

Conversational asymmetry between mothers and children*

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ABSTRACT

TURNABOUTS, which both respond to and require a response from the other (either verbal or nonverbal), were produced more than twice as often by mothers as by their children at 2;2 and 2;6, in videotaped dialogues during semi-structured play. The 27 mothers showed stable individual differences in this aspect of their turn-taking, across situations and across time. Children tended to take a reciprocal role rather than an imitative one within the immediate situation: if a mother produced many mands, her child produced few. At 2;10 the children were tested for language comprehension, puzzle-solving and conversational engagement with an investigator. Mothers' mands at the earlier ages appeared to have a negative effect upon these measures, even when social class differences were controlled; but causal interpretations were complicated by the fact that language production measures also predicted the 2;10 cognitive measures.

INTRODUCTION

It has been pointed out that turn-taking is smooth in young children, even when they are just beginning to speak sentences (Garvey & Berninger 1981). Interruptions and simultaneous starts are rare (Bloom, Rocissano & Hood 1976). However, there is more to conversation than the smooth exchange of speaking turns. In fact, that smoothness may make children appear to be more skilled as conversationalists than they really are.

In the early months of infancy, mothers and other caretakers use speech and nonverbal expressions during face-to-face play in such a way as to simulate conversations with full-fledged partners (Brazelton, Koslowski & Main 1974,

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Kaye 1980, Kaye & Fogel 1980, Newson 1977, Snow 1977, Stern, Beebe, Jaffe & Bennett 1977, Trevarthen 1977). This phenomenon does not cease when the child begins to speak. We shall show that mothers continue their leadership role in creating and maintaining a semblance of true dialogue. Conversational asymmetry extends well into the time when the child can construct complex descriptions, questions, and requests. The intention of the present study was to explore the nature of that asymmetry in three different play situations during the third year of life.

The mother's leadership role may be exemplified by a communicative unit called the TURNABOUT, defined in a previous paper (Kaye & Charney 1980) as a turn that unequivocally both responds to the other (a RESPONSE) and expects a response from the other (a MAND). We found that a majority of mothers' turns were of this kind while their 2-year-olds tended either to respond or to mand, but not both in the same turn. This means that children rarely caught the ball and threw it back, to use Fillmore's (1973) analogy. They dropped it, or caught and kept it, or ignored it and threw a different ball back. The mother-child asymmetry was apparent even when we controlled for the number of words in a turn, and it was true of nonverbal (gestural) turns as well. The difference was not merely due to the ages or linguistic skills of the conversants, but to their role *vis-à-vis* one another: the mothers' frequency of turnabouts exceeded what one finds in an ordinary conversation between two adults.

The concept of a turnabout refers to a structural unit in discourse, but encompasses many different types of speech act. What all have in common is that they combine (1) an acknowledgement, reference, or response to the other's immediately preceding turn, and (2) a perlocutionary force directed back to that person. Ervin-Tripp (1977) lists a variety of types of turnabouts used by adults in speaking to children, all of which involve 'programming speech acts to build dialogue'. Corsaro (1977) has described one particular type, 'clarification requests', and Garvey (1977) another, 'contingent queries'. Much of what these authors have said about the specific types is true of all or most turnabouts: for example, that they provide important information to the child about the meanings of expressions and about conventional usage. Since the broader category of turnabouts is naturally much more frequent than any of the specific types, speculations about their importance for language learning become all the more plausible, and the larger category seems to warrant study despite its diversity of linguistic forms.

Conversational asymmetry as manifested in the use of turnabouts is important because it helps to explain how adults are able to expand the scope and variety of their discourse with children, and to introduce alternative utterances with similar meaning. It is also important if individual mothers are consistently different in the degree to which they take advantage of those opportunities.

In this paper we present some additional data not analysed in our first paper,

and we explore the relations between individual differences in mothers' and children's conversational behaviour and the children's cognitive and linguistic development.

METHOD

Our subjects were drawn from a longitudinal sample of white English-speaking mothers in Chicago. There were 27 mothers, with 15 boys and 13 girls (one mother had a pair of male fraternal twins).¹ At 2;2 and again at 2;6, we videotaped them in six 5-minute play periods, mother and child sitting adjacent to one another at a corner of their kitchen table. Different materials were presented during the six periods so as to provide a variety of contexts for conversations (in this order): a wooden puzzle, a picture-book (Scarry 1971), a set of blocks, a toy tea-set (2 cups, 2 saucers, 2 plates, etc.), a book containing illustrated sentences that the mothers were asked to get their children to imitate, and a Fisher-Price 'Play Family' consisting of father, mother, children, dog, and furniture. Three of these situations – the play-family, tea-set, and picture-book – were transcribed and analysed in an identical way. These tasks were chosen so as to differ in the relation between the two participants and the world represented by the objects: the subjects' own world, a miniature world, and a depicted world. They therefore sampled a range of different mother-child play activities. (The other three tasks had another purpose, outside the scope of this paper; but those videotapes also demonstrated the same general phenomenon.)

At 2;10 we administered the Peabody Picture Vocabulary Test (Dunn 1965) and videotaped a 30-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. This session also included 5 minutes with the play-family.

All sessions were transcribed as in the following example:

Mother	Child
(1) (<i>Points to a picture</i>) What is that one? (M)	(2) Kitty cat. (R)
(3) Well what is it? (RM)	(4) Kitty cat. (R)
(5) Well, I know there's a kitty in it; what's he in? (RM)	

[1] 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 behaviour with the two boys differed, but less than the difference between one mother and another in our sample.

Mother		Child	
		(6) Huh?	(RM)
(7) What's he riding in?	(RM)	(8) Airplane.	(R)
(9) Right.	(R)	(10) (<i>Turns page</i>)	(U)

In addition to the words uttered, the transcripts included all pointing, nodding or shaking of the head, questioning intonation, giving or receiving objects, initiating a new activity, significant gazes, and visual orienting to where the other had pointed.

A TURN might consist of a single utterance with accompanying gestures (e.g. (1) above), two or more utterances strung together without a pause between them (5), or certain nonverbal acts alone (10). Reliability (percentage agreement) between the two coders as to the segmentation of turns was 83% over eight sessions that they each transcribed independently at various times throughout the 2-month coding process. Percentage agreement on the accompanying nonverbal features was 81%. Only 11% of the children's and 1% of the mothers' turns contained any inaudible words, and these turns were always codable on the basis of their audible portions plus nonverbal features.

Immediately after transcribing each session (while the videotape was still mounted so that it could be reviewed where necessary), the coders labelled each turn as a response (R), a mand (M), both, or neither. A turn was coded R (see examples above) on the basis of verbal or nonverbal (intonation, gaze, pointing) evidence that it was a response to the other person. Inter-coder agreement on responses (number coded as responses by both, divided by the mean number coded as responses by each) was 85%. A turn was coded M if – again for verbal or nonverbal reasons – it would require a response in normal adult discourse. By this we mean that it had perlocutionary force; but the coders were told simply that any turn was a mand if, in adult discourse, it would be rude not to respond in some way. Reliability of coding mands was 84%. Agreement as to turnabouts (coded as both response and mand) was also 84%. Turns that were neither responses nor mands were coded U, for UNLINKED.

Clearly, this coding scheme relied on subjective judgements; the inter-observer reliabilities are the basis for any claim as to the validity of the categories. The most important aspect of the coding scheme, however, was the fact that it applied identically to children's and to mothers' turns. It is also important to note that TURNABOUT was not a coding category. The criteria by which a turn was a response were independent of the criteria by which it may also have been a mand.²

[2] The coding scheme is described in more detail in Kaye & Charney (1980).

We typed the codes into the computer in sequence – a total of 7,664 turns in the picture-book situation, 7,192 with the tea-set, and 8,813 (including the sessions at 2; 10) with the play-family. The preliminary analysis was done by a system called CRESCAT, designed for the analysis of complex behavioural events in sequence (Kaye 1978). Certain supplemental counts – subcategories of turnabouts, for example – were made by hand.

RESULTS

Turn-taking almost always went smoothly. Only 2.7% of the mothers' turns and 4.8% of the children's were interruptions. (A turn that started while the other continued a nonverbal turn was not considered an interruption.) In 70% of the interruptions, the person who was interrupted yielded to the other by responding to the interruption rather than continuing his or her own turn. Another 11% of all turns started simultaneously. In 80% of these cases, one partner yielded at once and the other continued. Thus simultaneous talking was very rare.

The relative proportion of different types of turns is shown in Fig. 1. Turnabouts were between two and three times as frequent among the mothers' turns as among the children's, depending upon the play materials. However, the mothers' turnabouts occurred in almost exactly the proportion one would obtain by a chance combination of responses and mands; the children combined responses with mands significantly less than chance in the first two situations ($P < 0.001$ by binomial sign tests), but the actual difference ($R \times M - RM$) was relatively small. So the variables of greatest interest were simply the proportion of responses and the proportion of mands. Each of these was the dependent variable in a 2 (Mother vs. Child) \times 2 (Ages) \times 3 (Tasks) repeated measure ANOVA.

There were no age effects on the proportion of mands, by either partner. There were more responses by both partners at 2; 6 than at 2; 2 ($F(1, 22) = 8.2$, $P < 0.01$),³ but the mean difference amounted to less than 4%; hence the two ages have been combined in Fig. 1. Mother and child differed both in responses ($F(1, 22) = 135.3$, $P < 0.001$) and in mands ($F(1, 22) = 70.2$, $P < 0.001$). The tasks also made a difference both in responses ($F(2, 44) = 5.3$, $P < 0.01$) and in mands ($F(2, 44) = 18.9$, $P < 0.001$), but as Fig. 1 shows, the child was more affected by the different materials than was the mother. With the play-family, which was highly appealing to all of the children, many unlinked turns were directed exclusively at the toys and both responses and mands were considerably diminished; while the mothers made more responses and almost

[3] The ANOVA is based on 25 children because one family moved from the city prior to 2; 6 and two videotapes were uncodable.

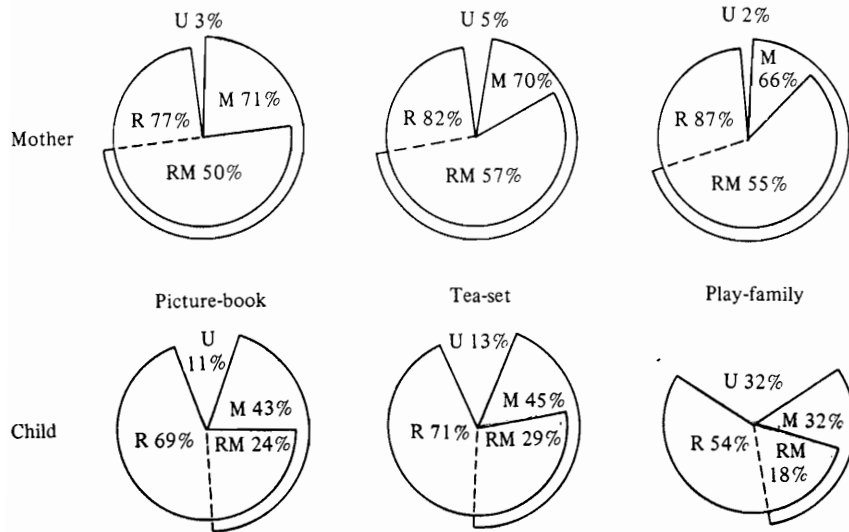


Fig. 1. Proportions of responses (R) and mands (M) by mothers and children in the three different situations, averaged between 2;2 and 2;6. Turnabouts are the overlapping areas (RM). U denotes the proportion of unlinked turns, neither R nor M.

as many mands as in the other two situations. This person \times task interaction was significant both for responses ($F(1, 22) = 61.2, P < 0.001$) and for mands ($F(1, 22) = 3.3, P < 0.05$).

Although unlinked turns were more frequent among the children than among the mothers, it should still be noted that seven out of eight of the children's turns with the picture-book and the tea-set took cognisance of the mother either by responding or by manding. Even with the play-family, two out of three of their turns did so. Fig. 2 also shows that 75% of their turns in the play-family situation contained at least one word; the proportions were higher in the other two situations.

Chains of responding

Continuity of topic is maintained between speakers so long as each of their turns is a RESPONSE as we have defined it here. A chain of connected turns is constituted by any unbroken series of responses without regard to the question of mands. For example, items (2)–(9) in the example given earlier are all responses, producing a chain of nine turns. However, the two partners were not equally likely to respond, as Table 1 shows.

The importance of the mother-child differences in Fig. 1 and Table 1 is their effect upon the probable length of chains of linked turns. The child was far less likely to respond unless the mother's turn was a mand, which means that the

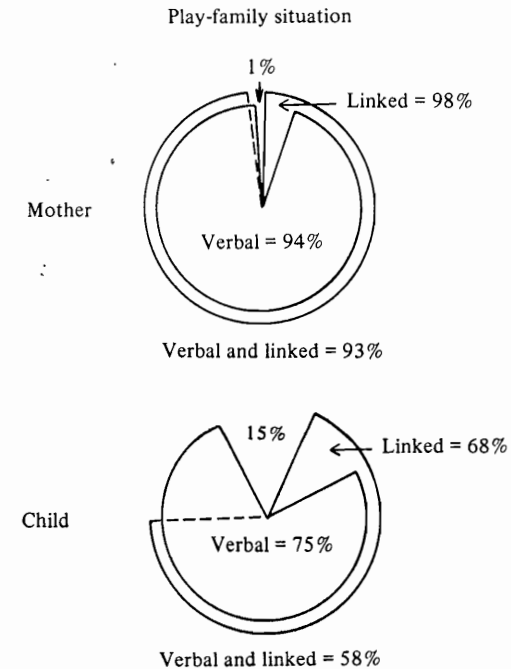


Fig. 2. Verbal vs. nonverbal turns, compared with linked vs. unlinked turns.

TABLE 1. Probability of response to other (%)

	Child	Mother
Following other's mand	71.4	90.0
Following other's non-mand	41.9	77.7

chain was far less likely to continue unless the mother's turn was a turnabout. On the basis of the conditional likelihood of responses, mands, turnabouts, and second responses when the other failed to take a turn, we computed the expected length of a chain if both partners had behaved as the children did: 1.7 responses (Kaye & Charney 1980). On the other hand, if they both had behaved as the mother did the average chain would have reached about 7.0 responses. The actual result, then, about 4.5 responses (5.5 turns), was achieved by the mothers' efforts.

Types of turnabouts

Not all turnabouts were of the same type. They could be classified in a number of different ways. Many were simply juxtapositions of a response and a mand, e.g. the child's turnabout here:

M: You putting the Mommy in the car?

C: Yeah, what's this for?

Some turnabouts consisted merely of a response with a tag:

C: Coffee.

M: It's a coffee pot, isn't it?

The simplest requests for clarification (*Huh?*) were turnabouts, and so were the ones Garvey (1977) called 'Specific Requests for Specification':

C: What's that?

M: What's what?

There were various types of request for confirmation:

M: (*Points to new picture*)

C: A bear?

Silently handing the partner a requested object was also a turnabout (a response to the request, and a proffered object that must be taken).

Unlike any of the foregoing, some turnabouts expanded upon the other's turn by introducing new propositions. The simplest types were suggestions (*I want some or Put him in the bed*) and corrections of the other's utterance (*No, it's a frog!* - with expectant tone) or behaviour (*Get your thumb out of my coffee*). Finally there were those that gave the clearest impression of attempts to sustain the conversation (*What does the other hippo say?*).

Although the distinctions among the last three types - suggestions, corrections, and expansive questions - were often blurred, the fact that a turnabout belonged to at least one of these types was reliably codable (about 90% agreement between the authors; this was done on the play-family situation only). All were lumped together as 'follow-ups'. As a proportion of children's turnabouts they increased from 34.3% to 54.9% between 2;2 and 2;6, thus reaching the mother's level, which was 53.8% and 57.7% at 2;2 and 2;6 respectively. Furthermore, children who had the highest proportion of follow-ups at 2;6 were the ones who scored highest on the production measure described below ($r = 0.40$, $P < 0.05$).

All turnabouts, even the silent compliance with a request for an object, have the property of sustaining the discourse. The foregoing results show that they differ in the degree to which they introduce or call for anything new, and that children seem to increase the prevalence of the latter types as a proportion of all their turnabouts before they increase the turnabouts as a proportion of all turns.

Individual differences

Although every mother produced more turnabouts than her own child, the range of differences among children and among mothers was almost as great as that between children and mothers. The main goal of the present analysis was

to investigate the reliability of these differences across situations and over time, as well as the similarity of individual children to their mothers.

Table 2 presents the reliability of the proportion of responses and mands across the three situations, among individual children and mothers. Among the children, there was consistency in both measures at 2;2, but by 2;6 the picture-book situation apparently brought out different behaviour from different children. The tea-set and the play-family still produced significant individual consistencies. Among the mothers, there was no consistency across tasks in terms of responses but there was a very high degree of consistency in mands.

TABLE 2. *Cross-situational consistency of individual differences*

	Age	Book & Tea	Book & Family	Tea & Family
(a) Correlation within individual children				
Responses	2;2	0.37*	0.57**	0.45*
	2;6	0.24	(0)	0.51**
Mands	2;2	0.47*	0.55**	0.44*
	2;6	(0)	(0)	0.55**
(b) Correlation within individual mothers				
Responses	2;2	(0)	(0)	0.42*
	2;6	(0)	(0)	(0)
Mands	2;2	0.51**	0.59**	0.63***
	2;6	0.64***	0.59**	0.66***

* $P < 0.05$. ** $P < 0.01$. *** $P < 0.001$.

When we created a combined measure across all three situations (using the mean of the z -scores so as to weight the situations equally) we found little consistency in the children across time except in the proportion of unlinked turns, but again the mothers were very consistent in their proportion of mands (Table 3). This produced consistency in their proportion of turnabouts as well, since 75% of the mothers' mands were turnabouts (see Fig. 1).

TABLE 3. *Consistency of behaviour across time: (correlation between 2;2 and 2;6, all three situations combined)*

	Child	Mother
% Unlinked	0.49*	0.27
% Responses	0.15	0.28
% Mands	0.37	0.73***
% Turnabouts	0.33	0.75***

* $P < 0.05$. *** $P < 0.001$.

Despite the tendency for children to respond to their mothers' mands, there was no consistent relationship between the individual differences in mothers' manding and the proportion of responses by their children (Table 4). However, in the play-family and tea-set situations there was a strong negative association between mands by the mothers and mands by the children. In these two tasks, there were some dyads in which the mother tended to direct the play and others in which it was the child who did so. For these kinds of play, at least, the characteristic maternal behaviour did not serve as a model imitated by the children within the immediate situation (though they may have done so later, or with other partners); instead it apparently pre-empted the role, and the children who did a good deal of manding were the ones whose mothers did little.

TABLE 4. *Correlation with mothers' proportion of mands in each situation*

	Picture-book	Tea-set	Play-family
Child's % responses			
2; 2	0.32	0.22	(0)
2; 6	0.45*	(0)	0.32
Child's % mands			
2; 2	-0.27	-0.53**	-0.49**
2; 6	(0)	-0.55**	-0.51**

* $P < 0.05$. ** $P < 0.01$.

There was no significant relation between the mothers' mands and their own responses, except in the play-family situation where the two proportions correlated negatively (n.s. at 2; 2, $r = -0.68$ at 2; 6, $P < 0.001$). The children's proportions of mands and responses were also unrelated except in the play-family situation, where they correlated positively ($r = 0.58$ at 2; 2, $P < 0.01$, n.s. at 2; 6). A positive correlation means that in this situation the factor really distinguishing among the children was the extent to which they included the mother in their play at all; whereas the factor distinguishing among the mothers was whether they related to the child through mands or through responses.

Outcomes

We obtained three dependent measures at 2; 10. One was a cognitive measure: the child's ranked combined performance score on a wooden picture puzzle, a two-piece picture assembly task (juxtapose squares containing the upper and lower halves of Donald Duck), a shape-matching and a colour-matching task. Second was a language comprehension measure: the PPVT ranked score. Third was a social measure, the child's ranked proportion of linked turns in interacting with the investigator.

Although each of these measures was only a rough index, they provided meaningful rankings of our subjects because of the fact that all were of the

same age.⁴ The variables were related to one another: the puzzle score correlated significantly with the PPVT ($r = 0.58$ ($P < 0.01$)) and with the extent to which the child related to the investigator in the play-family situation ($r = 0.63$ ($P < 0.01$)), though the latter two variables were not significantly associated with one another. The puzzle score and the PPVT were predictable from several measures of mother and child behaviour in the earlier sessions, especially a production score derived from each child's words per utterance, second longest utterance, and number of lexical types produced (Table 5). However, any inference from these results was stymied by the very strong social-class differences within our sample, in all variables except one (Fig. 3). Since the children's outcome measures were most highly predicted by their own language measures at the earlier sessions (and only about 12% additional variance was accounted

TABLE 5. *Predicting 2; 10 performance from mother-child sessions*

	Puzzle score		
	Simple correlation	Mothers' education controlled	Mothers' education and child production score controlled
2; 2 and 2; 6 combined			
Mother's words per utterance	0.36*	(0)	(0)
Mother's mands	-0.35*	-0.41*	-0.34
Child's linked turns	(0)	(0)	(0)
Child's production score	0.55**	0.40*	
0; 1, 0; 3 and 0; 6 combined			
Mother's utterance rate	-0.44*	-0.46*	-0.36
		PPVT score	
2; 2 and 2; 6 combined			
Mother's words per utterance	0.33	(0)	(0)
Mother's mands	-0.41*	-0.44*	-0.36
Child's linked turns	0.39*	0.31	(0)
Child's production score	0.75***	0.69***	
0; 1, 0; 3 and 0; 6 combined			
Mother's utterance rate	-0.34	-0.31	(0)

* $P < 0.05$. ** $P < 0.01$. *** $P < 0.001$.
(Unstarred coefficients are $P < 0.10$.)

[4] Criticism of the PPVT as a language comprehension test, for example, centres on the derived percentile scores based on norms for different age groups. We used simply the ranked raw scores, which were almost identical for forms A and B. Our distribution of scores, incidentally, exactly matched Dunn's (1965) published norms for 2; 9-3; 2.

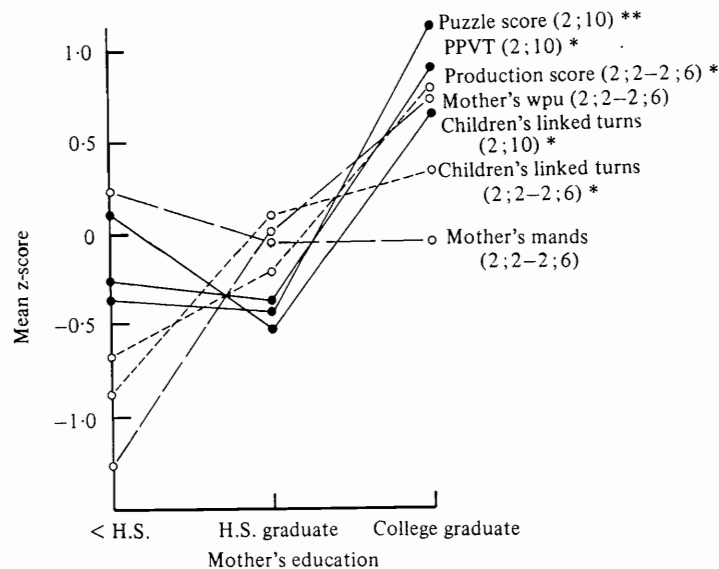


Fig. 3. Social class differences as measured by mothers' levels of education.

for by the mother's mands), we could not conclude that mothers with high frequencies of mands had significantly impeded their children's cognitive or language development. And since the children's earlier and later measures all varied with social class almost as much as the mothers' linguistic complexity did, we cannot conclude to what extent these differences were produced by differences in the environments provided by more- and less-educated families as opposed to genetic predispositions.

The one variable that was unrelated to mothers' education but related to the child's task performance at 2;10, the mothers' proportion of mands, was the variable we had found to be most consistent in individual mothers (Tables 2 and 3). This characteristic represented a style of interaction distinguishing mothers within all three social class groups. It does not appear to have been a response to the individual child, because it did not correlate significantly with the children's production score and because mothers' mands did not decline from 2;2 to 2;6 as their children all became more sophisticated conversational partners. Furthermore, the same mothers' tendency to produce many mands was discernible in their rate of utterances to these infants during face-to-face interaction in the first six months (Kaye 1980). The relation between the latter variable and our outcome measures is also included in Table 5.⁵

[5] We found that we could have predicted 58% of the variance in the PPVT and puzzle scores by a canonical variate composed of social class (years of education) and the mothers' utterance rate to their infants; that is, without observing the mother-child conversations at all.

DISCUSSION

It is true that conventions respecting the exchange of speaking turns are well established by the third year of life. Our results show, however, that such exchanges are still managed very largely by the adult partner, so far as the maintenance of continuity is concerned. Turnabouts, the kind of turn in discourse that both responds to the other (verbally or nonverbally) and expects a response from the other, are much more characteristic of the mother than of the two-year-old interacting with her. We know that children by this age are capable of turnabouts of several types including full-fledged 'follow-ups', for they do produce some. But they do not produce many. Most of their turns are either responses or mands, but not both.

In fact it appears that the mother, in an effort to maintain the conversation, produces more turnabouts than she would if she were talking to an adult in a comparable situation (looking at a book of photographs or setting a table) (Kaye & Charney 1980, Martinez 1980). Snow (1977) has noted that the main goal in adult-adult conversations is getting one's turn, while the main goal of an adult in an adult-child conversation is getting the child to take his turn. A broader statement of this point might be that the mother's goal is to create a connected series of turns, the child's turns alternating with her own in a semblance of meaningful dialogue. As such, it is an agenda she has been working on since long before the infant uttered a word. Treating the child as if he were participating in an intelligent conversation is a basic activity in mother-infant care-taking and play (Newson 1977, Snow 1977). In the early months, whenever an infant gives his mother any behaviour that can be interpreted as if he had taken a turn in a conversation, it will be; and if he does not, she often pretends that he has (Brazelton, Koslowski & Main 1974, Kaye & Fogel 1980, Richards 1974, Stern *et al.* 1977, Trevarthen 1977).

The mother's side of the discourse can begin long before the infant begins to talk, because it is not a strategy specifically for language training (Kaye 1980). It is a basic mode of interaction with infants and can be seen even in the first feedings. Mothers use their newborn infants' pauses in sucking as occasions for jiggling, and 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 sucking (Kaye & Wells 1980). Jiggling is a turnabout. Or to put it another way, the mothers of two-year-olds are still jiggling.

The effect of this enduring parental role, we believe, is to involve the infant in dialogue that is always beyond his own capacities for intentional discourse. In this way, the child learns both conversational and linguistic skills by having his own efforts interpreted and expanded. With respect to linguistic development, Brown (1968) discussed the importance for the child of hearing transformations of his own kernel propositions as they move back and forth between speakers.

These transformations provide much richer data than any corpus of overheard speech between third parties. The child is presented with ongoing discourse in which he finds himself 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.

Garvey concludes that contingent queries may be an important technique for language learning. We consider them only one type of turnabout, and consider that Garvey's conclusion is true of all types. The present data show that the child has an opportunity to profit from the back-and-forth flow of discourse and from protracted chains of mutual responses. Thanks to the fact that the mother's turns will combine mand and response, the child's turns do not have to.

The broadest implications of the present study are that the social structure, the discourse itself, is not mastered by children before they go on to the specifics of their parents' syntax and semantics. Adults will create and maintain the discourse structure for them, thus teaching them how to participate in that structure and eventually take it over as their own (Kaye 1981).

Our findings raise an important question for future research. We found consistent individual differences, unrelated to social class, in mothers' use of a conversational 'style' but we do not understand the origins of those differences. There was tentative evidence suggesting that some mothers may overdo the manding, for the mothers' proportions of mands explained (inversely) some of the variance in puzzle performance and in the PPVT at 2;10. However, our data do not permit a causal interpretation.

On the child's side, we still have little specific knowledge of the relation between the course of verbal development and the development of conversational skills, although this study has indicated that the two-year-old's conversational skills may not be so advanced as they appear superficially. What we have shown is that the child can find himself taking speech roles without quite intending to do so. Mothers behave as if their children were full participants in dialogue, while the children only gradually become so. As they do, adults pose ever-advancing challenges. Our results, then, are manifestations of a more general adult role, that of amplifying biologically constrained interpersonal structures (in this case, turn-taking) in the direction of those social conventions, linguistic rules, and patterns of thought particular to a given culture.

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