff’s mother thinks a puppy would be messy” as simply “Jeff’s mother doesn’t like puppies because they are messy” (i.e., viewing the critical information as desire or preference information) and perform well on these tasks. In this regard, successful reasoning did not necessarily involve considering beliefs as such; however, arguably, it did involve considering mental states that were representative in the sense of having propositional content. That is, if the appropriate argument is to be cued, Jeff’s mother must be understood as not liking puppies because they are messy rather than simply as not liking puppies. Of course, regardless of interpretation, the skill remains an important practical one. But from a theoretical standpoint, it would be interesting to know whether children persuade differently when focusing on different mental states (e.g., desires vs. beliefs) or even on mental as opposed to nonmental states (e.g., beliefs vs. allergies).

**Continued Development of Mental State Understanding in Middle Childhood**

So far we have explored several potential explanations as to why our participants began to make consistent use of mental state information in hypothetical persuasion tasks in middle childhood only. We reflected on research attesting to the social prowess of toddlers and preschoolers, which in turn spawned a consideration of methodology. Further empirical exploration of these avenues is needed—the history of social cognitive development is replete with discoveries of early competencies in the wake of new measures—but the preceding analyses suggest that our findings are not easily reduced to methodological artifacts. Although it is clearly possible that young children might demonstrate an application of belief understanding to persuasion under different conditions, their failure to do so in tasks presented in these studies warrants at least a consideration of the possibility that such children have not yet acquired some fundamental aspect of belief understanding.

Therefore, we now turn to extant research that appears to concur with our findings of extended development in the social application of mental state conceptions. The portrayal of young children as being unable or unwilling to use belief information in persuasion accords with claims that many aspects of social cognition, such as role-taking, develop throughout childhood (for reviews, see Bennett, 1993; Flavel & Miller, 1998; Shantz, 1983). Historically, following Piaget’s theory of cognitive development and especially his characterization of young children as egocentric (Flavel, 1992), stage theories of various social–cognitive developments have been articulated (Damon, 1977; Selman, 1980; Turiel, 1975) that uniformly depict development as continuing until, if not beyond, adolescence. Although we cannot do justice here to all of the research stemming from this history that is probably relevant to our findings, a reflection on two areas seems appropriate.

Most closely resembling our current work are studies that were conducted to directly measure children’s perspective-taking and persuasion skills. As mentioned previously, R. A. Clark and Delia (1976) reported that younger children demonstrated little perspective-taking when they were asked to say everything they could think of in hypothetical persuasion tasks (such as asking a parent to buy a gift or asking a stranger to keep a lost puppy). The first statistically significant increase in perspective-taking was observed between Grades 3 and 4; a second one was observed between Grades 8 and 9. Perspective-taking was defined broadly to include such characteristics as taking into account the desires of the person being persuaded, phrasing the request as a favor to the person being persuaded (e.g., “I’ll let you keep this dog”), and phrasing the request as a statement of a mutual goal. R. A. Clark and Delia’s finding thus suggests that young children’s failure to apply belief information to persuasion tasks in our studies may reflect a larger problem with applying any sort of perspective-taking to persuasion.

However, some perspective-taking has been observed in preschoolers’ persuasion when a different measure was used. Weiss and Sachs (1991) had preschoolers engage in lengthy persuasion tasks with an experimenter, who played the part of either a child who needed to be convinced to share a new toy or a “mother” who needed to be convinced to buy a toy. The experimenter refused the participant’s requests five times in order to elicit persuasive statements. The most frequent statements made by preschoolers were that people were not like adults in their kind of situation (e.g., parents) and that children were not like parents in their kind of situation (e.g., children). These findings suggest the importance of considering the nature of the people involved in the situation and the kind of situation involved in the situation. Although such findings are certainly less egocentric than say, simply reiterating one’s own desires, they do not necessarily reflect understanding of individual psychological states. Children might have learned from experience that bargaining makes people more likely to acquiesce. Without detailed knowledge of the content of the benefits, it is impossible to know whether children used mental state or other psychological assumptions in their reasoning. In this regard, our tasks were better designed to measure attention to individual psychological states such as beliefs.

A second area of research especially relevant to our findings is one that does address children’s understanding of specific mental states: the aforementioned theory of mind research. Speculations
concerning developments in middle childhood have revolved around the general proposal that children acquire an understanding of the mind as an interpretive, constructive processor only in middle childhood or later (e.g., Chandler, 1988; Flavell, 1988; Wellman, 1990). Consistent with this thesis are a number of recent empirical reports documenting changes in children's understanding of the relationships between various cognitive concepts and processes (Fabricius & Schwanenflugel, 1994; Schwanenflugel, Henderson, & Fabricius, 1998), conceptual perspective-taking (Pillow, 1995), biased interpretation (Pillow & Henrichon, 1996), the distinction between knowing and seeing (Taylor, 1988), and a conception of mind as an active agent (Wellman & Hickling, 1994). Documented changes in belief reasoning are most relevant to our findings. Chandler and his colleagues (Carpendale & Chandler, 1996; Chandler, 1988; Chandler & Lalonde, 1996), for instance, have contended for some time that after the preschool years, children continue to struggle with the notion that "even after experiencing one and the same event, people may, and regularly do, come away with warrantably different interpretations" (Carpendale & Chandler, 1996, p. 1688). Chandler and Lalonde, for example, presented children with visually ambiguous pictures (e.g., a curly line that were also shown as restricted views of a larger unambiguous picture (e.g., a pig with a curly tail). Children were asked whether two puppets who saw only the ambiguous pictures could form different beliefs about the larger picture. Only after about 6 or 7 years of age did children begin to acknowledge that puppets might guess wrong in different ways.

As noted earlier, an acknowledgment of multiple wrong interpretations may be similar to the recognition that the mother and father view the same puppy with different (but equally invalid) concerns in mind. Of course, our persuasion tasks required children not only to view the mother and father as having different concerns but also to select appropriate arguments to address each concern. Another difference between the tasks concerned the "truth" of the differing beliefs. In our persuasion tasks, the mother's and father's beliefs, although both false, were not contradictory to each other (i.e., the puppy could be both noisy and messy), whereas in the ambiguous picture tasks, the beliefs were contradictory (i.e., the picture cannot be both a string and a snake). In view of these task differences, it is premature to assume that the data reflect a single development. Yet it seems plausible that some underlying continued progress toward understanding the comprehensive effects of individual psychologies (toward a "subject-oriented or constructivist epistemology" in the words of Chandler & Boyes, 1982, p. 393) accounts for both sorts of findings.

Conclusions

Our investigation of children's application of belief information to persuasion has resulted in a provocative preliminary sketch of development that broadly concurs with reports of other social-cognitive and metacognitive developments in middle childhood. However, our findings regarding the limitations of young children contrast with reports from observational studies of social behaviors and with experimental findings regarding children's reasoning about beliefs. Although it cannot be strongly concluded from our results that young children have no ability to use belief information in persuasion, our failure to discover any such ability on hypothetrical story tasks (the sort mastered by young children on other types of belief reasoning) indicates the need for further examination of this issue.

Overall, we believe that the studies reported here contribute in three ways to the enterprise of understanding children's developing social cognition. First, they introduce a paradigm for examining the links between mental state understanding and its application in social contexts. So far as we know, these studies are the first to combine active manipulation of mental state information with measurement of a social skill such as persuasion. It is noteworthy that our studies go beyond those examining perspective-taking more generally by manipulating information about individual, psychological states. Second, our research offers preliminary evidence that application of belief information to persuasion develops throughout the early elementary school years. Whether this reflects a general pattern of development regarding children's application of mental state knowledge to social tasks, and precisely how that development should be characterized, is a matter for future study. Regardless, our findings add description to a theory of mind literature that currently has little to say about changes beyond the preschool period (Happe, Winner, & Brownell, 1998). Third, our results suggest directions for future research in examining the role of mental state understanding in children's social lives. These include further exploration of young children's abilities in dynamic situations and with familiar people as well as examination of the role of early experience with persuasive arguments in mental state understanding.

References


