
Young Children's Persuasion in Everyday Conversation: Tactics and Attunement to Others' Mental States

Karen Bartsch, *University of Wyoming*, Jennifer Cole Wright, *College of Charleston* and David Estes, *University of Wyoming*

Abstract

Young children's persuasion tactics, and how these reflected attunement to others' mental states, were explored in archived longitudinal samples of transcribed at-home conversations of four children, three to five years old. Over 87,000 utterances were examined to identify conversation 'chunks' involving persuasion; 1,307 chunks were then coded for who initiated the persuasion, the persuader's goal, tactics employed, the presence of cues about others' beliefs and desires, and whether children attended to such information. Analyses suggested that persuasion exchanges were initiated similarly by children and adults, were stable in frequency and length across time, and involved a limited set of persuasion tactics. Children's attempts to change beliefs increased although explicit mental-state cues were only rarely available. When such cues were available, children more often than not altered their tactics. Implications for our understanding of children's developing social cognition and theory of mind, as well as the limitations of conversational analysis, are discussed.

Keywords: social cognition; theory of mind; communication; social skills

Introduction

Researchers now attribute a significant appreciation of psychological states to young children (e.g., Flavell & Miller, 1998; Gopnik & Meltzoff, 1997; Wellman, 1990), a view at odds in some respects with older claims that social understanding develops only late in childhood (e.g., Damon, 1977; Flavell, Botkin, Fry, Wright, & Jarvis, 1968; Piaget, 1965; Selman, 1980; Shantz, 1983). The modern view of young children has led contemporary researchers to re-examine early social interactions for evidence of attunement to the psychological states of others (e.g., Astington & Jenkins, 1995; Dunn, 1996; Symons & Clark, 2000; Tomasello, 1995).

One form of social interaction likely to reflect early psychological perspicacity is persuasion. Persuasive conversation is a promising forum for the study of developing psychological attunement for three reasons: It is ubiquitous, it has been observed in children of all ages (even the very young), and it likely flags situations in which

Correspondence should be addressed to Karen Bartsch, Psychology Department 3415, University of Wyoming, Laramie, WY 82071, USA. Email: bartsch@uwyo.edu

children are well motivated to utilize their knowledge of other people's mental states. To date, the persuasion literature, largely limited to laboratory studies, has wavered on whether young children's persuasion involves genuine psychological attunement. Seminal research suggested such attunement emerged only in adolescence (e.g., Clark & Delia, 1976; Delia, Kline, & Burlison, 1979), but recent studies have suggested an earlier sophistication (e.g., Bartsch & London, 2000; Bartsch, London, & Campbell, 2007). Here we report a longitudinal study of young children's real-life conversational efforts to persuade others, anticipating that such well-motivated exchanges are likely to display whatever psychological sophistication young children possess.

Webster's New Collegiate Dictionary (1997, p. 856) defines 'persuade' as 'to move by argument, entreaty, or expostulation to a belief, position, or course of action'. Conceived broadly, persuasive communication may be evident as early as infancy, when babies cry to get attention from a caretaker. Certainly, toddlers use verbal and non-verbal tactics to get parents and siblings to share toys or food, relinquish favorite objects, abandon bedtime rules, and so forth. Piaget (1937/1954, p. 297) famously remarked on his 16-month-old daughter Jacqueline's 'expressing a certain need' (that she clearly no longer had) as a ruse to get out of her playpen. Applied to verbal exchanges, persuasion broadly conceived encompasses many utterances directed to others in so far as they aim to make people do, think, want, feel, or say something.

Clearly, the ability to verbally persuade others is important in social interaction. Weinstein (1969, p. 753) commented on socialization: 'If the process is defined as equipping individuals to function as participating members of society, no set of skills . . . is as essential to participating in society as the skills enabling people to get others to think, feel, or do what they want them to'. Even very young children try to control others through language. In naturalistic studies of children's attempts to exert dominance over peers, Williams and Schaller (1993) reported that the most frequently employed domineering tactic of four- and five-year-olds was verbal assertion, accounting for 72 percent of dominance behavior, with physical assertiveness accounting for only 12 percent. Two-year-olds sometimes employ factual (including false) statements to persuade family members (Newton, Reddy, & Bull, 2000; Reddy, 2007; Wilson, Smith, & Ross, 2003) and even one-year-olds will contradict factual claims (Hummer, Wimmer, & Antes, 1993; Pea, 1982).

In so far as persuasion is intended to achieve some effect in another person, it is reasonable to assume that persuaders are generally well motivated to draw on whatever social cognitive understanding they possess. In this spirit, Sully (1896/2000) commented that children show their most advanced social behavior when they are frustrated and their self-interest is threatened.

Not surprisingly then, researchers have studied verbal persuasion, at least in older children, to assess developing social cognition. For instance, Clark and Delia (1976) presented children in grades 2–9 with hypothetical persuasion situations (e.g., asking a parent to buy a gift) and asked them to say everything they could think of to gain agreement. Seven- and eight-year-olds demonstrated little perspective-taking whereas adolescents demonstrated considerably more, a difference viewed as consistent with a Piagetian constructivist perspective and with seminal reports concerning social role-taking (e.g., Flavell et al., 1968). Bragg, Ostrowski, and Finley (1973) reported specifically that 10-year-olds used different tactics to persuade younger, as opposed to same-aged or older, children, possibly reflecting recognition of differing cognitive capabilities. In a more extensive exploration of persuaders' attention to others' psychological states, Howie-Day (1977) interviewed first graders (six- or seven-year-olds)

as well as fifth graders (10-/11-year-olds), seventh graders (12-/13-year-olds), and undergraduates. Participants were presented with a hypothetical scenario in which a young child attempted to obtain a toy from various 'targets'. After listening to two tape-recorded persuasive appeals, participants indicated which the persuader would select and why. Persuasive appeals that involved inferences about others' psychological states increased with age. Yet even first graders selected 'reasoned, elaborated tactics that took account of the target's internal states' and occasionally offered reasons for selecting strategies that involved hypothetical attributions concerning the wants or thoughts of the target (as in 'the mother might think it was good').

Utilizing different laboratory-based tasks with even younger children, Weiss and Sachs (1991) arranged for preschoolers to engage in lengthy persuasion tasks with an experimenter, who played the part of either a child who needed to be convinced to share, or a mother who needed to be convinced to buy, a new toy. The experimenter refused each participant's requests five times in order to elicit multiple persuasive utterances. Most frequently, preschoolers attempted to bargain (e.g., 'I'll give you a million dollars if . . .'), which arguably required some general perspective taking. However, this method fell short of demonstrating that children were attuned to the specific mental states of the experimenter (states which were not communicated).

In order to examine directly whether children can attend to others' mental states in persuasion, researchers have begun to employ experimental methods in which the stated beliefs of the persuasion targets are directly manipulated. Bartsch and colleagues (Bartsch & London, 2000; Bartsch et al., 2007) gave young children tasks in which information about the beliefs of the person to be persuaded was manipulated. Children were asked to select the most persuasive argument from two choices, only one of which was relevant to the belief communicated by the target. For instance, in one story, a gentle and clean kitten wanted to be brushed, but the story character, Chloe, stated that she did not want to brush the kitten because she thought that kittens bite. Each child participant was then asked whether, in order to persuade Chloe to brush the kitten, she should be told that the kitten was gentle or that the kitten was clean. After the participant answered, a second story character, Zach, was introduced. Zach said he did not want to brush the kitten because he thought that kittens were dirty. Each participant was asked what Zach should be told to get him to brush the kitten, that the kitten was gentle or that the kitten was clean. Selection of belief-relevant responses for *both* story characters was viewed as evidence that children were attending to others' beliefs in persuasion.

In the first set of studies (Bartsch & London, 2000), these scenarios were presented through story tasks. On such tasks, preschoolers, kindergartners, and first graders showed little evidence of attention to beliefs during persuasion whereas third and sixth graders used belief information reliably. However, when the scenarios were presented within the context of interactive puppet tasks, a dramatic increase in children's psychological attunement between the ages of three and seven years was observed, with three-year-olds performing poorly and six- and seven-year-olds selecting belief-relevant persuasion more often than not (Bartsch et al., 2007).

These results from studies examining persuasion as a function of experimentally manipulated belief information support the characterization of young children as having some nascent appreciation for others' psychological states. For example, the finding that children begin to attend to beliefs in persuasion (in a structured laboratory task) between ages of three and seven years is roughly in line with claims that typically developing children achieve or already possess some understanding of beliefs, even false beliefs, in the preschool period (e.g., Baron-Cohen, Leslie, & Frith, 1985;

Wimmer & Perner, 1983; also see Wellman, Cross, & Watson, 2001). That children as young as three years select persuasive arguments appropriately for individuals with opposing beliefs accords also with literature suggesting that such children can tailor communications to listeners' characteristics, such as age and experience (e.g., O'Neill, 1996; Shatz & Gelman, 1973). Yet such experimental studies leave unanswered the question of whether and to what extent children demonstrate psychological attunement in real-life persuasion. Nor do they reveal much about the general nature of young children's everyday persuasion, such as what persuasion goals children typically have and what persuasive tactics they typically employ in daily interactions.

Naturalistic studies have partially addressed these issues. For instance, Dunn's (1988, 1996; Brown & Dunn, 1991; Dunn & Munn, 1987) extensive longitudinal observations of family conversation, broadly encompassing interpersonal understanding and communication within parent-child-sibling contexts, reveal some qualities of early persuasion and how it might relate to naive psychological reasoning. Dunn's observations suggest an early attunement to the internal states of familiar others. For instance, in one study, nearly half of child participants were observed to tease a sibling (specifically, to act in a way that seemed especially designed to upset or annoy the sibling, such as destroying a cherished possession) by age 18 months; nearly all children had engaged in such behavior by 24 months (Dunn, 1988, Study 2).

Although Dunn's work establishes that young children consider the feelings and likely reactions of others in early social interactions, it is less clear that children consider the specific mental states (e.g., beliefs) of others. To be sure, arguments occur, as when a 30-month-old attempted to convince her mother that the older sister was touching the forbidden garden hose. But it is hard to find, within these reports, examples of arguments in which a child is clearly responding to, and strategically attempting to change, the beliefs of another individual. With regard to verbal persuasion specifically, Dunn (1996, p. 192) noted psychological subtlety in the argument of Sarah, aged 47 months: Sarah, who was 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'. Although Sarah can be credited with something like general perspective-taking in this instance, she might have used these very same arguments on any individual competing for the crown, regardless of his or her particular mental states.

In sum, our review of the extant literature exposed two shortcomings with regard to the topic of early persuasion and the extent to which it might reflect psychological attunement. On the one hand, few experiments have directly addressed the issue of whether young children's persuasion involves attunement to others' mental states and those who suffer from concerns about ecological validity. On the other hand, few naturalistic studies have focused with sufficiently fine-grained analysis on children's everyday persuasion to provide much guidance on this topic. Therefore, to explore both the general nature of young children's real-life persuasive verbal exchanges and, more specifically, the extent to which such exchanges reflect attunement to others' mental states, we examined archived at-home conversations of four young children.

Methods

Database

Young children's everyday persuasion was examined in language samples selected from the Child Language Data Exchange System (CHILDES) online language

database, a collection of archived transcripts contributed by numerous researchers (MacWhinney, 2000).

Transcripts selected for study represented four children between the ages of three and five years: Abe (data contributed by Kuczaj, 1977), Adam (Brown, 1973), Ross (MacWhinney, 2000), and Sarah (Brown, 1973). These children were chosen because their transcripts reflected extensive and similar samplings of talk (roughly, on the order of an hour per week) from the ages of three to five in similar contexts (at-home conversations mostly with a single adult, either a parent or a researcher). All were first-born and except for Ross, whose younger brother appeared in later transcripts, had no siblings during the data-collection period. The children differed in some respects. Only one was female. One was African-American and three were White. Two were from academic families, one from a working-class family. Mean length of utterance (MLU) calculated for each child at 33–36 months and 45–48 months ranged from 2;3–6;0 and 3;2–8;0, respectively. Table 1 details the sampling information and the amount of persuasion data gleaned from each set of transcripts.

Procedure

Coding for Persuasion Chunks, Persuasion Initiator, and Persuasion Goals. Printed transcripts recording sampled at-home conversations for each child starting at three years of age were examined in their entirety by one coder. A second coder independently coded one-quarter of the transcripts (sampled from each six-month period) for reliability assessment. Each line of discussion was numbered sequentially for easy reference (as exemplified below):

- 27 Father: ok # sit down I want you to do some stuff for me # ok?
 28 Abe: uhuh # mine # ok?
 29 Father: ok # just a second I want you to do something see what's that?
 30 Abe: a camel.

Transcripts were first coded for what we termed *persuasion chunks*. We stipulated that a persuasion chunk was a series of verbal exchanges (of any length) that involved either the child trying to make the adult(s), or the adult(s) trying to make the child, do, say, want, or think something. Furthermore, because we wished to examine situations in which children were especially motivated to draw on their psychological expertise, we restricted our examination to exchanges in which resistance to a claim or request was evident and in which the persuader then made at least one additional effort to persuade, as in this exchange about a puzzle:

- Adam (4;4): Daddy, I know how to do that too.
 Father: But I don't want to mess it up because I won't know how to put it back.
 Adam: But I know how to put it back. Could you get it down and just let me look at it?
 Father: If you touch it would you mess it up for me?
 Adam: No.
 Father: How do you know?
 Adam: Because of my brains.
 Father: Your brains will stop you from doing it?
 Adam: Yeah.
 Father: Okay, then you can do it.

We also stipulated that each persuasion chunk would involve only one *topic*. So, for example, a persuasion chunk might involve a child trying to convince his mother to let him stay up instead of going to bed. As long as the discussion between the child and the

Table 1. Language Samples Information and Amount of Persuasion Identified

Child	Number of samples	Number of utterances (child and adult)	Age range utilized	MLU at 33-36 months	MLU at 45-48 months	Family information	Contributor/collection dates/sampling	Number of persuasion chunks	Number of persuasion utterances as percent of total utterances
Abe	150	Age 3: 20,207 Age 4/5: 8,300	3;0-5;0	6.0	8.0	White; graduate student family	Kuczaj (1977) 1973-1975 1 hour/week 2;4-4;0 .5 hour/week 4;1-5;0	235	8.9%
Adam	36	Age 3: 31,021 Age 4/5: 15,484	3;0-5;2	2.8	4.2	African-American middle-class	Brown (1973) 1962-1965	603	12.2%
Sarah	100	Age 3: 22,381 Age 4/5: 28,041	3;0-5;1	2.3	3.2	White working-class	Brown (1973) 1963-66 1 or 2 hours/2 weeks .5 hour/.5-1 week	225	5.2%
Ross	41	Age 3: 19,215 Age 4/5: 37,903	3;0-5;11	4.3	5.2	White; college professor family	MacWhinney 1979-1989 multiple short episodes/2-3 weeks	244	5.0%

mother focused on this topic, it was considered part of the same chunk. Once the conversation shifted to another topic (because the persuasion either succeeded or was abandoned, or simply because another topic of discussion was introduced), the persuasion chunk ended. For each instance, coders recorded the *first/last line numbers* of the persuasion chunk, *who initiated the persuasion* (child or adult), and the *persuasion goal* (to do something, say something, think or believe something, desire or want something, or unclear objective, although this last category was never utilized).

In assessing inter-coder reliability on identifying persuasion chunks, we stipulated that both coders had to identify the same chunk within three utterances at the beginning and end of the chunk. Agreement between coders (defined here as the percent of persuasion chunks identified by both coders as a proportion of the total persuasion chunks identified by either coder) ranged from 71.8 percent for Ross to 82.3 percent for Abe. Coders were unanimous in judgments of who initiated persuasion. Agreements concerning persuasion goals ranged from 96 percent (Cohen's $\kappa = .92$) for Sarah to 98 percent ($\kappa = .97$) for Abe, as shown in Table 2. Disagreements were resolved in discussion between coders.

Coding for Persuasion Tactics. After persuasion chunks were identified, each utterance within each chunk was examined. Coders recorded the *speaker* of each utterance and coded for the *persuasion tactic* that was employed, with each utterance receiving a single tactic code. Tactics were categorized as: *pleading*, *affirming*, *protest/denial*, *command/insisting*, *hint/suggesting*, *questioning*, *appeals to authority*, *explain/elaborate*, *guarantee/promise*, negotiate a *compromise*, *bargain/bribe*, give a *warning/threat*, consider a *hypothetical* situation, or engage in a *distraction*. These categories were generated through perusals of the existing literature on persuasion and from a preliminary review of our data. The following persuasion chunk illustrates our coding for tactics:

Adam (3;0): Cigarette. You have cigarette?
 Mother: No, no, no (*protest/deny*)
 Mother: Don't take them out, Adam. (*command/insist*)
 Adam: Why not? (*question*)
 Adam: Why not? (*question*)
 Mother: No, Adam. (*protest/denial*)
 Adam: Why not? (*question*)
 Mother: Because little boys don't smoke cigarettes. (*explain/elaborate*)
 Adam: Yeah. I want to smoke. (*command/insist*)

Inter-coder reliability regarding persuasion tactics (for each utterance) ranged from 97.6 percent agreement for Abe (Cohen's $\kappa = .80$) to 99.0 percent ($\kappa = .92$) for Ross (see Table 2). Disagreements were resolved in discussion between coders.

Coding for Mental-state Cues and Cue Use. Finally, coders judged whether the children and adults, in their attempts to persuade, were attuned to their conversational partner's explicitly stated mental states (e.g., beliefs and desires). Specifically, coders first noted whether any information about the persuadee's mental states, relevant to the persuasion topic, was explicitly stated. The coding options were *no explicit mental-state information*, *explicit belief* (e.g., 'I think that . . .' or 'I believe . . .'), *explicit desire* (e.g., 'I want . . .' or 'I'd like . . .'), *other explicit mental state* (e.g., 'I hope . . .', 'I don't know'), or *multiple explicit mental states* (which involved the explicit communication of at least two separate types of states—e.g., a belief and a desire—in

Table 2. Inter-coder Reliability: Percent Agreement (and Cohen's Kappa) for Each Coding Category

Child	Persuasion chunks	Who initiated	Goal	Tactics	Mental state cues present	Mental state cue utilized	Tactic change	Successful persuasion
Abe	82.3	100 (1.0)	98.4 (.97)	97.6 (.80)	98.7 (.96)	93.6 (.82)	86.0 (.66)	94.0 (.87)
Adam	70.2	100 (1.0)	98.2 (.96)	97.2 (.77)	95.9 (.91)	96.8 (.93)		
Sarah	77.6	100 (1.0)	96.2 (.92)	98.2 (.86)	97.0 (.94)	95.5 (.87)	93.0 (.85)	100 (1.0)
Ross	71.8	100 (1.0)	96.9 (.95)	99.0 (.92)	95.9 (.91)	97.6 (.95)		

the same persuasion chunk). If explicit mental-state information relevant to the persuasion topic was provided, then coders further judged whether the persuader adjusted his or her tactics in a manner that seemed responsive to the cue or seemed instead unresponsive. Coders also noted whether the adjustment involved a shift from a low- to a high-level tactic or visa versa. High-level tactics, or those that potentially took into account psychological states or perspectives, were *explain/elaborate*, *guarantee/promise*, negotiate a *compromise*, *bargain/bribe*, give a *warning/threat*, consider a *hypothetical* situation, or engage in a *distraction*. The following example illustrates our application of these additional categories:

Adam (5;2): I want to . . . I'm finished with these.

Adult: I'm not. (*protest/denial*)

Adam: But I want to play with something else. (*explain/elaborate*)

Adult: Why don't you play with the banjo? (*question*)

Adam: I like to play with other toys instead of a banjo. (*explicit desire cue, explain/elaborate*)

Adult: I thought a banjo was all you wanted. (*responsive to cue, explicit belief cue, explain/elaborate*)

Adam: I want something else. That and that and that and that. (*explicit desire cue, responsive to cue, explain/elaborate, no tactic shift*)

Adult: Let's put these away first and then you can have these. (*responsive to cue, compromise*)

Agreement between coders was calculated for decisions about the availability of explicit mental-state information and about whether persuaders adjusted their tactics in response to such information. Within each child's dataset, agreements were all above 92 percent and Cohen's kappas were above .82, as shown in Table 2. Disagreements were resolved in discussion between coders.

Results

We present results regarding (1) the persuasion chunks identified in children's conversations; (2) the persuasion tactics used; and (3) the availability of, and attunement to, explicitly mentioned mental states. Our primary interest was in children's persuasion but because this was interlaced with adults' persuasion, we report on adults also, in a limited fashion, to provide information about conversational context and to afford comparisons. Our analyses exploring development focus on comparisons between the ages of three and four/five, in keeping with reports suggesting marked changes children's understanding of mind across these ages (e.g., Bartsch & Wellman, 1995; Wellman et al., 2001).

Description of Persuasion Chunks

Number and Length of Persuasion Chunks. In Abe's transcripts, we identified 235 chunks of conversation that met our persuasion criterion. At the level of individual utterances, this meant that 2,546 (8.9 percent) of 28,507 utterances (child and adult) in Abe's transcripts were involved in persuasive exchanges. Adam's transcripts yielded 603 chunks (12.2 percent), Sarah's yielded 225 chunks (5.2 percent), and Ross's yielded 244 (5.0 percent). See Table 1 for detailed description. Table 3 shows the number of chunks for each child at the ages of three and four/five years. The number of persuasion-related utterances, viewed as a proportion of total utterances, did not change significantly between the ages of three and four/five, according to a Wilcoxon

Table 3. Who Initiated Persuasion and with What Goals

Child	Age	Child-initiated chunks		Adult-initiated chunks		Numbers of persuasion chunks with goals of changing actions, beliefs, and desires (and % of total initiated chunks)					
		Child	Adult	Child	Adult	Action		Belief		Desire	
						Child	Adult	Child	Adult	Child	Adult
Abe	3	92	66	64 (70%)	47 (71%)	18 (20%)	16 (24%)	10 (11%)	3 (5%)		
	4/5	49	28	25 (51%)	76 (61%)	21 (43%)	8 (29%)	3 (6%)	3 (11%)		
Adam	3	319	115	252 (79%)	92 (80%)	47 (15%)	20 (17%)	20 (6%)	3 (3%)		
	4/5	121	48	82 (68%)	32 (67%)	35 (29%)	15 (31%)	6 (5%)	1 (2%)		
Sarah	3	61	60	46 (75%)	44 (73%)	10 (16%)	13 (22%)	5 (8%)	3 (5%)		
	4/5	52	52	39 (75%)	35 (67%)	11 (21%)	15 (29%)	2 (4%)	2 (4%)		
Ross	3	64	50	35 (56%)	33 (66%)	14 (22%)	14 (28%)	15 (23%)	2 (4%)		
	4/5	67	64	28 (42%)	29 (45%)	27 (40%)	27 (40%)	12 (18%)	2 (3%)		

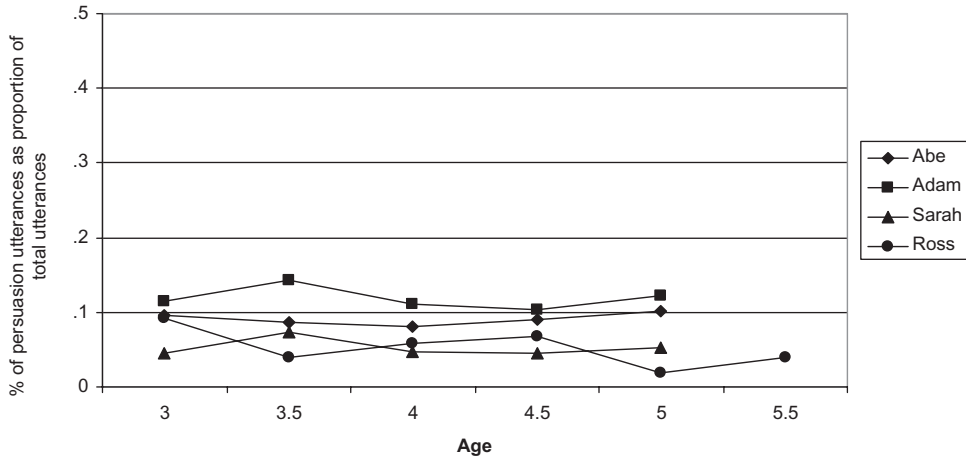


Figure 1. Frequency of Persuasion Utterances as a Proportion of Total utterances from the Ages of 3 to 5 years.

signed ranks test. Figure 1 displays these proportions for each child at six-month intervals.

The average size of persuasion chunks was similar across children: for Abe, the average length was 10 utterances (range: 4 to 22); for Adam, 10 (3 to 29); for Sarah, 12 (4 to 32); and for Ross, 14 (5 to 36). Average lengths of persuasion exchanges were also similar across ages. At the ages of three, four, and five, respectively, the mean lengths of persuasion chunks were as follows: Abe: 11, 9, and 9 utterances; Adam: 9, 10, and 10; Sarah: 11, 12, and 11; Ross: 10, 12, and 12.

Persuasion Initiation. Each child initiated half or more of his or her persuasive exchanges: Abe initiated 141 (60 percent) of persuasion chunks in his data; Adam 440 (73 percent); Sarah 113 (50 percent); Ross 131 (54 percent). These proportions were similar at ages of three and four/five (See Table 3).

Persuasion Goals. Child-initiated persuasion was primarily aimed at getting someone to do (rather than think, say, or want) something: for Abe, this constituted 62 percent of his persuasion chunks; Adam, 74 percent; Sarah, 71 percent; and Ross, 38 percent. The next most common goal was to persuade someone to believe something (Abe, 28 percent; Adam, 19 percent; Sarah, 19 percent; Ross, 36 percent). Children also occasionally attempted to persuade someone to desire something (Abe, 9 percent; Adam, 6 percent; Sarah, 6 percent; Ross, 19 percent). Adults' persuasion goals resembled the children's: adults mostly tried to get the child to do something (adults for Abe, 63 percent; Adam, 72 percent; Sarah, 70 percent; Ross, 44 percent), next most frequently to believe something (Abe, 26 percent; Adam, 22 percent; Sarah, 25 percent; Ross, 42 percent), and in a few instances to desire something (Abe, 6 percent; Adam, 3 percent; Sarah, 5 percent; Ross, 4 percent). For children and adults, attempts to get someone to say something were rare or non-existent, so in ensuing analyses we combined these chunks with those coded as aimed at motivating action.

Table 3 shows that the relative prevalence of children's goals was maintained between the ages of three and four/five years, although adult goal patterns were more

variable. To examine children's data for evidence of development between the ages of three and four/five, we used Wilcoxon signed ranks tests to compare the number of chunks of each goal-type, viewed as a proportion of total chunks, at each age. We found no significant change in children's attempts to get others *to do* things, but there was a significant increase in persuading others *to think* things and a significant decrease in persuading others *to want* things ($ps < .05$, one-tailed), with each of the four children showing an according pattern of increases and decreases. A Wilcoxon signed ranks test revealed no significant changes in adults' goal-types between children's ages of three and four/five ($p = \text{NS}$).

Persuasion Tactics

To understand more about the general nature of children's earliest verbal persuasion, we examined what persuasion tactics children used. Coding for persuasion tactic at the level of each utterance, we found that children and adults employed six of the fourteen defined tactics with some consistency. Table 4 shows that *questioning*, *commanding*, *protesting*, and *explaining* dominated for both children and adults, and that less frequent but consistent efforts to *affirm* and *hint* were also evident. Of these, only *explaining* was a high-level tactic that we thought might indicate psychological attunement; it appeared in the earliest transcripts for each child. Remaining tactics—*pleading*, *appeal to authority*, *promise*, *bribe*, *compromise*, *threaten*, *distract*, and *hypothesizing*—constituted less than 5 percent of total tactics employed by either the child or adults in each set of transcripts within each year.

Only one significant developmental change in children's persuasion tactics emerged when we tested for differences between the ages of three and four/five for each tactic listed in Table 4. A Wilcoxon signed ranks test revealed that children *explained* more at the age of four/five compared to the age of three ($p < .05$, one-tailed), with all four children showing an increase. Adults' persuasion tactics did not change significantly between children's ages of three and four/five ($p = \text{NS}$).

Use of Mental-state Information in Persuasion

Availability of Explicit Mental-state Information. Within the persuasion exchanges, adults and children occasionally provided explicit information about their own mental states, what they thought, wanted, hoped, and so forth. To learn whether, in their efforts to persuade, children attended to such cues from adults, we first identified all explicit mental-state references that were relevant to the persuasion topic within the chunks. Such references were fairly rare, ranging from a total of 41 cues addressed to Sarah to 168 cues addressed to Adam. Table 5 shows the number of explicit cues that were available to each child at the ages of three and four/five, detailing how many referred to the persuadee's beliefs, desires, other mental states, or multiple mental states. In comparison to adults, children tended to report their mental states more often: Abe reported his mental states 163 times to his adults' 73 times, Adam reported 178 to his adults' 168, and Ross reported 83 to his adults' 42. Sarah was the only exception, reporting mental states 41 times to her adults' 111. All four children explicitly reported both beliefs and desires within each six-month period.

Responding to Mental-state Cues. All four children were judged to occasionally alter their persuasion tactics in response to the explicitly mentioned mental states of their

Table 4. Persuasion Tactics

		Proportion of different persuasion tactics used*													
Child	Age	Total tactic uses		Affirm		Protest/deny		Command/insist		Question		Hint/suggest		Explain/elaborate	
		Child	Adult	Child	Adult	Child	Adult	Child	Adult	Child	Adult	Child	Adult	Child	Adult
Abe	3 4/5	885 352	877 315	.09 .05	.10 .10	.23 .27	.18 .22	.18 .10	.20 .11	.21 .17	.34 .34	.04 .04	.03 .02	.24 .36	.17 .17
Adam	3 4/5	1934 846	1654 684	.05 .05	.05 .06	.09 .11	.17 .11	.35 .37	.14 .22	.28 .20	.26 .31	.02 .01	.03 .04	.21 .24	.29 .24
Sarah	3 4/5	495 518	645 633	.05 .07	.05 .06	.22 .19	.18 .20	.36 .32	.20 .15	.14 .22	.21 .23	.01 .01	.01 .02	.19 .20	.28 .29
Ross	3 4/5	545 656	589 689	.11 .09	.08 .09	.27 .33	.22 .22	.26 .14	.14 .12	.13 .12	.30 .31	.03 .03	.03 .03	.18 .22	.20 .17

* Other tactics—pleading, appeal to authority, promise, bribe, compromise, threaten, distract, and hypothesize—were never or rarely used (i.e., they constituted less than .05 of total tactics for any speaker during any period.)

Table 5. Availability and Attention to Explicit Mental State Cues

Child	Age	Total mental-state cue informed chunks	Mental-state categories			
			Belief cue chunks	Desire cue chunks	Other/Multiple-state cue chunks	
Adam	3	130	68	49	13	46%
	4/5	38	28	2	8	63%
Abe	3	54	35	9	10	70%
	4/5	19	13	2	4	75%
Sarah	3	19	8	7	4	25%
	4/5	22	14	2	6	50%
Ross	3	13	6	7	0	0%
	4/5	27	10	9	8	63%

Number of persuasion chunks involving an adult's explicit mental-state cue and percent of those chunks in which the cue preceded a child's tactic shift

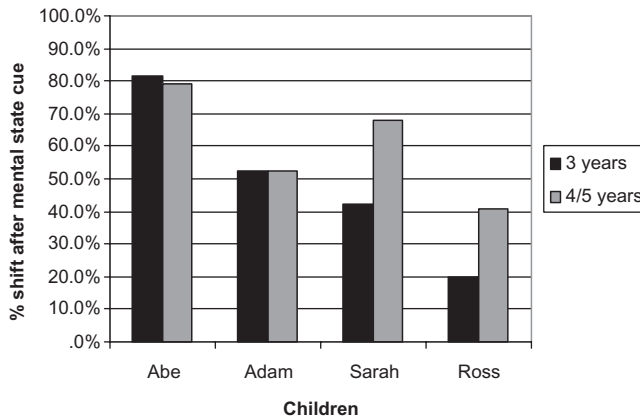


Figure 2. Tactic Shift Following Mental-state Cues as a Percentage of Mental-state Cued Persuasion Chunks.

conversational partners (see Figure 2). Abe adjusted his persuasion in response to mental-state cues in approximately 80 percent of instances in which a cue was available; Adam did so in 50 percent of instances. Neither exhibited marked change in such adjustments between the ages of three and four/five. Sarah and Ross, however, attended to more mental-state information over time: Sarah adjusted her persuasion tactics in 42 percent of cue-informed instances at three years and in 68 percent at four/five years; Ross did so in 20 percent of cue-informed instances at three years and 41 percent at four/five years.

Although all four children were judged to alter persuasion in response to belief cues, specifically, at both ages of three and four/five, Table 5 shows little evidence of development in this regard. Attention to desire cues appeared to increase over time, but the numbers of desire-cue instances were too small to permit confident interpretation.

Follow-up Exploration of When Persuasion Was Successful. In conducting the preceding research, we found that it was usually evident whether children's persuasion was successful. Therefore, to explore whether children's attunement to mental-state cues was associated with successful persuasion, we undertook a follow-up examination involving two of the four children (Abe and Sarah, representing opposite ends of the MLU spectrum). For each persuasion chunk, independent coders judged whether the child's persuasion resulted in success, failure, or an indeterminate outcome. Coders also judged whether children shifted tactics over the course of each exchange, and, if so, whether the shift was from a low-level to a high-level tactic, *visa versa*, or neither. Table 2 shows coding reliability figures.

Overall, Abe and Sarah succeeded in about a third of their persuasion attempts (Abe: 29 percent; Sarah: 32 percent). They failed more than half of the time (Abe: 69 percent; Sarah: 56 percent) and the remaining attempts were coded as indeterminate. Abe's success rate was about the same whether he attended to his persuadee's mental states (30 percent vs. 29 percent, respectively). Sarah succeeded more when she responded to mental-state cues (45 percent), compared to when she did not (35 percent).

A related question was whether children at least changed tactics, possibly moving to high-level tactics, when they had information about their conversational partner's

mental states. Overall, we found that both Abe and Sarah adjusted their tactics in some fashion in just over half of all persuasion attempts (Abe, 60 percent; Sarah, 65 percent). Both shifted tactics slightly more when there were explicit mental-state cues, compared to when there were not (Abe: 63 percent vs. 59 percent; Sarah: 66 percent vs. 62 percent, respectively). Both shifted from low- to high-level tactics about half the time (Abe 51 percent; Sarah 46 percent). For Abe, this did not change depending upon whether he had access to his persuadee's mental states (51 percent in both situations), but for Sarah it did: she shifted from low- to high-level tactics more frequently in the presence, compared to the absence, of mental-state cues (54 percent v. 45 percent, respectively). Both children occasionally shifted from high- to low-level tactics (Abe, 3 percent; Sarah 12 percent) but never when they had explicit mental-state information. Of Abe's successful persuasion attempts, 73 percent involved tactic shifts (63 percent of which were from low- to high-level tactics, none from high- to low-level). Of his unsuccessful attempts, Abe shifted tactics only 50 percent of the time (47 percent from low- to high-level tactics, 3 percent from high- to low-level tactics). Of Sarah's successful attempts, 58 percent involved tactic shifts (50 percent from low- to high-level tactics, 8 percent from high- to low-level). Sarah shifted tactics just as often in her unsuccessful persuasion attempts (57 percent; 44 percent low- to high-level and 13 percent from high- to low-level).

Discussion

We studied four young children's everyday conversations to examine verbal persuasion. Our aim was to determine whether this common and dynamic form of social interaction reflects an early appreciation of mental life in accord with that suggested by extant experimental research (e.g., Baron-Cohen et al., 1985; O'Neill, 1996; Wellman et al., 2001; Wimmer & Perner, 1983). The current study examined persuasion not only with respect to general perspective-taking but also in terms of children's attention to the specific mental states of those they sought to persuade. In describing young children's goals and tactics as well as the availability of, and sensitivity to, specific mental-state information, we revisited the issue of young children's ability to attend to others' psychological states and perspectives during persuasion. This examination resulted in the discovery of new instances of persuasion by young children in their everyday conversations, in novel description concerning the general nature of children's persuasion interactions with adults, and, more specifically, in data pertinent to the possible significance of children's mental-state understanding for such interactions.

Before detailing the implications of our findings, we note that our inspection of early persuasion was limited in several important respects. Firstly, we studied only four children who, although different with respect to both a number of demographic dimensions and language development (as indexed by MLU), did not constitute a representative sample of young children. Children's conversations were at home and mostly with adults, thus excluding persuasive exchanges with adults in other contexts and also with other children. This omission is significant from a perspective assuming that peer conflict provokes elevated social cognition (e.g., Piaget, 1965). And yet children have been reported to use more reasoned 'other-oriented' argumentation with adults (e.g., Dunn & Munn, 1987), hinting that such conversations may be the first to involve appeals to mental states such as beliefs and thus are a sensible place to look for early psychological attunement. Additionally, our analyses were limited to transcriptions containing no information about facial expression or other non-verbal cues, a point of

significance in a study of children's sensitivity to the psychological states of others. Nor did we have much information about the social context of the conversations beyond what could be gathered from the utterances. Nevertheless, in view of the recent claims concerning children's emerging belief-desire reasoning in the preschool years, arising in part from intensive examinations of children's use and comprehension of mental-state terms, and in view of the dearth of evidence concerning young children's verbal persuasion in general and especially with regard to the availability of and attention to verbally given mental-state cues, this descriptive study constituted a meaningful first exploration.

With its novel focus, our investigation provided previously unavailable descriptions of young children's persuasion exchanges with adults. Children's extended persuasion exchanges constituted about one-twentieth to one-tenth of their total utterances. Children initiated the persuasion in half to three-quarters of the documented exchanges. These proportions held true as children aged from three to five, suggesting an independence from other cognitive and social developments occurring in this period and showing that children and adults played surprisingly equal roles in such conversations. Of course, given that the data were originally collected for studies of children's language development, it is possible that conversations were atypically child-centered, but this does not explain the lack of developmental change. Another dimension that did not change with age was the average length of persuasion exchanges, which was between 9 and 12 utterances for the four children at each age. Thus, some aspects of the conversational structure of persuasion exchanges appear to hold constant across this preschool period.

As expected, children's persuasion was mostly directed at getting someone to do something, as in the following instance involving the play activity of building a toy town:

Adam (3;0): Mommy make a street light over dere.
 Mother: You go put it up.
 Adam: No.
 Mother: Let me show you how. You put this part on the floor.
 Adam: You come. Come on, I can't do it. Mommy put dat one on.

Yet roughly a fifth of child-initiated persuasion involved arguments of fact, which we coded as attempts to get someone to believe something, as in the following exchange:

Abe (3;9): Oh. How can snakes hear if they don't have ears?
 Father: I don't think they can hear.
 Abe: They have to hear.
 Father: Why?
 Abe: Because they wouldn't know who was gon (t)a kill em if they couldn't hear.
 Father: They have to hear so they can protect themselves?
 Abe: Yeah.

We found that the initiation of such arguments of fact, relative to other persuasion exchanges, increased for all four children between the ages of three and four/five (though not for adults talking to them), as one would expect from the extensive literature attesting to children's developing understanding of belief over this period (e.g., Bartsch & Wellman, 1995; Wellman et al., 2001), even as persuasion to get someone *to want* something decreased for all four children.

Clearly, we have no evidence that in these factual disputes children were explicitly thinking, 'I will change his belief from *x* to *y*' or 'I want him to believe *x*, not *y*'. In that

respect, children's arguments over matters of fact were not necessarily cases of 'persuading to believe' in a fashion perfectly analogous to the cases of 'persuading to act' (where it seems likely that children could, if asked, articulate their goal of getting someone to do something). So whether children *deliberately* attempted to persuade within both the 'landscapes of consciousness and actions' (Bruner, 1986) is not clear. It is interesting that arguments of fact already constituted between 15 and 22 percent of three-year-olds' persuasive exchanges. In keeping with claims by Dunn and colleagues (Slomkowski & Dunn, 1992; Tesla & Dunn, 1992) about the central role of conflict in children's social development, we speculate that it may be through such arguments that children come to explore the idea of individual cognitive representation. Specifically, a child may hear someone make a verbal claim at odds with her own belief and argue against it, later coming to view such statements as expressions of distinctive beliefs.

Both children and adults occasionally initiated persuasion with the explicit goal of getting someone to want something, as in the following exchange:

Abe (5;0): Dad, do you want to go upstairs and wrestle?

Dad: Not right now.

Abe: Now you want to, now you want to, now you want to.

Our data indicate that three-year-olds were most likely to do this, perhaps reflecting the desire-focused psychology that has been attributed to two- and three-year-olds (e.g., Bartsch & Wellman, 1995; Wellman & Woolley, 1990), even in the form of the misguided notion that one can change others' desires simply by telling people what they want. Interestingly, adults engaged in this as well (e.g., a mother said 'oh, you don't want to do that') which raises the intriguing question of what young children make of such statements by adults.

To garner information about the general nature of young children's persuasion, and permit comparisons with extant literature, we categorized each persuasion effort as reflecting one of 14 tactics. About half of these appeared consistently in our data (*questioning, commanding, protesting, affirming, hinting, and explaining*) in both children's and adults' persuasion efforts, whereas the others (*plead, appeal to authority, promise, bribe, compromise, threaten, distract, hypothesize*) were never or rarely used. Children's use of only one tactic changed significantly with age; *explaining* was more prevalent at age of four/five than at age of three, although it was a relatively common tactic at both ages. Both aspects of this finding are of interest. An increase in children's use of explanation, the tactic most plausibly reflecting an assumption of mind (although both hinting and questioning could also be candidates), accords with the notion that a developing understanding of mind influences social interactions such as persuasion. But the fact that explanation was already evident among the tactics used by three-year-olds suggests that its use does not await the development of a more complete understanding of mind. Although one possibility is that these early explanations reflect a precocious sensitivity to the cognitions of others, another is that such explanations are somehow elicited in these dynamic conversations in the absence of a mature understanding of their effect (e.g., as imitations of adult conversation) and thus anticipate children's eventual understanding of cognitive representation.

As expected, our findings about the persuasion tactics of young children are at odds with reports from older literature. For instance, Clark and Delia (1976), in their experimental studies of children ranging from grades 2 to 9, reported that the first indication of perspective-taking (in their coding scheme, the initiation of any counter-

arguments, as opposed to mere pleading or request repetitions) emerged in the arguments of third graders, and that attention to the other's specific viewpoint (even in the sense of mentioning advantages to the other) was not evident until children were in ninth grade. The fact that in our study children as young as three years old used explanation in persuasion suggests a more precocious capacity for something at least akin to psychologically sensitive argument, arguably in accord with studies crediting preschoolers with appreciation of the cognitive states of others (e.g., Baron-Cohen et al., 1985; Bartsch & Wellman, 1995; O'Neill, 1996; Wellman et al., 2001).

Of course, a primary aim of our study was to determine whether children engaging in persuasion were sensitive to the mental states (not just the social roles or perspectives) of their conversation partners. But first we had to determine how often such states were verbally expressed. We found that adults did explicitly mention their own beliefs, desires, emotions, and other mental states during persuasion exchanges (ranging from 41 times to Sarah and 168 to Adam). Thus, explicit psychological cues (mostly about beliefs) were available to children in about a third of persuasion chunks. Children mentioned their own mental states more than did adults, perhaps reflecting the child-centered nature of the exchanges. Of course, information about beliefs, desires, and emotions may have been evident in a variety of non-verbal ways, or known from historical verbal evidence. Moreover, it may have been evident in verbal exchanges but without explicit use of a mental-state term (e.g., 'The cat is on the mat' as opposed to 'I think the cat is on the mat'). In that regard, our examination of attunement to mental states was limited. That we found relatively few explicit cue instances speaks to both the relatively limited verbal data that children encounter about the beliefs and desires of others and also the limitations of examining children's attunement to mental-state knowledge in social conversation.

In terms of what we did find in the way of explicit verbal cues about mental states, all four children mentioned their own beliefs and desires within each six-month period, consistent with other analyses (Bartsch & Wellman, 1995) and dispelling the possibility that children would speak only about their own desires. Adults mentioned their own beliefs and desires to children at all ages, with most instances concerning beliefs. This may reflect the fact that desires are often evident in non-verbal ways, whereas beliefs may require articulation. There was no evidence in our study that adults talking to three-year-olds, compared to five-year-olds, were less likely to mention their own beliefs. Both children and adults mentioned other psychological states (including emotions and ignorance), though all these references were quite rare.

We sought to discover whether children altered their persuasion tactics in the face of such explicit information about their conversational partners' mental states. Coders judged that such attunement was evident in the persuasion efforts of all four children across all ages studied. For example, Ross was judged as responding to his father's desire in the following exchange:

Ross (3;4): Now, will you read that?

Father: What about the Three Pigs? Do you want to go get that book?

Ross: No.

Father: Yeah, I like that book. Go get it. I don't want to read that. I want to read The Three Pigs book.

Ross: This one's a good one, it is.

Father: It is?

Ross: Yeah.

Father: How do you know?

Ross: Because, because it is from Sesame Street.

Ross's argument that 'This one's a good one, it is', in response to his father's statement that he did not want to read the book in question, was viewed as a significant expansion, pertinent to his father's desire, on his earlier simple request for action. Likewise, response to a belief cue was perceived in the following exchange about a kite, in which Abe similarly expanded on his simple refusal (by reference to imaginary authority) after his mother described her thinking:

Mother: Can we hang that on the wall Abe?

Abe (3;2): Yeah, no, no, not yet.

Mother: I can't fly it yet because there's snow on the ground, so I thought I'd hang it on the wall until springtime comes.

Abe: Right here it says snow kite don't hang it on the wall [pretends to read].

Mother: Oh, it does say that?

Abe: Yeah.

Children, regardless of age, shifted tactics following mental-state cues in about half of the cue-laden instances, suggesting some level of attention to such cues. Even at the age of three, responsive alteration of tactics occurred in a low of 23 percent of cue-informed cases for Ross and in a high of 81 percent of cases for Abe. We must be clear that children's 'responsiveness' did not necessarily mean that they explicitly acknowledged the belief or desire of the conversational partners (as in 'I know you think *x*, but . . .'), but simply that their next remark was appropriately relevant to the comment involving the mental-state reference. So, for example:

Adam (3;0): Do you want me to touch it [microphone]?

Mother: I think you may knock it off Adam.

Adam: Why I knock it off?

Mother: I don't think you would intend to.

Adam appeared to respond to the content of his mother's belief in his response although he did not himself explicitly remark on her belief. No clear evidence of development in children's responsiveness to beliefs over the ages studied was apparent in the few examples we identified. In terms of individual differences, Sarah and Ross (but not Abe or Adam) were more responsive at the age of four/five than at three in both belief- and desire-informed instances.

Because the success or failure of children's persuasion was apparent in our data, we examined whether Abe and Sarah's apparent responsiveness to mental-state cues was associated with success. Abe's success rate was about 30 percent either way, but Sarah succeeded in 45 percent of instances when she responded to mental-state information compared to 35 percent when she did not. This suggests that Sarah was more likely to get her own way when she paid attention to what others wanted or believed, a pattern that might encourage future attention to others' states. When we looked comprehensively for tactic changes within the persuasion chunks, focusing especially on change from low- to high-level tactics, we found such shifts were slightly more common for Sarah in cases in which there were mental-state cues present (54 percent compared to 45 percent when cues were not present), although there was no such difference for Abe. Intriguingly, although both children occasionally shifted from a high- to a low-level tactic, they never did so in the presence of an explicit mental-state cue. This hints that explicit talk about mental states in persuasion exchanges may facilitate children's use of high-level, 'mind-minded' persuasion tactics.

Beyond providing preliminary description concerning how children's early persuasion with familiar adults might relate to developing mental-state understanding, our study offers new description of early persuasion itself. We found that extended persuasion sequences were initiated as much or more by young children as by their adult conversation partners, something that could have been otherwise, and that these sequences were similar in length and frequency across the three- to five-year age period. This argues against the possibility that during this critical period for the development of mental-state understanding, children are suddenly inspired about the utility of persuasion. Rather, three-year-olds are already engaged in this form of interaction, which perhaps facilitates the emergence of an articulated mental-state understanding (e.g., Carpendale & Lewis, 2004; Dunn & Brophy, 2005; Dunn & Munn, 1987; Hughes & Leekam, 2004; Lohmann, Tomasello, & Meyer, 2005; Slomkowski & Dunn, 1992; Tesla & Dunn, 1992). Our findings accord also with reports that even three-year-olds engage in teaching (e.g., Ashley & Tomasello, 1998; Astington & Pelletier, 1996; Maynard, 2002; Strauss, Ziv, & Stein, 2002), an activity that would seem to require some sensitivity to cognitive states and transitions in others. Reports of precocious teasing and deception (e.g., Dunn, 1988; Reddy, 1991, 2007) in still younger children similarly suggest sensitivity to others' perspectives; indeed, even infants recognize what is new to other people and thus merits attention (e.g., Tomasello & Haberl, 2003). Yet it seems plausible that social engagement, whether in persuasion, teaching, or teasing, precedes an explicit and conscious awareness of the cognitive states involved.

A final comment concerns our observation that young children's persuasion frequently occurred, and was often successful, in the absence of explicit verbalizations concerning psychological states. This finding inspires two diverging lines of thought. On the assumption that attunement to the specific psychological states of others is critical in social interaction, it suggests that children and adults may frequently engage in, and succeed at, persuasion using psychological information obtained from non-verbal sources such as facial expressions, gesture, action, and knowledge of other persons based on past interactions. Alternatively, our findings may simply indicate that persuasion often occurs in the absence of psychological cues of any type. Although it seems indisputable that an understanding of mind is critical in some persuasion endeavors, our data suggest much social manipulation may occur without benefit of explicit psychological information, understanding, or analysis. Future efforts to examine the specific role of mental-state understanding, as opposed to more general psychological understanding such as general role-taking, in real-life social interactions are needed to tease apart these possibilities.

References

- Ashley, J., & Tomasello, M. (1998). Cooperative problem-solving and teaching in preschoolers. *Social Development*, 7, 143–163.
- Astington, J. W., & Jenkins, J. M. (1995). Theory of mind development and social understanding. *Cognition and Emotion*, 9, 151–165.
- Astington, J. W., & Pelletier, J. (1996). The language of mind: Its relation to teaching and learning. In D. Olson, & N. Torrance (Eds.), *Handbook of psychology in education: New models of learning, teaching and schooling* (pp. 593–619). Oxford: Basil Blackwell.
- Baron-Cohen, S., Leslie, A. M., & Frith, U. (1985). Does the autistic child have a 'theory of mind'? *Cognition*, 21, 37–46.

- Bartsch, K., & London, K. (2000). Children's use of mental state information in selecting persuasive arguments. *Developmental Psychology*, *36*, 352–365.
- Bartsch, K., London, K., & Campbell, M. D. (2007). Children's attention to beliefs in interactive persuasion tasks. *Developmental Psychology*, *43*, 111–120.
- Bartsch, K., & Wellman, H. M. (1995). *Children talk about the mind*. New York: Oxford University Press.
- Bragg, B. W. E., Ostrowski, M. V., & Finley, G. E. (1973). The effects of birth order and age of target on use of persuasive techniques. *Child Development*, *44*, 351–354.
- Brown, J., & Dunn, J. (1991). 'You can cry, Mum': The social and developmental implications of talk about internal states. *British Journal of Developmental Psychology*, *9*, 237–256.
- Brown, R. (1973). *A first language: The early stages*. Cambridge, MA: Harvard University Press.
- Bruner, J. (1986). *Actual minds, possible worlds*. Cambridge: Cambridge University Press.
- Carpendale, J. I. M., & Lewis, C. (2004). Constructing an understanding of mind: The development of children's social understanding within social interaction. *Behavioral and Brain Sciences*, *27*, 79–96.
- Clark, R. A., & Delia, J. G. (1976). The development of functional persuasive skills in childhood and early adolescence. *Child Development*, *47*, 1008–1014.
- Damon, W. (1977). *The social world of the child*. San Francisco, CA: Jossey-Bass.
- Delia, J. G., Kline, S. L., & Bureson, B. R. (1979). The development of persuasive communication strategies in kindergartners through twelfth-graders. *Communication Monographs*, *46*, 241–256.
- Dunn, J. (1988). *The beginnings of social understanding*. Cambridge, MA: Harvard University Press.
- Dunn, J. (1996). Arguing with siblings, friends, and mothers: Developments in relationships and understanding. In D. Slobin, J. Gerhardt, A. Kyratzis, & J. Guo (Eds.), *Social interaction, social context, and language: Essays in honor of Susan Ervin-Tripp* (pp. 191–204). Mahwah, NJ: Lawrence Erlbaum Associates.
- Dunn, J., & Brophy, M. (2005). Communication, relationships, and individual differences in children's understanding of mind. In J. W. Astington, & J. A. Baird (Eds.), *Why language matters for theory of mind* (pp. 50–69). Oxford: Oxford University Press.
- Dunn, J., & Munn, P. (1987). Development of justification in disputes with mother and sibling. *Developmental Psychology*, *23*, 791–798.
- Flavell, J. H., Botkin, P. T., Fry, C. L. Jr., Wright, J. W., & Jarvis, P. E. (1968). *The development of role-taking and communication skills in children*. New York: Wiley.
- Flavell, J. H., & Miller, P. H. (1998). Social cognition. In W. Damon (General Ed.), D. Kuhn, & R. Siegler (Vol. Eds.), *Handbook of child psychology: Vol. 2. Cognition, perception, and language* (5th ed., pp. 851–898). New York: Wiley.
- Gopnik, A., & Meltzoff, A. N. (1997). *Words, thoughts and theories*. Cambridge, MA: MIT Press.
- Howie-Day, A. M. (1977). *Metapersuasion: The development of reasoning about persuasive strategies*. Unpublished doctoral dissertation, University of Minnesota.
- Hughes, C., & Leekam, S. (2004). What are the links between theory of mind and social relations? Review, reflections and new directions for studies of typical atypical development. *Social Development*, *13*, 590–619.
- Hummer, P., Wimmer, H., & Antes, G. (1993). On the origins of denial negation. *Journal of Child Language*, *20*, 670–618.
- Kuczaj, S. (1977). The acquisition of regular and irregular past tense forms. *Journal of Learning and Verbal Behavior*, *16*, 589–600.
- Lohmann, H., Tomasello, M., & Meyer, S. (2005). Linguistic communication and social understanding. In J. Astington, & J. Baird (Eds.), *Why language matters for theory of mind* (pp. 245–265). New York: Oxford University Press.
- MacWhinney, B. (2000). *The CHILDES project: Tools for analyzing talk, Vol. 2: The database* (3rd ed.). Mahwah, NJ: Lawrence Erlbaum Associates.
- Maynard, A. E. (2002). Cultural teaching: The development of teaching skills in Maya sibling interactions. *Child Development*, *73*, 969–982.
- Webster's New Collegiate Dictionary* (1997). Springfield, MA: G. & C. Merriam Co.
- Newton, P., Reddy, V., & Bull, R. (2000). Children's everyday deception and performance on false-belief tasks. *British Journal of Developmental Psychology*, *18*, 297–317.

- O'Neill, D. K. (1996). Two-year-old children's sensitivity to a parent's knowledge state when making requests. *Child Development*, 67, 659–677.
- Pea, R. (1982). Origins of verbal logic: Spontaneous denials by two- and three-year-olds. *Journal of Child Language*, 9, 597–626.
- Piaget, J. (1937/1954). *The construction of reality in the child*. New York: Basic Books.
- Piaget, J. (1965/1932). *The moral judgment of the child*. New York: Free Press.
- Reddy, V. (1991). Playing with others' expectations: Teasing and mucking about in the first year. In A. Whiten (Ed.), *Natural theories of mind: Evolution, development and simulation of everyday mindreading* (pp. 143–158). Oxford: Basil Blackwell.
- Reddy, V. (2007). Getting back to the rough ground: Deception and 'social living.' *Philosophical Transactions of the Royal Society*, 362, 621–637.
- Selman, R. L. (1980). *The growth of interpersonal understanding: Developmental and clinical analyses*. New York: Academic Press.
- Shantz, C. U. (1983). Social cognition. In P. H. Mussen (Ed.), *Handbook of child psychology. Vol. III. Cognitive development* (pp. 495–555). New York: Wiley.
- Shatz, M., & Gelman, R. (1973). The development of communication skills: Modifications in the speech of young children as a function of listener. *Monographs of the Society for Research in Child Development*, 38 (5, Serial No. 152), 1–38.
- Slomkowski, C., & Dunn, J. (1992). Arguments and relationships within the family: Differences in children's disputes with mother and sibling. *Developmental Psychology*, 28, 919–924.
- Strauss, S., Ziv, M., & Stein, A. (2002). Teaching as a natural cognition and its relations to preschoolers' developing theory of mind. *Cognitive Development*, 17, 1473–1487.
- Sully, J. (1896/2000). *Studies of childhood*. London: Free Association Books.
- Symons, D. K., & Clark, S. E. (2000). A longitudinal study of mother-child relationships and theory of mind during the preschool period. *Social Development*, 9, 3–23.
- Tesla, C., & Dunn, J. (1992). Getting along or getting your way: The development of young children's use of argument in conflicts with mother and sibling. *Social Development*, 1, 107–121.
- Tomasello, M. (1995). Joint attention as social cognition. In C. Moore, & P. J. Dunham (Eds.), *Joint attention. Its origin and role in development* (pp. 103–130). Hillsdale, NJ: Lawrence Erlbaum.
- Tomasello, M., & Haberl, K. (2003). Understanding attention: 12- and 18-month-olds know what's new for other persons. *Developmental Psychology*, 39, 906–912.
- Weinstein, E. (1969). The development of interpersonal competence. In D. Goslin (Ed.), *Handbook of socialization theory and research* (pp. 753–775). Chicago, IL: Rand McNally.
- Weiss, D. M., & Sachs, J. (1991). Persuasive strategies used by preschool children. *Discourse Processes*, 14, 55–72.
- Wellman, H. M. (1990). *The child's theory of mind*. Cambridge, MA: MIT Press.
- Wellman, H. M., Cross, D., & Watson, J. (2001). Meta-analysis of theory-of-mind development: The truth about false belief. *Child Development*, 72, 655–684.
- Wellman, H. M., & Woolley, J. D. (1990). From simple desires to ordinary beliefs: The early development of everyday psychology. *Cognition*, 35, 245–275.
- Williams, D. E., & Schaller, K. (1993). Peer persuasion: A study of children's dominance strategies. *Early Child Development and Care*, 88, 31–41.
- Wilson, A. E., Smith, M. D., & Ross, H. S. (2003). The nature and effects of young children's lies. *Social Development*, 12, 21–45.
- Wimmer, H., & Perner, J. (1983). Beliefs about beliefs: Representation and constraining function of wrong beliefs in young children's understanding of deception. *Cognition*, 13, 103–128.

Acknowledgments

We thank Brian MacWhinney, Catherine Snow, and others responsible for the CHILDES database, and also the researchers, parents, and children who contributed the language samples used in this study. Thanks also to Becky Sicheloff, Katherine French-Ewing, Piper Grandjean, Brandi McCulloch, and Ross Little for assistance with coding. This material is based upon work supported by the National Science Foundation under Grant No. BCS0131496. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation.