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Conversational patterns in late talkers at age 3

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ABSTRACT
Topic choice, topic synchrony, and utterance function during mother–child play sessions at age 3 were examined in 32 late talkers (identified at 24 to 31 months) and 21 comparison children, matched at intake on age, SES, and nonverbal ability. At age 3, late talkers had significantly lower MLUs and IPSyn scores than comparison children. Late talkers and comparison children did not differ in number of utterances, topic initiation, topic synchrony, use of commands, reactions to commands, or conversational fillers. However, late talkers asked significantly fewer questions, provided fewer answers to maternal questions, made fewer declarative statements, and were less likely to elaborate on their own topic than comparison children. Mothers of late talkers produced significantly more utterances and asked many more questions, but otherwise they did not differ from mothers of comparison children. In both groups, children and mothers were highly synchronous. When late talkers were divided into two groups (children with continuing delay vs. "late bloomers" who were within the normal range in MLU), the subgroups did not differ significantly from each other on any conversational measure.

This research examines topic focus (i.e., topic choice and topic synchrony) and utterance function (i.e., questions, answers, declaratives, commands, etc.) at age 3 in 32 children identified as late talkers at 24 to 31 months and 21 comparison children, matched at intake on age, SES, and nonverbal ability. First, we summarize the research on these conversational patterns in typically developing children and in children with specific language impairment (SLI). We then review existing studies of topic focus and utterance function in late talkers, defined as children under the age of 4 who have slow expressive language development (Rescorla & Lee, 1999; Thal & Katich, 1996). Many late talkers develop normal language skills by the age of 4 or 5 (Paul, 1996; Whitehurst & Fischel, 1994); it is conventional, then, to distinguish them from children, age 4 and older, who are diagnosed as having SLI (i.e., youngsters who have normal cognitive abilities and typical emotional development but delayed expressive and/or receptive language).

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Investigation of topic focus in toddlers with normally developing language has revealed that young children tend to initiate more than respond (Wetherby, Cain, Yonclas, & Walker, 1988), and that mother–child synchrony is associated with better language development in children (e.g., Akhtar, Dunham, & Dunham, 1991; Harris, Jones, Brookes, & Grant, 1986; Tomasello & Farrar, 1986; Tomasello & Todd, 1983). With regard to utterance function, Olsen-Fulero and Conforti (1983) found that typically developing 2½- to 3-year-old children appropriately responded to more than half of their mothers' questions but acknowledged less than 20% of their mothers' declaratives. Work by McDonald and Pien (1982) indicated that mothers who had a highly directive conversational style were less successful in eliciting child conversational participation than mothers who asked more questions. Kloth, Janssen, Kraaimaat, and Brutten (1998) found that mothers were more directive when their children had less advanced expressive language skills.

There have also been several studies of topic focus and utterance function in conversations between mothers and children with SLI. When Lasky and Klopp (1982) compared children with language impairments and language-matched controls, they found no differences in maternal or child MLU, number of verbal or nonverbal interactions, or utterance functions; however, mothers of children with SLI adjusted their conversational style less to their child's MLU. Schodorf and Edwards (1983) found that parents of children with SLI talked less, used shorter utterances, had briefer turns, asked fewer questions, provided fewer expansions, and made more explicit corrections but fewer contingent comments. Tiegerman and Siperstein (1984) reported that only 20% of the mothers' speech was related semantically to the topic focus of the children's speech, and that mothers did not respond to children's initiations 88% of the time.

A more positive picture was presented by Conti-Ramsden and Friel-Patti (1983, 1984), who reported that mothers in language-impaired dyads initiated slightly more and children initiated significantly less than their counterparts in language-matched comparison dyads. However, the groups did not differ in mothers' use of comments, questions, and commands or in children's conversational turns or responses to commands and questions. Mothers of typically developing children had a higher number of answers to children's yes/no questions and acknowledgments of children's statements (Conti-Ramsden & Friel-Patti, 1983), presumably because their children produced more questions and statements. Conti-Ramsden, Hutcheson, and Grove (1995) found no differences between children with SLI and MLU-matched controls in number of utterances, number of conversational breakdowns, amount of initiation, or degree of topic synchrony by either parent or child.

Similarly, Cunningham, Siegel, van de Spuy, Clark, and Bow (1985) reported no difference in level of initiation during play or in degree of responsiveness between mothers of children with SLI and mothers of typically developing, age-matched peers; however, younger children with SLI (33 to 49 months) interacted less frequently with their mothers than typically developing, age-matched peers. In general, children with SLI who had poorer receptive language skills manifested less overall interaction, fewer conversational initiations, less responsivity

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to questions, and less compliance with commands; mothers of these children gave more commands.

Only a few studies of conversational patterns have examined late talkers – the focus of the present article. Paul and Elwood (1991) examined mother–child conversation during play in 28 late talkers (20 to 33 months), 25% of whom had receptive and expressive delays. Late talkers produced one-third as many interpretable utterances as age-matched peers, but mothers in the two groups did not differ in number of utterances. The groups did not differ in maternal use of declaratives, questions, commands; requests for information; comments; topic initiations; topic continuations; or responses to the child's topic initiations.

In a related study, Paul and Shiffer (1991) reported that late talkers produced fewer joint attention initiations than typically developing, age-matched peers, but that the groups were comparable in initiations of regulatory or social interaction. These researchers viewed their results as confirming the findings of Wetherby, Yonclas, and Bryan (1989). The earlier study reported low rates of joint attentional behavior in their language-impaired preschool children.

Whitehurst, Fischel, Lonigan, Valdez-Menchaca, DeBaryshe, and Caulfield (1988) examined parent–child verbal interaction at the dinner table in 17 28-month-old late talkers with normal receptive language. Parents of late talkers talked more, labeled objects more, gave more imitative directives, and provided fewer answers than parents of controls, matched on age and receptive language.

Rescorla and Fechnay (1996) studied mother–child conversations for a subset of subjects in the present study. At intake (24 to 31 months), late-talking toddlers and their mothers did not differ from typically developing agemates and their mothers in ability to maintain topic synchrony. Although the late talkers used fewer verbalizations and produced more unclear utterances, they provided some form of communication as frequently as the typically developing agemates.

Finally, in a study using many of the same children as those in the present research, Rescorla and Merrin (1998) investigated communicative intent during the intake free play session in 32 toddlers (24 to 31 months of age) with expressive language delay but normal receptive language and 31 peers, matched on age, SES, and nonverbal ability. Late talkers had somewhat lower rates of communication, but when the percentages of total communicative acts were analyzed, late talkers were just as likely to initiate, respond, and maintain joint attention when engaged in play with either their mothers or an examiner.

Thus, previous studies of late talkers have produced mixed results regarding parent conversational dominance as well as child communicativeness and joint attention. Unlike these studies, the present study examined both topic focus and utterance function dimensions in mothers and children. In this research, we analyzed these conversational patterns in a large and very homogeneous sample of late talkers ($N = 32$). That is, all the children were identified between 24 and 31 months of age; all had normal receptive language as well as average nonverbal ability and typical personality development.

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Table 1. *Intake and outcome data for late talkers and comparison children*

	Late talkers	Comparison children
Intake (24 to 31 months)		
Intake age (months)	26.31	25.43
Hollingshead total	52.47	52.62
Bayley nonverbal items	13.56	13.05
Reynell Receptive *z* score	.12	.86***
Reynell Expressive *z* score	−1.71	.30***
LDS vocabulary	20.84	225.67***
Outcome (36 months)		
Leiter	131.83	134.29
Mean length of utterance (MLU)	2.43	4.12***
MLU *z* score	−1.55	1.13***
IPSyn raw score	48.03	77.90***
IPSyn *z* score	−2.22	.40***

***$p < .001$.

METHOD

Participants

The participants in this study were 53 mother–child dyads from middle class or upper middle class white families. At intake, 32 children (30 boys, 2 girls) were diagnosed as late talkers. There were 21 children (20 boys, 1 girl) in the comparison group. These children comprised all of Rescorla's longitudinally studied cohorts of late talkers and typically developing toddlers (e.g., Rescorla & Fechnay, 1996; Rescorla & Merrin, 1998; Rescorla, Roberts, & Dahlsgaard, 1997) for whom adequate age 3 data were available.

All the children in the late talker cohort had a score greater than 85 on the Bayley Mental Development Scale (Bayley, 1969), normal hearing, and typical personality development. Selection criteria for late talkers were Reynell (1977) Receptive language no more than 3 months below chronological age (CA) and Expressive language at least 6 months below CA. For comparison children, both Reynell scores had to be no more than 3 months below CA.

All the subjects met our criteria except for three late talkers, whose receptive language was 4 months below normal, and one comparison child, whose expressive language was 4 months below CA. These deviations were not enough to place any child in the contrasting group. As the results from previous research with these cohorts (e.g., Rescorla & Fechnay, 1996; Rescorla & Merrin, 1998; Rescorla et al., 1997) remained unchanged when these children were excluded, they were included in all the present analyses.

Demographic variables and test scores for the two groups of children at intake are shown in Table 1. No significant differences were found in age, SES, or mean nonverbal Bayley score. Despite being within the normal range for re-

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ceptive language, late talkers did score significantly lower on Reynell Receptive language than comparison children, $t(39.00) = -4.37$, $p < .001$. Of course, the scores for the two groups were significantly different on Reynell Expressive language, $t(41.52) = -14.17$, $p < .001$. At intake, comparison children had a mean reported vocabulary of 226 words, as assessed by the Language Development Survey (Rescorla, 1989), whereas late talkers had a mean of 21 words, $t(23.00) = -13.47$, $p < .001$.

Table 1 also shows the age 3 outcome data for the two groups. On the Leiter International Performance Scale (Leiter, 1948), a nonverbal ability test, there was no significant difference between late talkers and comparison children. Late talkers had a mean MLU of 2.43 words, placing them 1.55 *SD*s below age expectations, based on Scarborough's (1990) benchmark values. Comparison children had a mean MLU of 4.12 words, placing them 1.13 *SD*s above age level, $t(50.98) = -7.61$, $p < .001$. On the Index of Productive Syntax (IPSyn), a measure of syntactic and morphological ability (Scarborough, 1990), late talkers had a mean z score of −2.22, whereas comparison children had a mean z score of .40 relative to age expectations, $t(45.60) = -8.13$, $p < .001$.

Procedure

Data were derived from the first 10 minutes of a speech sample collected at age 3 while the children played with their mothers using a toy village. The second, third, and fourth authors, who were blind to the original diagnostic status of the children, used videotapes and transcripts of these sessions to code the children's conversational interactions. The transcripts, prepared in CHILDES format (MacWhinney, 1991), had been previously used by Rescorla et al. (1997) to study age 3 language outcomes in these same children. Every utterance (sentence, phrase, word, or sound) for both partners was transcribed on a separate line of the transcript, along with accompanying actions and gestures. An utterance line was also used for Partner A if Partner B said something that required acknowledgment and Partner A did not respond, because the conversational turn had passed from Partner B to A.

The codes

Using both the content of the utterance and the accompanying actions, gestures, and gaze, coders classified each utterance line for topic focus (whether the topic was an initiation; whether the topic was synchronous with the partner's current topic) and utterance function (the grammatical content and intended effect of questions, answers, commands, etc.). Coding categories were derived from previous work by Rescorla and Fechnay (1996) as well as by Conti-Ramsden and colleagues (Conti-Ramsden et al., 1995). The following is a synopsis of the coding scheme.

Topic focus codes. Every utterance line was coded with one of the mutually exclusive topic focus codes.

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SYNCHRONOUS CODES. Partner topic (PT) was coded when Partner A initially adopted Partner B's topic. The first utterance in every PT sequence was coded as PT1. Joint topic (JT) was coded when Partner A was on his or her topic (new topic or own topic), Partner B adopted it (partner topic), and Partner A continued with it (JT1). Subsequent utterances by both partners within the topic were coded JT until a new topic was introduced by one of the partners.

ASYNCHRONOUS CODES. New topic (NT) was used when a partner introduced a new focus of attention; this constituted a topic initiation. Own topic (OT) was used when Partner A continued on his or her own topic, but Partner B had not yet adopted it. When an OT code was the first code of a partner's turn, it was designated as OT1.

Utterance function codes. Each of the subjects' utterance lines was coded for its specific grammatical function. These codes were not mutually exclusive because occasionally the speaker could carry out two functions with the same utterance. For example, the child might fail to answer the mother's question while asking a question; or, the mother might not acknowledge the child's command while making a declarative statement.

QUESTIONS. These were interrogative utterances designed to obtain information. Rhetorical questions (i.e., those that did not require an answer or did not leave enough time for an answer) were coded in brackets but not analyzed as part of the question category. *Wh-* questions (IW) were those that began with *how, when, what, where, who,* or *why.* Yes/No questions (IY) were those that required a "yes" or "no" response (e.g., "Is the car red?") or that gave a specific choice of answers (e.g., "Is it a ship or a car?"). Query questions (QQ) were those that questioned the meaning of the partner's utterance or asked for a clarification of it.

ANSWERS. One of the following three answer codes was given to Partner A for every question that was posed by Partner B. Brackets were used to set apart additional answers to the same question. Bracketed answers were not analyzed as a part of the answer category. An accurate answer (AA) was one that was complete, adequate, and correct. Nonverbal AAs were demarcated (e.g., Partner A: "Is that a dolly?" Partner B: says nothing but nods.). If Partner B gave several answers to Partner A's question and one of them was correct, this answer would receive the AA code and the others would be placed in brackets. An incorrect answer (IA) was one that was incorrect or inappropriate. Returning the question to the partner (e.g., "You know what that is.") and responding "I don't know" were also considered incorrect answers. A non-answer (0A) occurred when Partner B failed to acknowledge Partner A's question.

COMMANDS. These were utterances designed to lead the partner to perform an action. Rhetorical commands (i.e., those that did not require a reaction) were placed in brackets and were not analyzed as commands. Direct commands (DC) specifically demanded the partner to perform some action (e.g., "Turn the vil-

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lage around."). Indirect commands (IC) used the form *let's* (e.g., "Let's play with the mailman."). Suggestion commands (SC) were grammatically questions but pragmatically commands. They were intended to get the other partner to engage in some sort of action (e.g., "Should we put the doll to bed?").

REACTIONS. These encapsulated the three possible ways Partner B could react when given a command by Partner A. A reaction code was given for Partner B whenever a command was given by Partner A. Compliance (CR) constituted following the command. It was subcoded as either verbal (e.g., "okay") or nonverbal (e.g., complying without saying "okay"). Noncompliance (NR) entailed voicing opposition (verbal) or doing the complete opposite (nonverbal) of the command. Non-reaction (0R) meant that Partner B showed no acknowledgment of Partner A's command.

DECLARATIVES. These encompassed all comments that clearly had meaning and were not a question, a command, a filler, a response to a question, or a reaction to a command.

FILLERS. These consisted of exclamations (e.g., "wow"), noises (e.g., "ahhh"), and affirmations (e.g., "yeah," "okay") that were not an acknowledgment of a question or a command. Sentence fragments that were unintelligible or otherwise devoid of any referential content or meaning were considered fillers as well.

Interrater reliability

The second, third, and fourth authors each coded about one-third of the transcripts. Two randomly selected minutes of each transcript were coded by the fourth author and either the second or third authors, who had initially developed and pilot-tested the coding system in collaboration with the first author. Interrater reliabilities, reflecting agreement of the original two raters with the new rater, were determined for topic focus and utterance function codes by dividing identically coded lines by total lines coded. Interrater reliabilities ranged from 86.4% for the utterance function codes of late talkers to 94.4% for the topic focus codes of mothers of late talkers. One common coding disagreement was deciding whether a question, an answer, or a command was rhetorical (and therefore should be placed in brackets). Coders also sometimes disagreed about whether an utterance required two utterance function codes or whether a topic focus code should be a JT or a PT. Coding disagreements were resolved through review and discussion of the videotapes.

Aggregation of codes

To reduce the number of variables analyzed and to aggregate codes of low frequency, some variables were combined before the data were analyzed. Children's *wh-* and query questions were combined because both often consisted of one-word utterances (e.g., "Huh?" "What?"). Mothers' nonverbal and verbal

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codes were combined for answers, compliant reactions, and noncompliant reactions. Similarly, mothers' indirect and suggestion commands were combined. Because children gave fewer commands, all types were pooled. Finally, rhetorical commands, rhetorical questions, and bracketed answers were combined with declaratives into the variable, statements.

Data analysis

The denominator for most calculations was total utterances, computed by summing the mutually exclusive topic focus codes by speaker. The topic focus codes, the superordinate categories of synchrony and asynchrony, and the major utterance function categories (questions, commands, declaratives, statements, answers, reactions, and fillers) all were computed as a percentage of total utterances. Topic focus codes summed to 100% because they were mutually exclusive, whereas utterance function codes slightly exceeded 100% because more than one code was occasionally given for an utterance. Prior to data analysis, the distributions of all variables were examined, and outliers were brought in to 2.5 *SD*s of the mean, in accord with conventional practice (Tabachnick & Fidell, 1996).

Between-group differences were compared by using independent-sample, two-tailed *t* tests and one-way ANOVAs. Transforming the data using arc sin did not change most of the relationships between the groups. Therefore, unless otherwise stated, the untransformed percentages and *p* levels are reported.

RESULTS

Conversational participation

As can be seen in Table 2, mothers of late talkers talked more than mothers of comparison children during the 10-minute speech sample, $t(51.00) = 3.33$, $p < .01$. On the other hand, whether total utterance lines or lines containing speech were analyzed, late talkers communicated as much as comparison children, despite the fact that their syntactic skills were far less developed. Thus, late talkers had a smaller percentage of total conversational utterances (i.e., total mother plus total child utterances) than did comparison children (41% vs. 47%), $t(35.02) = -2.52$, $p < .05$.

Topic focus

Means and standard deviations for the codes dealing with topic choice and topic synchrony for mothers and children are shown in Table 2.

Mother's topic focus. For both groups, about 80% of total utterances were synchronous, with the preponderance of synchronous utterances consisting of joint topics. Both mothers of late talkers and those of comparison children divided their asynchronous utterances fairly evenly between initiating new topics and speaking on their own topics, although the latter introduced significantly more

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Table 2. *Topic focus data for mothers and children by group*

	Late talkers		Comparison children	
	M	*SD*	*M*	*SD*
Mothers				
Total utterances	166.91	(53.10)	126.86	(34.45)**
% Conversation utterances	59.05	(7.6)	52.61	(9.9)*
% Conversation initiations	47.25	(.17)	47.28	(.19)
% Synchronous	80.72	(10.6)	76.56	(12.7)
% Partner topic	13.29	(6.7)	15.87	(7.9)
% Joint topic	67.43	(11.4)	60.69	(12.9)
% Asynchronous	19.28	(10.6)	23.44	(12.7)
% New topic	8.19	(4.1)	11.19	(5.1)*
% Own topic	11.09	(7.7)	12.25	(8.8)
Children				
Total utterances	113.59	(31.51)	113.71	(28.70)
Total speech lines	97.06	(36.14)	103.14	(33.58)
% Conversation utterances	40.95	(7.6)	47.39	(9.9)*
% Synchronous	77.89	(9.8)	72.52	(9.9)*
% Partner topic	10.02	(4.8)	11.61	(7.0)
% Joint topic	68.87	(12.0)	60.91	(13.3)
% Asynchronous	22.11	(9.8)	27.48	(9.9)*
% New topic	13.17	(6.1)	13.52	(4.7)
% Own topic	8.94	(6.1)	13.97	(7.3)

*$p < .05$; **$p < .01$.

new topics than the former. Regardless of group, mothers initiated 47% of all new topics in the total conversation; children initiated the remainder.

Child's topic focus. Children in both groups were highly synchronous (75% vs. 73%); the small group difference in synchrony favoring late talkers was significant using the arc sin values, $t(46.68) = 2.04$, $p < .05$, but not using the actual percentages. As was the case with the mothers, the vast majority of the children's synchronous utterances were in the form of joint attention.

About one-quarter of their utterances were asynchronous. Although the two groups had the same percentage of new topics relative to total utterances, new topics constituted 62% of late talkers' asynchronous utterances but only 51% of comparison children's, $t(44.60) = 2.56$, $p < .05$. This indicates that late talkers spent a larger proportion of their asynchronous utterances initiating new topics than did comparison children. Late talkers also had fewer own topics relative to total utterances (9% vs. 14%), $t(37.50) = -2.60$, $p < .05$, but no differences were found between the two group means for first utterance on partner's own topic. Thus, late talkers were just as likely as comparison children to make one remark

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Table 3. *Utterance function data for mothers and children by group*

	Late talkers		Comparison children	
	M	*SD*	*M*	*SD*
Mothers				
% Questions	30.46	(10.0)	25.14	(7.6)*
% Statements	46.99	(15.0)	43.07	(16.1)
% Commands	6.52	(3.2)	8.13	(4.5)
% Answers	2.60	(2.7)	10.08	(5.5)***
% Reactions to commands	1.87	(1.8)	1.89	(1.9)
% Fillers	12.69	(6.3)	14.52	(6.2)
Children				
% Questions	3.54	(3.5)	11.02	(6.3)***
% Statements	27.83	(13.0)	41.99	(14.3)**
% Commands	2.46	(2.2)	2.01	(1.8)
% Answers	44.37	(13.7)	29.55	(13.1)***
% Reactions to commands	10.30	(6.3)	10.90	(10.0)
% Fillers	16.47	(9.9)	13.19	(5.5)

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

on their own topic, but they were less likely to follow this up with subsequent utterances on the same topic.

Utterance function

Table 3 contains the data for the main utterance function categories.

Mother's utterance function codes. Mothers in the two groups were quite similar in their use of different types of utterances: 7% versus 8% for commands, 43% versus 47% for statements, 13% versus 15% for fillers, and 2% in both groups for reactions to child's commands. However, mothers of late talkers devoted a higher percentage of their utterances to questions than did comparison mothers (30% vs. 25%), $t(49, 71) = 2.20$, $p < .05$. Also, less than 3% of the utterances of mothers of late talkers were answers, compared to 10% of the utterances of comparison mothers, $t(26.25) = -5.78$, $p < .001$, a finding that reflects the disparity between the percentage of questions asked by the two groups of children. There were no significant differences between the two groups of mothers in the distribution of types of responses to questions: accurate answers, 46% versus 47%; incorrect answers or "returning" the question to the child, 40% versus 31%; and non-answers, 15% versus 22%. Reactions to their children's commands constituted a very small percentage of total maternal utterance lines (less than 2%) because children gave very few commands. There was no significant difference in the percentage of reactions to commands that were coded as compliance, although mothers of late talkers had a higher percentage (70% vs. 61%).

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Child's utterance function codes. Comparison children devoted a far greater percentage of their utterances to questions than did late talkers (11% vs. 3.5%), $t(27.93) = -4.75$, $p < .001$. This difference was also significant when a Mann–Whitney *U* test was performed on the highly skewed question data. Nevertheless, no differences emerged between late talkers and comparison children in the percentage of questions that were *wh-* questions or queries (79% vs. 74%) compared to Yes/No questions (21% vs. 26%). On average, 24% of the total utterances of late talkers were declaratives, compared to 36% of the utterances of comparison children, $t(38.88) = -3.26$, $p < .01$. The category of statements (declaratives + rhetorical questions + rhetorical commands + bracketed answers) was significantly different between the two groups, $t(39.97) = -3.66$, $p < .001$. Commands accounted for only about 2%, on average, of a child's total utterances, with no significant group differences.

Given that mothers of late talkers asked many more questions than mothers of comparison children, it is not surprising that a greater percentage of late talkers' utterances consisted of answers (44% vs. 29%), $t(44.27) = 3.97$, $p < .001$. However, the groups did not differ significantly in their level of responsivity to questions, which can be seen in the percentage of non-answers (34% for late talkers vs. 28% for comparison children). In addition, analysis of the children's answer codes revealed no significant differences for the percentage of answers that were correct. On average, children in both groups reacted to commands for 10% to 11% of their utterances, with late talkers no less likely to react to commands verbally than comparison children. The child, regardless of group membership, was compliant with 68% to 69% of maternal commands and noncompliant with 13% to 14% of them; 17% to 19% of the commands were not acknowledged (i.e., non-reactions). The use of fillers (13% to 16%) was similar for the two groups.

Differences within the late talker group

For the next analyses, late talkers were divided into two groups, based on their MLUs at age 3. Some 56% of late talkers (18 children) were 1.5 *SD*s below age expectations, following Scarborough's (1990) benchmark values; these children were seen as having persistent, significant expressive language delay. We referred to them as the "continuing delayed" (CD) group. However, 44% of late talkers were at or above the 1.5 *SD* cutoff. These children we referred to as the "late bloomers" (LB) group. Mean MLU *z* scores for the CD and LB groups were −2.63 and −.15, constituting a highly significant difference, $t(19.60) = -7.19$, $p < .001$. The two groups were also significantly different in IPSyn *z* scores at age 3: −3.32 and −.82, $t(27.52) = -7.38$, $p < .001$. Although children in the LB group scored within 1.5 *SD*s of age expectations in MLU, they were still significantly less advanced in MLU and IPSyn than children in the typically developing (TD) group (−.15 vs. 1.13 for MLU *z*; −.82 vs. .40 for IPSyn *z*; both $p < .001$).

There was a significant difference between the TD, LB, and CD groups in the percentage of total utterances contributed by the mother, $F(2, 50) = 3.67$, $p < .05$. Mothers of those in the CD group talked significantly more than moth-

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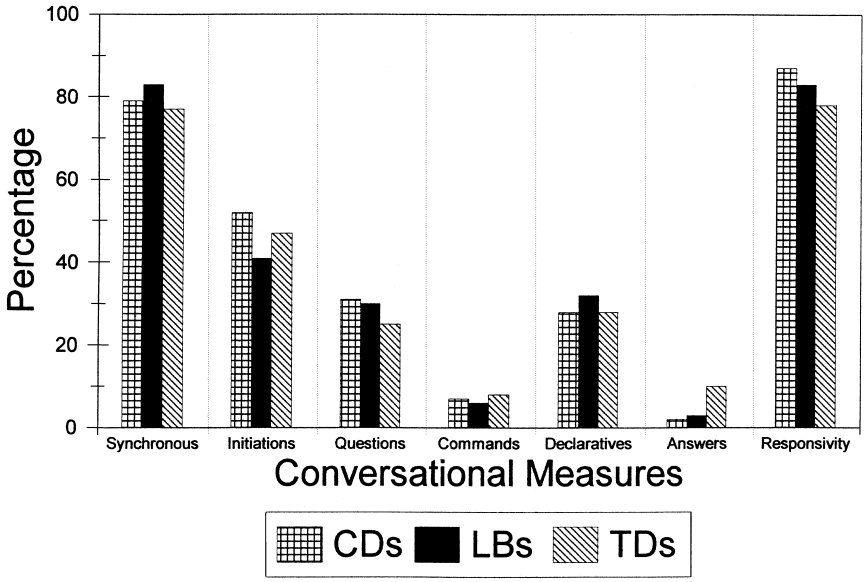


Figure 1. Three-group analysis for mothers: Topic focus and utterance function.

ers of those in the TD group, as shown by Newman–Keuls post-hoc tests (CD, 60%; LB, 58%; TD, 53%).

The major topic focus and utterance function codes for mothers of children in the CD, LB, and TD groups appear in Figure 1. For all three groups, mothers were highly synchronous with their children, with no detectable differences between them. Moreover, there were no significant group differences in initiation; mothers initiated 47% to 52% of new topics in the total conversation. The percentage of maternal questions did not differ in this three-group analysis, although mothers of CD and LB children did ask slightly more questions than mothers of TD children (about 30% vs. 25%). For the three groups, mothers did not differ in the percentage of declaratives or commands (approximately 30% vs. 7%). As was the case in the two-group analysis, the three-group analysis indicated a significant difference in maternal answers, $F(2, 50) = 22.36$, $p < .001$. Mothers of CD children provided the fewest answers (2% of their utterances), whereas mothers of TD children provided the most (10%). However, mothers did not differ in their level of responsivity. Mothers of CD children responded to the highest percentage of their children's questions.

Child topic focus and utterance function data for the CD, LB, and TD groups appear in Figure 2. Youngsters in the three groups were highly synchronous (above 70%), with the CD and LB groups being slightly more synchronous than the TD group. For all three groups, children initiated about 50% of new topics in the total conversation. Although children in the LB group had expressive language skills roughly in the average range, they still asked far fewer questions than those in the TD group. The overall ANOVA for the percentage of questions

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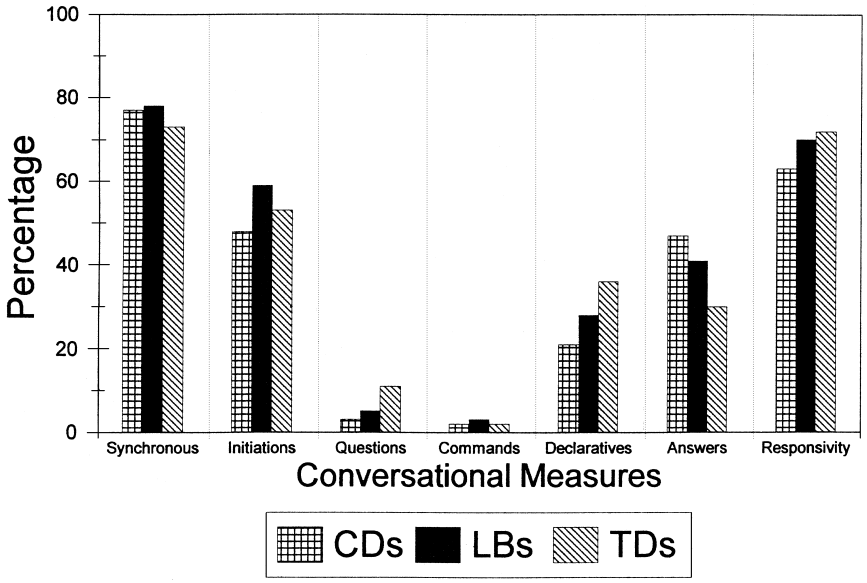


Figure 2. Three-group analysis for children: Topic focus and utterance function.

was highly significant, $F(2, 50) = 16.01$, $p < .001$. The CD and LB groups were significantly different from the TD group but not different from each other, as shown by Newman–Keuls post-hoc tests. There were no group differences in the percentage of commands, but there was a significant overall effect for use of declaratives, $F(2, 50) = 7.41$, $p < .01$; the difference between the CD and TD groups reached pairwise significance. The three groups differed significantly in the percentage of utterances that were answers to maternal questions, $F(2, 50) = 8.83$, $p < .001$; the CD and LB groups differed from the TD group in this measure (47%, 41%, and 30%, respectively). However, the groups were similar in responsivity, with children in all three groups attempting to respond to maternal questions about 60% to 70% of the time.

DISCUSSION

Late talkers spoke as often as typically developing children during this 10-minute play session at age 3, even though they differed significantly in the length and complexity of their utterances, as measured by MLU and the IPSyn. It should be noted that, at intake, these two groups had been very different in their volubility (Mirak & Rescorla, 1998; Rescorla & Ratner, 1996), in their rate of communication per minute (Rescorla & Merrin, 1998), and in their language level. Thus, it would appear that late talkers had "caught up" in terms of verbalization and communication rate, despite still being delayed in syntax and morphology at age 3. This is consistent with Roberts, Rescorla, Giroux, and Stevens (1998), who found no difference in volubility but significant differences in phonological skills at age 3 in these late talkers.

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Mothers of late talkers talked more during the 10-minute speech sample than mothers of comparison children (59% vs. 53% of total dyadic utterances). This finding is consistent with some previous studies of children with SLI (Conti-Ramsden & Friel-Patti, 1983; 1984; Cunningham et al., 1985) as well as with Whitehurst et al.'s (1988) study of late talkers. Although our late talkers talked as often as their typically developing peers, they produced utterances that were shorter and less complex, leaving more actual time for their mothers to talk during the 10-minute sample. In addition, mothers of late talkers seemed to work harder at keeping the conversation moving along, which they did by talking more often.

Despite this group difference in maternal conversational dominance, both late talkers and comparison children initiated slightly more than half of the new topics in the total conversation, indicating no group difference in topic choice. This contrasts with Paul and Shiffer (1991), in which late talkers contributed a smaller percentage of new topics than typically developing children, but is consistent with Rescorla and Fechnay (1996), in which no group differences were found in either mothers or children in topic initiation. In the present study, it would appear that mothers of late talkers were not using their "extra utterances" to introduce new topics, but were waiting for their child to introduce a new topic and then following up on that topic with more utterances.

Mothers and children in both groups manifested a high level of mean topic synchrony (73% vs. 81%), despite the fact that there were wide individual differences in topic synchrony within groups. This is consistent with Rescorla and Fechnay (1996) and Rescorla and Merrin (1998) studies, which examined many of these same dyads when the children were 6 to 12 months younger.

Although children in both groups were asynchronous for only about 25% of their utterances, comparison children initiated new topics as often as they maintained those topics (i.e., NTs = OTs), whereas late talkers used 62% of their asynchronous utterances for initiating new topics. Thus, typically developing children spent more time developing their own topics, but they were no more likely to produce a first utterance on their own topic than peers who had been slow to talk.

Mothers of late talkers were very similar to mothers of comparison children in their use of declaratives, fillers, commands, and reactions to commands. This is consistent with Paul and Elwood (1991) and Rescorla and Fechnay (1996) but different from Whitehurst et al. (1988), who audiotaped families at dinner. However, this group similarity in maternal use of different kinds of utterances does not mean that all the mothers were the same. As the *SD*s in Table 2 clearly show, the variance within each group was extremely large.

One of the notable results of this study was that mothers of late talkers asked more questions than mothers of comparison children, a finding that has not been previously reported for late talker samples (Paul & Elwood, 1991; Whitehurst et al., 1988). This finding may reflect a strategy that mothers of late talkers had developed for keeping their language-delayed child engaged in conversation. The benefit of such a strategy was reported by McDonald and Pein (1982), who found that frequent maternal questioning was a successful technique for eliciting conversation in typically developing toddlers.

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Mothers of late talkers spent less time answering questions because their children posed very few questions, a finding that is consistent with Whitehurst et al. (1988). In all other respects, despite the fact that their children had expressive language skills below the normal range, mothers of late-talking children participated in conversation with their children in the same ways as mothers of children who had no history of language delay.

Although there were wide individual differences within both groups of children on most utterance function measures, late talkers and typically developing children displayed very similar conversational patterns, despite having very discrepant expressive language skills. They did differ strikingly, however, in use of questions and in answers to questions. Just as mothers of late talkers asked a higher percentage of questions and gave fewer answers than their counterparts, a lower percentage of late-talking children's utterances were questions and a higher percentage of their utterances were answers. In addition, comparison children produced declarative statements for a significantly greater percentage of their utterances than did late talkers.

When late talkers were divided into two groups, based on their MLUs at age 3, very much the same results were found as in the two-group analyses. Mothers in the three-group analysis did not differ in synchrony or in most utterance function measures. The difference in maternal questions found in the two group analysis was no longer significant when late talkers were subdivided by age 3 language outcome. As had been the case in the two-group analysis, the three-group analysis indicated a significant difference in maternal answers; mothers of CD children provided the fewest answers and mothers of TD children provided the most. However, mothers did not differ in level of responsivity across the three groups, which is similar to the pattern found in the two-group analysis.

Late talkers who were still delayed in language did not differ from "recovered" late talkers or from typically developing children in topic synchrony, topic initiation, or responsivity to maternal questions. The three groups did differ significantly in the percentage of utterances that were answers to maternal questions. In addition, although the LB group had expressive language skills roughly in the average range, they still asked fewer questions than the TD group, but they did not differ in this regard from the CD group. However, the LB group did not differ from the TD group in use of declaratives, whereas the CD group did differ.

The pattern of results for the two groups of late talkers suggests that, as late talkers begin to "catch up" in their language skills, they talk more than they did earlier, take a bigger role in conversational initiation, and make more declarative statements. What seems to take them longer to master is the proclivity and/or ability to formulate questions during a conversation. The degree to which this is due to the syntactic complexity of questions or the pragmatic task of asking the interlocutor for information could not be determined from the present study, but would be a good issue to explore in future research.

The results of this research must be considered in the context of the limits to its generalizability. Late talkers in this study, who came from middle class and upper middle class intact families, were identified at a very young age (24 to 31 months), and all had normal nonverbal cognitive ability, age-adequate receptive

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language, and normal personality development. One might expect that the high levels of conversational participation, topic initiation, topic synchrony, and responsivity to questions demonstrated by this sample of late talkers might not be present in older children with SLI who have more severe or protracted language delays, children with receptive as well as expressive delays, or children from lower SES backgrounds. Similarly, mothers with less education, mothers of older children with SLI, or mothers of late talkers with language comprehension problems might not display the highly synchronous and supportive conversational style and high use of questions manifested by the mothers in this study.

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