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## How Mothers Maintain “Dialogue” with Two-Year-Olds

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Our work crosses two fields: early language development and the earlier social interaction between infants and adults. Since about 1970, many authors have proposed that mother-infant interaction somehow lays a groundwork for the structure of language. There are, however, at least two different versions of this hypothesis. First is the notion that certain universals of *linguistic* structure are prefigured in infants' joint action with mothers and fathers upon the object world. For example, Bruner (1975) has argued most coherently that mutual gestural reference is a precursor of deixis; that there is a topic-comment and presuppositional structure in sensorimotor interaction, leading to predication; and that basic grammatical cases—Agent, Action, Object, Instrument—are clearly marked in mother-infant interaction before the onset of speech proper.

A compatible but somewhat different form of the hypothesis holds that the early interactions of mother and infant are particularly suited to prepare the way for those later interactions in which language is learned. This is our view (Kaye, 1979): The structure developed in infancy is *social* structure, which then enables the child to interact with adults in ways that optimize learning. The main features of social interaction and cognition in infancy—joint reference to objects, turn-taking, mutual imitation, the signalling of intention—are not necessarily directly internalized by the child in language, but at least provide a discourse structure without which the rules of language in the narrower sense could not be learned.

Both versions of the general hypothesis assume that the fine points of a particular language are elaborations of a basic set of speech acts that depend upon social contexts and make use of those contexts in conveying

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meaning (Austin, 1962; Searle, 1969; Dore, 1975). Stated in the way we prefer, the hypothesis suggests that the young child is able to learn the informative features, the obligatory transformations, and the optional forms of speech acts because of the ongoing discourse in which they are embedded. Mead (1934), Brown (1968), and Macnamara (1972) among others have pointed out that the back-and-forth cycles of discourse provide great redundancy for the child, so that he is very often in the position of hearing a proposition expressed when he already knows its intended meaning, and of hearing variant forms for his own propositions.

The rules for successful dialogue constrain each speaker not to interrupt the other and not to change the subject abruptly: to wait for the other to finish and then to continue the topic of the other's turn (Fillmore, 1973). There are also rules for signalling to the other when one is completing one's own turn (Duncan, 1972). Sometimes (but not always) a speaker will end his turn with a question, request, or gesture to which the other is expected to respond directly.

All these rules have analogies in mother-infant interaction, but mainly on the mother's side. She produces the turn-taking even in the earliest feeding of her newborn, by inserting responses into gaps in the baby's activity (Kaye and Wells, *in press*; Kaye, 1977). The biological mechanisms of sucking, of attention, and of arousal all take the form of on-off cycles, to which mothers and other caretakers respond. In face-to-face play with infants, as well as in feeding and bathing and dressing them, mothers' speech and facial expressions simulate (and exaggerate) conversations with full-fledged interlocutors (Brazelton, Koslowski, and Main, 1974; Stern, 1974; Trevarthen, 1977; Newson, 1977; Snow, 1977). The dialogue consists in the mothers adjusting their behavior to the infants', eliciting responses from them whenever possible. Furthermore, mothers maintain continuity of topic by responding to infants' "meanings." We see a clear and continuous progression from attaching meaning to the newborn's burp or involuntary twitch ("Oh! You don't say!"), to acknowledging the arousal inherent in a burst of arm and leg movements ("You're excited, aren't you?"), to interpreting a babbling noise as intentional signification ("What? You want your nana?"), to glossing a poorly articulated word ("Okay, here's some juice.") The mother's behavior barely changes: What changes is that the turn-taking becomes more symmetrical, the baby's turns become real speech acts.

In fact even when the child begins to verbalize, the adult-child exchanges should not be equated with true dialogues. The asymmetry—the leadership role of the mother in creating and maintaining a semblance of dialogue—is not restricted to the infancy period. It continues at least another two years. Conversational asymmetry (and not just linguistic asymmetry) extends well into the time when the child himself is a language user. The intention of the present study was to describe the nature of that asymmetry at twenty-six months and again at thirty months of age.

We shall define a communicative unit, which can be called a "turnabout"—a turn which unequivocally *both* responds to the other and expects a response from the other—and we shall then trace these units in the conversations of our subjects. Our research strategy is to use a few of the subjects for an exploratory analysis and then to analyze individual differences in the sample as a whole. We are concerned with the behavior of mothers and children in general, but we also seek variables in the early discourse which will predict the individual child's subsequent progress as a language learner and conversationalist.

### Method

Our subjects were drawn from a cross-section of white, English-speaking families in the city of Chicago. Originally, fifty-two mothers were recruited in late pregnancy or a few hours after delivery for a study of "infant development" in the first six months of life. They were aware that we were observing their interaction with the infants, but we played down the extent to which their own behavior was to be analyzed: The mothers' behavior was observed, we explained, just because we wanted to know "what babies react to." The initial study involved five interviews and six observation sessions, mostly in the subjects' homes. Shortly after the children's second birthdays, twenty-nine of the mothers were contacted (all except those who had dropped from the previous study before six months; had moved away from Chicago or to an unknown address; or had no telephone, which made it too difficult for us to schedule visits). We expressed an interest in their children's language development and asked if we could make three home visits, at 26, 30, and 34 months. Two of the mothers declined due to family problems. The remaining 28 children (one mother had a pair of male fraternal twins) included 15 boys and 13 girls.\*

The twenty-six- and thirty-month visits each consisted of six five-minute videotaped play periods, mother and child sitting adjacent to one another at a corner of the kitchen table. Different materials were presented during the six periods so as to provide a variety of contexts for conversation (in this order): a wooden puzzle, a picture book (Scarry, 1971), a set of blocks, a toy tea set (two cups, two saucers, two plates, and so on), a book containing six illustrated sentences which the mothers were asked to get their children to imitate, and a Fisher-Price "Play Family" consisting of father, mother, children, dog, and furniture. The categories for coding were derived

\*Throughout this paper N is the number of infants, but statistical significance is based on one less degree of freedom because of the one mother with twins. In general, her behavior with the two boys differed—but less than the difference between one mother and another in our sample. These results will be included in a subsequent report on the twins.

from consideration of all six situations; however, our quantitative analysis in this paper will be restricted to the picture book and tea set sessions.

At thirty-four months we administered the Peabody Picture Vocabulary Test and videotaped a thirty-minute interaction between the child and the first author, who presented a fixed series of puzzles, sorting tasks, and configurations of blocks to be imitated. Only the test of language comprehension (PPVT) will be of concern to this paper.

It was quite easy to segment the mother-child exchanges into units referred to as "turns" in the child discourse literature, defined by a pronounced pause in which the partner might or might not take the floor:

Child <sup>1</sup>	Mother
1. [Flipping pages]	2. What is that? [Points]
3. A fish.	4. That's a boat.
5. [Nods]	6. Does it look like a fish?

The entire five-minute session was transcribed as illustrated in the example above. A "turn" might consist of a single utterance with accompanying gestures, two or more utterances strung together without a definite full stop between them, or certain well-defined nonverbal acts (for example, "Nods"). The acts or utterances constituted a turn if they had a potential connection to the other person (whether or not that connection was actually met by the other) or if they were a salient independent act to which the other *might* have responded. Reliability (percent agreement) between the two coders as to the segmentation of turns was 83 percent over eight sessions which they each transcribed independently at various times throughout the two-month coding process. In addition to the words uttered, all pointing, nodding, or shaking of the head, questioning intonation, significant gestures, significant gazes, and visual orienting to where the other had pointed were included in the transcripts. Percent agreement between the coders on these features was 81 percent. Only 11 percent of the children's and 1 percent of the mothers' turns contained any inaudible words, and these turns were always codable on the basis of their audible portions plus nonverbal features.

The coding scheme was based on our observation that not all turns took notice of the partner's preceding turn (even implicitly), and not all turns solicited a response (even implicitly). For example, turn 1 above is what we call an *unlinked* turn, not because it is nonverbal (which it also hap-

1. S38, 30 month, picture book

pens to be) but because it has no explicit or implicit connection to the mother's behavior. Turns 2 and 6 are *mands*; 3, 4, 5, and 6 are *responses*. So 6 is both a response and a mand, which we call a *turnabout*: Using Fillmore's (1973) analogy, the mother catches the ball (in this case, the fish) and throws it back to the child.

Immediately after transcribing each session (while the videotape was still mounted in case it proved necessary to review it), the coder labeled each turn as a response or not, and as a mand or not. Thus all turns fell into four mutually exclusive types: those which were only responses, only mands, turnabouts, and unlinked turns. A turn was considered a response if any part of it met one of the following criteria:

1. answering a question, correctly or incorrectly.
2. self-repetition when solicited by the other (for example, by the other's "Huh?").
3. repetition or paraphrase of the other's most recent turn.
4. requests for clarification ("What?" or "Huh?" and so on).
5. substantive continuation of topic. This could take many forms, including: one pointed to an object (mand) and the other named it (response); one said "Soup" and the other said, "What kind?" (both response and mand); or one said "Bear," the other said "Yeah" (response) and the first said "He's running" (response because the referent of "He" was a topic acknowledged by the other).
6. certain intrinsically responsive expressions ("Yeah," "Uh-huh") and gestures (looking where other has pointed, accepting an offered object).
7. any turn beginning with "And," "But," or "Because" (the syntax inherently continues a topic either introduced or acknowledged by the other). We did not require in this case that the topic actually have been acknowledged: If a mother said "A bear" (pause) "And a dog," she was behaving *as if* her topic had been acknowledged.
8. any act or utterance continuing a cadence, as when the two participants engaged in naming pictures for one another in rhythmic alternation.
9. commenting on the other person's behavior ("Take your finger out of your mouth"—a response as well as a mand). However, referring to something the other was *not* doing ("You're not listening"—a mand) was not considered a response.

In summary, we accepted any concrete evidence that a turn was responsive to the other person in its content or in its nonverbal accompaniment. Inter-coder agreement on responses (number coded as responses by both divided by the mean number coded as responses by each) was 85 percent.

A turn was considered a *mand* if it met any of the following criteria, regardless of whether or not it was also a response:

1. question syntax or intonation (unless blatantly to oneself, as in "What do we have here?" said under one's breath).
2. command or request, explicit or implicit, verbal or by manipulation (for example, pushing the other's hand off page).

3. pointing or calling attention to something not already the current topic.
4. offering an object.
5. a very expectant look, as if to say "Well?" or "Am I right?"

In summary, anything to which it would be rude not to respond in normal adult discourse was a mand. Reliability of coding mands was 84 percent. Agreement as to *turnabouts* (turns coded as both response and mand) was also 84 percent.

We typed the codes into the computer in sequence—a total of 7664 turns in the picture-book situation and 7192 with the tea set. The analysis was done by a system called CRESCAT, designed for the analysis of complex behavioral events in sequence (Kaye, 1978).

### *General Comparisons*

Turn taking almost always went smoothly, as other authors have reported for this age group (Bloom, Rocissano, and Hood, 1976): Only 2.7 percent of the mothers' turns and 4.8 percent of the children's were interruptions (a turn starting while the other continued a nonverbal turn was not considered an interruption). Another 11 percent of their turns started simultaneously. In 70 percent of the interruptions, the person who was interrupted yielded to the other (responding to the interruptor instead of attempting to continue with his or her own turn). In 80 percent of the cases of simultaneous starting, one partner yielded at once and the other continued. Interruptions and simultaneous starts were included as turns in the results reported in this section but were excluded from the analysis of chains of turns, contingent responses to mands, and so on.

The results for the picture-book were quite similar to those in the tea-set situation as table 1 shows. Three-way repeated measures (age x situation x person) ANOVAs indicated significant differences between mothers and children in the proportions of unlinked turns ( $F(1,22) = 52.5, p < .001$ ), responses other than turnabouts ( $F(1,22) = 43.2, p < .001$ ), and turnabouts ( $F(1,22) = 119.9, p < .001$ ). Mothers had more turnabouts as a proportion of all turns (T) and as a proportion of all responses ( $T/(R+T)$ ). There were no age differences in these variables, and only one difference between the two situations: more turnabouts by both partners with a tea set than with the picture book ( $F(1,22) = 8.8, p < .01$ ). There were no significant interaction effects.

Although unlinked turns were more frequent among the children than among the mothers, they were still less than 13 percent. In other words, seven out of eight of the children's turns took cognizance of the mother either by responding to her or by manding.

TABLE 1  
*Mean Percentage of Different Types of Turns*

	Picture Book		Tea Set	
	Child <sup>1</sup>	Mother <sup>2</sup>	Child	Mother
U UNLINKED TURNS				
26 mo	12.6	2.7	12.9	5.5
30 mo	10.1	2.8	12.9	4.3
R RESPONSES (excluding turnabouts)				
26 mo	43.9	27.8	43.8	23.7
30 mo	46.5	25.2	41.3	26.2
M MANDS (excluding turnabouts)				
26 mo	22.0	20.1	16.0	13.7
30 mo	16.8	20.7	15.5	13.5
T TURNABOUTS				
26 mo	21.5	49.4	27.3	57.2
30 mo	26.6	51.3	30.3	56.1

The major difference between mothers and children was in turnabouts, roughly twice as frequent among the mothers' turns as among the children's. Their total proportions of mands (M + T) was, of course, also greater. Despite the fact that our definition of mands included even implicit ones such as pointing to a picture, only about 44 percent of the children's turns were mands, and only about 26 percent were turnabouts, or turns in the full sense of "catching the ball and throwing it back."

The expected proportion of turnabouts by a chance compounding of responses and mands can be found by the formula  $(R + T) \times (M + T)$ . The turnabouts T would exceed this expected proportion if responses and mands were positively associated, or would fall below it if there were a tendency for responses and mands to be mutually exclusive. For both tasks and both ages, the children combined responses and mands less frequently than would be expected on the basis of chance ( $p < .001$  by binomial sign test). Their observed proportions of turnabouts averaged about 85 percent of the expected values. Thus the children tended to produce either a response or a mand rather than both. The mothers produced many responses and many mands, and their turnabouts were about as frequent as would be expected from a chance combination of responses and mands (observed/expected = .96).

1. N = 27 at 26 months and 26 at 30 months. One family moved from the city prior to 30 months and two videotapes were uncodable.

2. N = 26 at 26 months and 25 at 30 months. One mother had twins.

The conversational asymmetry of the two partners is perhaps best summarized by the fact that, at both ages in both tasks, about 70 percent of all turnabouts in our transcripts were due to the mothers.

### *Length of Turns*

To some extent, the children's relative lack of turnabouts may have been a consequence of their limited abilities to use many words in each turn. As table 2 shows, the longer turns were more often turnabouts. The mothers of

TABLE 2  
*Percent of Linked Turns Which Are Turnabouts<sup>1</sup>*

	Length of Turn				Regardless of length <sup>2</sup>
	0-word	1-word	2-word	3-word	
Mother <sup>3</sup>	11	40	46	57	50
Child <sup>3</sup>	3	30	41	46	24

course had more words per turn, all averaging between 4.0 and 6.0, while the children averaged between 1.0 and 3.0 words per turn. Only 7 percent of the mothers' turns with the picture book and 6 percent with the tea set were nonverbal, compared with 25 percent and 42 percent, respectively, of the children's turns.

Table 2 also shows, however, that even when the number of words in a turn was controlled for, mothers' turns were more often turnabouts than were children's turns. (These data came from eight subject pairs selected at random, at both ages.) The children did produce some nonverbal turnabouts (for example, silently handing the mother a requested object); as well as one-word ("Huh?" or "There"), two-word ("And piggies!") and so on. But the mothers produced more turnabouts of any given length. In other words even when a child's turn contained several words it was more likely to be *either* a response or a mand than to be both. So we conclude that the mothers' greater tendency for turnabouts resulted only partly from their ability to produce longer utterances.

1. Figured as percent of all those turns containing a given number of words, excluding unlinked turns.

2. From table 9:1.

3. Picture-book situation only, both ages, eight subject pairs selected at random.



**Chains of Responses**

Continuity of topic is maintained between speakers so long as each of their turns is a *response* in the sense we have defined in this study. A chain of turns can be defined as an unbroken series of responses without regard to the question of mands:

Child <sup>1</sup>	Mother
	1. [Points to a picture] What is that one?
2. Kitty cat.	
	3. Well what is it?
4. Kitty cat.	
	5. Well, I know there's a kitty in it, what's he in?
6. Huh?	
	7. What's he riding in?
8. Airplane.	
	9. Right.
10. [Turns page]	

Items 2 through 9 in this example are all responses. What was actually responsible for maintaining a chain, however, was more than just the high frequency of responses from both partners. One of the partners, the child, was far less likely to respond unless the mother's turn was a mand (in the context of a chain, a turnabout as in items 3, 5, and 7). This is shown in table 3. The child could ignore the mother's turn by taking an unlinked turn

**TABLE 3**  
*Next Turn, After Mands and Non-Mands*  
*(Two Ages and Two Situations Combined: Shown in Percentage of Distribution)*

	Child Turn Following Mother Non-Mand	Child Turn Following Mother Mand	Mother Turn Following Child Non-Mand	Mother Turn Following Child Mand
No turn	22.3	9.8	8.4	4.8
Unlinked turn	15.1	9.9	1.4	0.5
Response only	18.4	48.9	21.9	35.3
Mand only	20.9	8.8	12.5	4.7
Turnabout	23.5	22.5	55.8	54.7
<b>TOTAL</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

1. S44, 30 month, picture book

(number 10), or producing a mand of his own, or simply by doing nothing. When the mother's turn was not a mand, children took one of these options 58 percent of the time (table 3). If the mother's turn was a mand, they failed to respond 29 percent of the time. This means that a mother could increase the likelihood of a response, and thus of the child's continuing the chain, by turnabouts following his mere responses. As long as she kept manding, he was likely to keep responding; so if she responded-and-manded, she could keep the chain going. Table 3 reveals two ways mothers initiated and maintained chains of turns: by many mands (68 percent after a child's turn which was not a mand and 59 percent after one which was) and by responding to 78 percent of the children's turns which were not mands as well as to 90 percent of those which were.

In short, the dialogue is largely due to the mother. By faithful linkage to the child's turns she creates a continuous cycle and can carry the child along with her, turn after turn, like a cork on the waves.

A precise measure of the effect of the mothers' mands in constructing chains of mutual responses takes the form of a conditional probability: How much more likely was a child's response after a mother's turnabout than after her simple response? (This is different from table 3, which examined the likelihoods after a turn which was a mand *vs.* a non-mand, regardless of whether or not it was also a response.) The answer is that a turnabout had a 71.3 percent likelihood of eliciting a response from the child—that is, of his continuing the chain—while if a mother simply responded to her child (#9 above), she had only a 46.5 percent likelihood of his continuing the chain.

There was another way mothers could continue chains. When one partner failed to take his or her turn, the other could add another link by repeating or paraphrasing his or her own turn, or by responding to the other's previous turn in another way. This example comes from an unusually long chain of twenty-five turns:

Child <sup>1</sup>	Mother
	18. Ok. Here you go (T)
19. [Puts knife on plate and smiles at mother]	20. Well what about me? (T)
	21. Give me a knife, I have to have one, too. (T)
22. [Inaudible response]	23. Please? (T)
24. [Gives to Mother] (T)	25. Thank-you.

1. S1, 30-month, tea set

We have marked the turnabouts (T) in this example (item 23 is one because the topic—knife—is considered to have been acknowledged in item 19). The mother's turn number 21 is a restatement of number 20, which the child ignored. Mothers took two turns in a row in this way more often than children did: 59 percent of the turns in chains were mothers' turns (at both ages).

Despite these efforts by the mothers to maintain continuity, the average chain was only 4.2 responses long in the picture-book situation, 4.8 responses with the tea set. As tables 1 and 3 indicate, the children were almost as reliable at *responding* as their mothers were (see also Bloom, Rocissano, and Hood, 1976), but they still tended not to mand responses from their mothers and not to respond to non-mands.

It is possible to compute how long the average chain of responses would have been if mother and child had both behaved as the children behaved. To make this projection we use the proportions of responses and turnabouts in the first two columns of table 3 as transitional probabilities, computing the expected frequency of chains of one, two, three responses, and so forth. The result is that the average chain would have been about 1.7 responses long if the mothers had responded as the children did. On the other hand, if the children had responded as the mothers did in the last two columns of table 3, the average chain would have reached about 7.0 responses.

### *Types of Turnabouts*

The category "turnabout" can be subdivided into a great many types on the basis of various criteria including the number of words involved (table 2), degree of explicitness of the links, direct or indirect questions, and others. After examining the transcripts we settled on four subcategories which were mutually exclusive, exhaustive, and reliably codable; they seemed to us quite different though they shared the characteristic of being both response and mand:

*Two-part* turnabouts were turns in which the response component was separate from the mand component:

1. "Yeah, what's this?" was one turn because there was no pause, but it was really response + mand.
2. "You like that, huh?" without the tag question on the end would merely have been a response.

*Requests for clarification or verification*—"What did you say?" or "You're putting it in the cup?"—were listed under our coding definitions as both responses and mands. That is, they inherently both responded to the

other and asked for a response from the other. However, they did not ask for a *new* response.

*Answering mands* were mands elicited by a question or command. Suppose one asked "What did you say?" and the other responded "Give me the fork." The repetition was a response to a request for clarification. It also happened to be a mand. Similarly, if in answer to "Can I have a fork?" the child offered a fork, it would be both a response and (by definition) a mand.

Finally, there were *follow-up* turnabouts, mands which were a direct outgrowth of the other's remark or behavior. These were the turns which gave the clearest impression of attempts to sustain the conversation: "What does the other hippo say?", "Can I have one, too?", and so on. We also included in this category various kinds of corrections of the other's utterance ("No, it's a frog!"—with expectant tone) or of the other's behavior ("Get your thumb out of my coffee.")

When turnabouts were broken down into these types further differences appeared between the children and the mothers. The word "Huh?" alone (a request for clarification) accounted for more than 7 percent of the children's turnabouts and less than 2 percent of the mothers'. About 75 percent of the mothers' turnabouts, or 40 percent of all their turns in either situation, were turnabouts of the "follow-up or correction" variety, building on what the child had just done or said and attempting to elicit something more on the same topic. These were rare among the children, accounting for only about a third of their turnabouts, or, 9 percent of all turns. (These results are based on an analysis of four subjects at both ages in both situations.)

### *Individual Differences*

Although every mother produced more turnabouts than did her own child, the range of differences among children and among mothers in the frequency of turnabouts was almost as great as that between children and mothers. The size of our sample made it possible to investigate the reliability of these differences across situations and over time, as well as the similarity of individual children to their mothers.

Tables 1 and 3 presented the proportions of responses and mands exclusive of turnabouts, so that the columns would sum to 100 percent for purposes of clarity. As variables characterizing the individual subjects, however, we used the *total* proportions of responses ( $R + T$ ) and of mands ( $M + T$ ), the measures most directly based upon our coding categories.

Our measures of individual differences showed some stability across the two situations (table 4), but among the children this was only true at twenty-six months and among the mothers it was only true of mands and turnabouts. We believe that the reason the children's individual discourse styles

TABLE 4  
Correlation between Picture-Book and Tea-Set Situations

	26 months		30 months	
	C	M	C	M
% Unlinked	.51**	.12	.01	-.33
% Responses (total)	.37	-.02	.24	.15
% Mands (total)	.47*	.51**	-.02	.64***
% Turnabouts	.51**	.15	-.03	.57**

\*  $p < .05$   
 \*\*  $p < .01$   
 \*\*\*  $p < .001$

were inconsistent across the two situations at thirty months, despite the similar patterns for the group means (table 1), was the fact that by thirty months their play with the tea set had developed considerably. At twenty-six months the tea-set situation was not so different from that of the picture book—a set of objects for naming and showing—and so the two brought out similar behavior in any given child. This interpretation, however, depends on additional analysis of the children's play outside the scope of this paper.

When we look at the stability in our measures over time (table 5), we find highly reliable individual differences among the mothers in both mands and turnabouts while the correlations over time among the children were not significant. The children changed over this period, in comparison with

TABLE 5  
Correlation between 26 and 30 Months (Tea-Set and Picture-Book Combined)

	C	M
% Unlinked	.34	.37
% Responses (total)	.18	.30
% Mands (total)	.15	.62**
% Turnabouts	.25	.65***

\*  $p < .05$   
 \*\*  $p < .01$   
 \*\*\*  $p < .001$

one another—while the mothers' individual styles remained constant. It should be noted that these styles were not related to the mothers' education; they distinguished individuals reliably even when years of schooling (our best measure of socioeconomic status) was controlled.

Finally, we asked to what extent individual mothers' styles predicted t children's, or vice versa. In table 6, the picture-book and tea-set situat are reported separately because the results were not the same. There v

TABLE 6  
*Relation Between Mothers' and Children's Frequencies of  
Different Types of Turns*

		Picture Book			Tea Set		
		Mother 26 MO	Mother 30 MO	Child 26 MO	Mother 26 MO	Mother 30 MO	Ch 26
TURNABOUTS MANDS RESPONSES UNLINKED	Mother—30	.41*			.32		
	Child—26	-.28	-.08		.59**	.37	
	Child—30	.05	.27	.36	.27	.02	
	Mother—30	.32			.09		
	Child—26	.14	.03		.44*	.30	
	Child—30	.31	.39*	.42*	.42*	.15	
	Mother—30	.43*			.74***		
	Child—26	-.27	.05		-.53**	-.13	
	Child—30	.43*	.01	.19	-.37	-.55**	
	Mother—30	-.39*			.50*		
	Child—26	-.03	.02		-.30	-.24	
	Child—30	.53**	.39*	.37	-.03	-.18	.3

\*  $p < .05$   
 \*\*  $p < .01$   
 \*\*\*  $p < .001$

no variables, for either task, on which the children's score at twenty-s months predicted the mother's at thirty months. With the picture book, was the case that the mother's earlier frequencies of mands and turnabou predicted the children's later scores. In the case of turnabouts, the mothe and children were uncorrelated with each other at twenty-six months b became correlated at thirty months. This certainly suggests a maternal effe upon the extent to which individual children increased in their use of turr abouts.

However, the tea-set situation produced a different picture. At both age there was a strong negative correlation between mothers and children i

mands: If a child's mother made many mands, the child made few. Again there appears to be a maternal effect (since the mother's behavior was stable over time while the child's was not), but the effect was a negative one in this situation—and extending to mands in general, not to the special set of mands we call turnabouts. Our impression from the videotapes was that in the play with the cups and saucers, which prompted role play and encouraged children to reverse roles with their mothers, some did so more than others. Some children directed the play by telling their mothers what to arrange or serve, when to drink, and so forth, while in other pairs the mother did most of the directing. Thus some pairs were high in maternal mands and low in child mands and others were low in maternal mands and high in child mands.

### *Effect on Language Measures*

One would like to be able to trace the effects of differences among mothers in mands and turnabouts, upon the children's eventual progress in conversational skill as well as in other measures of language development such as, for example, vocabulary growth and increase in grammatical complexity. Unfortunately the present study does not offer an answer to that question.

Our best assessment of the children's language growth was the PPVT (Form B) administered at thirty-four months. The median score of 32, mean 30.9, and S.D. 9.4 were all very close to the published American norms for the test (Dunn, 1965), a reflection of the fact that our sample was deliberately selected to be a representative one. Since all of our subjects were the same age when tested we simply used their rank on the test as our outcome variable. This score was predicted .70 ( $p < .001$ ) by a composite score from the two earlier visits, based on the children's words per utterance, their number of distinct lexical "types" (different words) produced per minute, and their second longest utterance. Once this predictor based on the children's early productions was partialled out of the PPVT rank, no further variance could be explained by any aspect of the mothers' behavior which we measured at twenty-six and thirty months. There were no sex differences in our sample, for either the production measures or the comprehension (PPVT).

On the other hand, the PPVT rank was predictable by the mother's number of years of schooling (our mothers ranged from several high-school dropouts to one with a master's degree),  $r = .43$ ,  $p < .05$ , or by the mother's words per utterance,  $r = .40$ ,  $p < .05$ . It is of course well known that children's language development is related to their mother's education, but the present data do nothing to resolve the nature-nurture issue inherent in such a finding.

It remains possible that the differences among mothers in these aspects of discourse style produce differences in their children's conversational skills without affecting comprehension or production measures *per se*. We are currently exploring this hypothesis using the children's conversations with the investigator at 34 months.

### *Discussion*

We would summarize our findings thus: It is true that conventions of waiting for the other person to stop talking, and of signalling by intonation, gesture, or gaze that one expects a reply are well established by the third year of life after eighteen months or so of verbal exchanges. But such exchanges are still managed very largely by the adult partner. Turnabouts, the kind of turn in discourse which both responds to the other (verbally or nonverbally) and implies an expectation of response from the other, are much more characteristic of the mother than the two-year-old when they interact with one another. The children by this age are capable of turnabouts in all the varieties we have listed (for they produce some), but they do not produce many. The majority of their turns are either responses or mands but not both; when they are both, they are rarely of the type most frequent on the mothers' side of the discourse, which follow up or expand upon a topic. The latter type accounts for about 40 percent of all the turns taken by mothers in our two situations and only 9 percent of the turns taken by the children.

In fact, there is some evidence that the mother, in an effort to maintain the conversation, produces more turnabouts than she would if she were talking to another adult. We videotaped two adults for five minutes with our picture book. Their interaction was completely symmetrical, and 39 percent of their turns were turnabouts: more than our average child but fewer than our average mother. As Snow (1977) notes, the main goal in adult-adult conversations is getting one's turn; the main goal of an adult in an adult-child conversation is getting the child to take his turn.

We found, however, substantial individual differences among the subjects. During the period from twenty-six to thirty months the differences among the children were fairly unstable, while those among the mothers—in the proportion of their turns which were full turnabouts and in the proportion which were mands (including turnabouts)—were highly stable.

What is needed for a proper test of the outcomes (if any) of maternal differences in the management of early dialogues is a sample in which a sufficient number of children are matched for social class and early indices of their language development. Our data indicate that the mothers in such a sample would still differ considerably with respect to mands, turnabouts,



and the like; the possible effects of these differences upon their individual children should then be explored.

### *Beginnings*

Most striking to us is the fact that "turnabouts" on the part of mothers is much the same as they have been doing since the infants' birth. It is not an instructional process unique to the development of language. It is, on the one hand, a basic part of adult language. The mothers are merely treating the child as if he were already a full participant in dialogue, and at the same time they are modeling his role for him. On the other hand, it is a basic aspect of mother-infant nonverbal interaction. Across a good many studies of face-to-face play in the early months (Richards, 1974; Brazelton, Koslowski, and Main, 1974; Stern, 1974; Trevarthen, 1977) the rule seems to be that if an infant gives his mother any behavior which can be interpreted as if he has taken a turn in a conversation, it will be; if he does not, she will pretend he has. Newson (1977) has illustrated and discussed this "as if" character of mothers' early play with their infants. Snow (1977) observes how the process continues into the second year:

Mother	Child
<i>(3 months)</i>	
Are you finished?	
Yes? [removing bottle]	
Well, was that nice?	
<i>(7 months)</i>	
Look, what's that?	
What's that?	[Looks at object]
Well, you thought it'd gone away, didn't you?	
<i>(18 months)</i>	
Who's that?	Daddy.
That's not Daddy, that's Dougall. Say Dougall.	

[Snow, 1977, pp. 14-18]

We hope the reader can spot the four turnabouts in these examples (the first is a "verification," the others are all of the "follow-up or correction" type). Our purpose is to point out that a mother's discourse does not change much when her infant begins to talk: It is not a strategy specifically for language training. It is a basic mode of interaction with infants, highlighted even in the very first feedings. Kaye and Wells (in press; Kaye,

1977) found that mothers use their newborn infants' pauses in sucking as occasions for jiggling the infant, creating a turn-taking structure. Mothers quickly learn to keep their jiggling brief so that it fits into the pauses and receives an "answer" in the form of the next burst of sucks. Jiggling is a turnabout.

Elsewhere we have discussed the many different manifestations of turn taking through the first two years, emphasizing the extent to which it is managed by the mother, making use of biological rhythms in the infant: the on-off cycles underlying sucking, attention, arousal (Kaye, 1979). Our view is that the infant's rhythms provide a structure to which parents can respond—indeed, cannot help responding—and in so responding the parents create a semblance of a dialogue involving the infant at a level well beyond his actual capacities for intentional discourse. The data presented to the infant from which he is to develop a language are much richer than simply a corpus of overhead speech, or a series of discriminative stimuli plus reinforcers. He is presented with ongoing discourse in which he is already a participant, on topics very largely selected by his own interests. His meanings are interpreted, expressed, and expatiated upon before he even knows what meaning is.

The structure in which such expansion and clarification of the child's meanings takes place is the dialogue. Thus thought as well as language grows from the communication of the meaning of gestures, as Mead (1934) and Vygotsky (1962) reasoned half a century ago, and as Bruner (1975) has so forcefully argued from recent data.

A similar point can be made with respect to the learning of specific linguistic rules, once language development is underway. Deictic shifters like *I-you* and *here-there* would be extremely difficult for children if language were learned by observation, because they are not associated with any particular person, place, or thing. The reason they are learned early and with few errors is that the child acquires their meaning as a participant in discourse, not as an observer (Charney, 1978, 1979). The shifting back and forth of perspectives that such words encode is a basic part of the child's experience of language. From the first, language is learned in relation to speech roles.

The present study shows that the child can find himself taking speech roles without quite intending to do so. Even in the third year mothers continue to behave "as if" their children were full participants in dialogues, while the children only gradually become so. We tapped an age period when all twenty-eight children had already begun to take the kind of turns which best characterize true discourse, but when the major responsibility for creating and maintaining the dialogues still rested with their mothers. That responsibility continues (and comes to be shared with other teachers) as the development and coordination of language and thought continue. Vygotsky (1962) and Bruner (1972) have both described the adult role as

one which meets the child more than halfway, amplifying primitive understandings in the direction of the patterns of thought and interaction particular to a given culture.

The development of conversational pragmatics begins early—at birth—and continues late. It is a stream of language development parallel to those of semantics and syntax, intertwined with them. The infant's assumption of full partnership in dialogues is a process recapitulated on each new plane. It is completed within a few weeks for feeding, a few months later for play with objects, later still for simple naming of objects. The adult's role, which comes quite naturally to mothers and fathers, is to use each new plane of mastery as a springboard for the next challenge.

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