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Effect of Adult Continuing Wh-Questions on Conversational Participation in Children With Developmental Disabilities

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Children with developmental disabilities often converse less frequently than their developmentally matched peers. This low conversational participation can cause problems for the children's future language and discourse development. The purpose of this experimental study was to test the hypothesis that adult topic-continuing wh-questions would elicit topic continuations in children with relatively low language ability, but not in children with relatively high language ability. Twenty-three children with developmental delays interacted with an adult who conducted two play sessions. In each session, the adult used a different interaction style. The two styles differed in the adult's use of topic-continuing wh-questions. Results indicate that adult use of topic-continuing wh-questions supported the use of child continuations in children at all language levels. The type of continuations (single word versus multiword) that were elicited depended on the language level of the children. Clinical implications are discussed.

KEY WORDS: discourse, children with developmental disabilities, question asking, intervention, directives

As children begin to talk, they are also learning to maintain a topic of conversation. Bloom, Rocissano, and Hood (1976) found that children with mean length of utterance (MLU) under 2.00 continued the adults' topics 56% of the time. When the children reached an MLU of 3.5 and above, well into the complex sentence stage, they continued the adults' topics 76% of the time. The children also grew in their ability to add new information to the conversation.

Children with developmental disabilities who are in the one- and two-word stages of language learning frequently have difficulty maintaining the topic of conversation. There are two reasons for this difficulty: (a) the developmental stage of the children, as indicated above, and (b) the conditions associated with their disability. Many children with developmental disabilities exhibit specific delays in the frequency with which they continue the established topic of conversation when compared to peers of the same linguistic level (Rosenberg, 1982).

Although this inability to continue the topic very long is not serious for children who are developing normally, the prolonged period of low conversational ability for children with developmental disabilities has several negative effects. Infrequent conversationalists may elicit socially satisfying and language-facilitating interaction from adults less often than frequent conversationalists do. For example, Yoder and Davies (1990) found that parents continued the child's topic more often after child topic continuations than after child topic initiations.

Bruner's (1978) notion of "scaffolded" interactions suggests that helping children use their cutting-edge conversational skills may eventually result in children learning

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to maintain the topic of conversation on their own. Many investigators have noted that adult interactors shoulder the major burden of topic maintenance and development with children through a number of means (Bruner, 1978; Foster, 1981, 1985). For example, Bloom et al. (1976) noted that 2-year-olds were most likely to continue a topic after certain adult utterance types, such as certain types of questions. Brinton and Fujiki (1989) suggest an intervention technique based on the scaffolding notion in which one acknowledges the child's preceding utterance and asks the child for more information about the topic. Interventions based on scaffolded interactions are predicated on the withdrawal of these scaffolds when the child is able to continue the topic on his or her own (Brinton & Fujiki, 1989). Although no studies to date have demonstrated that asking such questions and later withdrawing them facilitates child discourse, such a strategy is worthy of investigation.

Even if using and later fading scaffolded interactions does not result in permanent changes in children's discourse skills, identifying interaction styles that help children maintain a particular conversation may be helpful for intervention related to semantic and syntactic aspects of language. For example, the child who converses less often presents fewer opportunities for adults to use the types of language models that have shown the most promise in facilitating child language development. One class of language-facilitating behavior is used immediately after the child speaks. For example expansions and recasts (i.e., continuing the child's topic of conversation with semantically or syntactically more complex utterances; Nelson, 1989) have been shown to be effective language-facilitation techniques in children who are typically developing (see Nelson, 1989, for review) and with language impairment (Camarata & Nelson, in press).

Although mothers have been found to expand prelinguistic communicative events and child topic-initiating utterances, Yoder and Davies (1990) found that child topic continuations precede adult continuations more than do child topic initiations. Expansions and other recasts are one type of adult topic continuation. Adult expansions may follow child continuations more frequently than child initiations because it is easier for the adult to immediately interpret the meaning of young children's ill-formed, short, and marginally intelligible utterances when the topic has already been established.

Therefore, there are two primary reasons why it is important to find ways to support the topic maintenance of children with developmental disabilities. First, such scaffolding interaction styles might help children with disabilities learn discourse skills. Second, such interaction styles may foster verbal participation, which may in turn provide the clinician with greater opportunity to exemplify some aspect of language serving as the focus of intervention. Adult topic continuations and certain types of questions may be two ways of scaffolding young children's topic maintenance skills.

Topic continuations may elicit child continuations more than topic initiations in the early stages of language development for two reasons. First, children may be more likely to be interested in topics that they talk about than those they do not talk about (Yoder & Davies, 1990). Second, it may be easier for a child to understand adult speech that continues the established topic than it is to understand adult utterances that initiate a new topic (Bloom et. al., 1976; Hoff-Ginsberg, 1987a, b; Landry & Chapieski, 1989).

Empirically, child continuations have been found to follow adult topic continuations more than is expected by chance in samples of young children who were developing normally (Chapman, Miller, MacKenzie, & Bedrosian, 1981), in children with hearing impairments (Kenworthy, 1986), and in children with developmental delays (Yoder & Davies, 1990). In addition, Yoder and Davies (1990) and Yoder, Davies, and Bishop (1992) found a greater probability of child continuations following adult topic continuations than following adult topic initiations.

Adult questions that continue the topic may be particularly likely to elicit child continuations. In this review of the literature, the term *questions* refers to all verbal utterances that explicitly ask the child to provide information. Questions may elicit child continuations more than comments do for several reasons. First, they generally carry a social obligation for the child to respond (Olsen-Fulero & Conforti, 1983). Second, questions are used to allocate speaker turn in conversations with young children (Blount, 1977; Ervin-Tripp & Miller, 1977). Third, utterances with a rising intonational curve, such as some questions, appear to command the child's attention (Garnica, 1977). Questions that continue the child's topic may be particularly powerful elicitors of child continuations because they combine the advantages of topic continuations with those of questions.

Empirically, Bloom et al. (1976) found that young children were more likely to continue a topic after adult questions than after adult comments during the early stages of language development. This tendency decreased as the children developed. With children who have developmental delays, Yoder et al. (1992) found that the probability of continuations following adult topic-continuing questions was significantly greater than the probability of their following adult topic-continuing comments.

Turn-about, a particular type of topic-continuing question, may be among the most powerful elicitors of child continuations. Kaye and Charney (1980) define turn-abouts as topic-continuing questions that query the child's preceding utterance. Garvey (1977) has referred to the same class of questions as unsolicited contingent queries (Garvey, 1977). Turn-abouts may be one of the most powerful elicitors of child continuations because they may simultaneously reinforce and stimulate the child's conversation (Kaye & Charney, 1980; Olsen-Fulero & Conforti, 1983). Empirically, the probability of child continuations following topic-continuing wh-questions is significantly greater when there is no intervening adult talk or pause before the question (Yoder & Davies, 1990).

It should be noted that the use of questions, even turn-abouts, in diagnostic and therapeutic interactions is controversial. MacDonald (1989) suggests that questions encourage children to be dependent on adults to know when and what to talk about. Additionally, some researchers (e.g., Mahoney & Robenalt, 1985; Tannock, 1988), but not all (e.g., Maurer & Sherrod, 1986), consider questions a form of directive behavior. Mahoney and colleagues (Mahoney & Powell, 1988; Mahoney & Robenalt, 1985) consider directives to be a negative influence on child development be-

cause they may inhibit engagement with the environment and people. The empirical relation between directives and language development is equivocal. Some researchers have found mothers who use directives frequently have children who develop language relatively slowly (Furrow, Nelson, & Benedict, 1979; Newport, Gleitman, & Gleitman, 1977). Others have found that maternal directives have a positive relation with later language development (e.g., Akhtar, Dunham, & Dunham, 1991; Barnes, Gutfreund, Satterly, & Wells, 1983). Yoder and Davies (1990) suggest that properly timed use of certain types of questions may aid the child in conversing more often than would otherwise be possible.

In any case, the effect that turn-abouts and other topic-continuing questions have on child continuations may be limited to the early stages of language development. For example, past research investigating possible adult utterance types that elicit child continuations in children with disabilities was conducted with children with MLUs below 2.0 (Yoder & Davies, 1990). Because children grow in their ability to add new information to the conversation after comments (Bloom et al., 1976), children in the simple sentence stage and beyond may not need adult topic-continuing questions to help them converse. Research with children who were developmentally older found that an interaction style using fewer questions appeared to elicit several aspects of the children's conversation more than did a style with more questions (Mirenda & Donnellan, 1986). Children with disabilities who are past the initial stages of language learning may not need the prompting that questions provide and may actually be inhibited by the constraint that questions put on the requested response.

Similar past work in this area has been restricted to nonexperimental studies (Chapman, et al., 1981; Kenworthy, 1986; Yoder & Davies, 1990; Yoder et al., 1992) or experimental work that compares interaction styles that vary on a number of dimensions (Mirenda & Donnellan, 1986). The present study compares two interaction styles that vary on one primary style difference: wh-questions that continue the topic. Wh-questions that are generally answered by children in the early stages of language development (what, where going, and who questions) (Clancy, 1989; Lee & Ashmore, 1983) were selected, instead of both wh- and yes/no questions, because the latter class can be logically answered with nonverbal answers such as head nod or shakes more often than the former class (Miller, 1981). Clinical experience also suggests that children who have had difficulty speaking will communicate nonverbally if doing so fills the social obligations.

The purpose of the present study was to compare the effect of two different adult conversational styles on children's use of continuations. The hypothesis was that children with lower MLU's would use more continuations when interacting with an adult who used topic-continuing wh-questions than when interacting with the same adult using only topic-continuing comments. We predicted that children with longer MLUs would not be affected by the difference in the two interaction styles.

It was important to develop a contrasting style that did not inhibit child continuations so that differences in the number of child continuations between styles could be credited to hypothesized superior style. The contrast style in the present study was designed such that adults would use only topic-continuing comments. Topic-continuing comments were selected as the utterance type for the contrast style because past research (Yoder & Davies, 1990; Yoder et al., 1992) indicated that topic-continuing comments frequently precede child continuations more than expected by chance or at chance levels. Therefore, there was no evidence that the primary utterance type in the contrast style, topic-continuing comments, inhibited child continuations.

However, the present study used an usually high proportion of topic-continuing comments. Perhaps the effect of topic-continuing comments on child continuations changed when they were almost the only type of utterance used. Therefore, we used sequential analysis techniques to determine whether topic-continuing comments had a negative sequential dependency with child continuations in the present subjects. Such a finding would be consistent with the notion that topic-continuing comments had an inhibitory effect on child continuations. Finally, we used sequential analysis to test whether topic-continuing wh-questions had a stronger positive sequential dependency with child continuations than did topic-continuing comments. If this hypothesis is supported, then the results add to the evidence suggesting that adult topic-continuing wh-questions were responsible for the summary level effects of the style with topic-continuing wh-questions on child continuations.

Methods

Subjects

Children were recruited through the administrators of local early childhood special education programs and of local elementary school programs that included children with disabilities. Administrators were asked to send consent letters to parents of children who met the selection and exclusion criteria. Selection criteria for the participants in the study were intelligence quotient no higher than 85, 50 or more utterances during a 30-minute language sample, 12 month or less discrepancy between receptive age equivalency and expressive age equivalency, average mean length of utterance between 1.0 and 4.0. In addition, we had to be able to transcribe reliably at least 25% of the children's utterances as partially or fully intelligible. Children with a diagnosis of autism, visual impairment, specific language impairment, or hearing impairment were excluded to reduce variance of response to topic-continuing wh-questions. When the signed consent letters were received, project staff reviewed the children's records. If evaluations were over 6 months old, intelligence and/or language tests were administered by an independent examiner.

Subjects for this study were 23 children with developmental delays who were in the first four stages of language development. The mean chronological age was 58.6 months (SD = 15.9 months). Intelligence tests used were Stanford-Binet Intelligence Scale (Terman & Merrill, 1973), Developmental Activities Screening Inventory (DuBose & Langley, 1977), Merrill-Palmer Preschool Performance Scale (Stuts-

man, 1948), and Bayley Scales of Infant Development (Bayley, 1969). The mean mental age was 31.7 months (*SD* = 5.2 months). Language tests were the Sequenced Inventory of Communication Development-Revised (Hedrick, Prather, & Tobin, 1984), Preschool Language Scale (Zimmerman, Steiner, & Evatt, 1969), Receptive-Expressive Emergent Language Scale (Bzoch & League, 1971), and Vineland Adaptive Behavior Scales (Sparrow, Balla, & Cicchetti, 1984). Mean production age equivalency was 28.1 months (*SD* = 5.1 months), and mean receptive age equivalency was 28.1 months (*SD* = 4.8 months). The mean length of utterance was derived from the experimental sessions and averaged 2.15 (*SD* = .63). Table 1 contains additional information about the children who participated in the study. The developmental quotients in the table are provided as indices of the degree of delay in language and cognitive domains.

TABLE 1. Means and standard deviations for additional subject descriptor variables.

Subject Descriptor	*N*	*M*	*SD*
Productive age equivalency			
PLS	1	26 mos.	—
Vineland	1	22 mos.	—
REEL	1	22 mos.	—
SICD	20	28.8 mos.	5.0 mos.
All Tests	23	28.0 mos.	5.17 mos.
Receptive age equivalency			
PLS	1	21 mos.	—
Vineland	1	30 mos.	—
REEL	1	20 mos.	—
SICD	20	28.8 mos.	4.49 mos.
All tests	23	28.1 mos.	4.92 mos.
Mental age equivalency			
DASI	1	28 mos.	—
Merrill-Palmer	3	29 mos.	2.16 mos.
Bayley	1	21 mos.	—
Binet	18	33 mos.	4.93 mos.
All tests	23	29 mos.	2.16 mos.
Developmental quotients			
Productive			
PLS	1	.7	—
Vineland	1	.51	—
Reel	1	.42	—
SICD	20	.52	.12
All tests	23	.52	.12
Receptive			
PLS	1	.65	—
Vineland	1	.42	—
Reel	1	.58	—
SICD	20	.54	.12
All tests	23	.54	.15
Cognitive			
DASI	1	.62	—
Merrill-Palmer	3	.74	.14
Bayley	1	.68	—
Binet	18	.55	.12
All tests	23	.59	.13

Note. Scores from the Sequenced Inventory of Communication Development, Revised (SICD), Receptive-Expressive Emergent Language Scale (REEL), Preschool Language Scale (PLS), and Vineland Adaptive Behavior Scales (Vineland) were used to calculate receptive and expressive developmental quotients. Cognitive developmental quotients and mental ages were calculated using scores from the Stanford-Binet Intelligence Scale (Binet), Developmental Activities Screening Inventory (DASI), Merrill-Palmer Preschool Performance Scale (Merrill-Palmer), and Bayley Scales of Infant Development (Bayley). Developmental quotients were calculated by dividing age equivalency by chronological age at time of test and represent degree of delay.

Design

The research design was a repeated measures group experiment. That is, all children experienced two play sessions in which the adult used a different interaction style for each session. Order and Style were counterbalanced. To reduce the probability that Order or Order × Style interaction effects would occur, we used separate and matched sets of toys. Had the same toys been used for both sessions, the children's familiarity with the toys might have affected how the children conversed during the second session, regardless of the Style used in the second session. Order of the Style and toy set was counterbalanced across subjects to prevent confounding toy set with Style. To control for variance between adult interactors and to control for confounding Style with different adult interactors, the same adult implemented both interaction Styles for all children. To reduce the probability that differences in the children's conversational participation between Styles were due to the contrast Style's inhibiting child continuations, we designed the Styles so that neither contained utterance types that the literature suggests may inhibit child topic continuations (i.e., directives for actions, topic-initiating utterances,) (Bloom et al., 1976; Mahoney & Robenalt, 1985; Miller, 1981; Yoder & Davies, 1990; Yoder & Kaiser, 1989). Sequential analysis was used within the contrast style to investigate any evidence that this style inhibited child continuations. Sequential analysis was used within the style with topic-continuing wh-questions to further investigate whether topic-continuing wh-questions were responsible for the summary-level effects on child continuations.

Procedure

Data collection sessions. The sessions were conducted in a laboratory playroom containing a colorful rug. Each child participated in two 20-min interaction sessions with the same adult interactor. Both sessions occurred on the same day and were separated by a brief snack time. Total session time was 50 to 60 min. Before each session, the toys were carefully arranged around the rug in a predetermined manner.

Selected toys were those that were judged to be interactive or to afford dramatic play. The toys also could be matched (into pairs) in terms of interest level for the children and type of play. See Appendix A for a list of the matched toys.

All sessions were video- and audiotaped through a one-way mirror. The child wore a vest containing a wireless microphone. An omnidirectional, overhead microphone was used to pick up adult speech. The adult interactor had a receiver through which she could hear instructions from an "interaction style coach" who was behind the one-way mirror. The coach prompted the interactor when she departed from the prescribed interaction Style or appeared to require assistance with an unexpected situation.

The staff member who implemented the interaction Styles received over 40 hours of training. Training consisted of directed practice with other staff members in the context of role play sessions and with pilot children who were normally developing.

The following principles were used in both of the interaction Styles. At the beginning of the session, the adult allowed the child to speak first. If the child did not talk for 15 sec, then the adult talked about the child's focus of attention. When the child did speak, the adult continued the child's topic using the utterance types that were prescribed in the interaction Style for that session (see description below). When the child initiated play with a new toy without talking about it for 15 sec, the adult verbally related the new toy to the toy with which the child had just played. The adult waited for at least 2 sec after speaking to allow the child time to take a conversational turn. The adult interactor was instructed to avoid the use of directives for actions, topic initiations, or yes/no questions during either session.

When implementing Style I, the adult staff member was instructed to use topic-continuing wh-questions and topic-continuing comments that extended the topic. By "extending the topic," we mean that the adult tried to add or elicit new information about the established topic whenever possible. The questions were "what", "what doing," "where going," and "who" questions. These types of wh-questions were used because they are the ones to which very young children are most likely to respond (Clancy, 1989; Lee & Ashmore, 1983). When the child spoke, the adult queried him or her for more information about the topic. If the child responded to the questions, the adult continued to ask for more information about the child's message. If the child did not answer the question or responded "I don't know," the adult answered the question for the child. If the child lost interest in the topic while the adult was asking questions, the adult ended the episode by talking about the child's focus of attention. If the child was silent for over 15 sec, the adult alternated between comments and questions about the child's actions. See Appendix B for example of both Styles.

When implementing Style II, the adult staff member was instructed to use topic-continuing comments. If the child had not spoken for 15 sec, the adult commented on the child's activity. If the child had just spoken, the adult waited for 2 sec and commented on the child's message and activity. Two sec pauses were used in both Styles to provide the child with ample opportunity to take a verbal turn. However, the adult interactor was likely to use more pauses in Style II because she (the adult interactor) paused after the child spoke. This was done because past research indicates that such comments are likely to have neutral or slightly positive effects on whether children continue the topic (Yoder et al., 1992). See Appendix B for an example of both Styles.

Transcription and coding. Trained observers transcribed and coded the sessions from audio- and videotapes. Child utterances were transcribed verbatim with morphological coding, using the format described in the manual for Systematic Analysis of Language Transcripts (SALT) (Miller & Chapman, 1983). These utterances were coded for length (single word versus multiword) and topic responsiveness (continuation versus initiation versus reinitiation). Length distinction was made to explore whether topic-continuing wh-questions affected child continuations of both lengths. A dichotomous distinction was made to allow an economical exploration of the issue.

The presence of the adult utterances was indicated and coded for the following aspects of Style: (a) topic-continuing wh-question, (b) topic-continuing comment, and (c) nonprescribed utterances. Nonprescribed utterances were defined as directives for action, topic initiations, and yes/no questions. In addition to child and adult utterances, the coders recorded the presence of 2 sec pauses. The inclusion of pauses in the transcript was a more accurate representation of how the conversational time was used.

Because the construct of topic continuation is central to the study, we describe the coding of topic changes and continuations in more detail. Topic was defined by the referent object and ongoing actions or events. In the rare event that the subject matter of the conversation was an abstract (e.g., a song) or absent entity (e.g., a friend), the sentence subject or object was considered the topic of the conversation (Chapman et al., 1981; Kenworthy, 1984). Topic initiations occurred when the speaker referred to an object that was unrelated to that referred to in the immediately previous conversation. Topic continuations occurred when the speaker referred to the exact topic or a topic that was verbally related to the topic of the previous conversation. Once a topic was continued by the noninitiating partner, either partner could unilaterally continue the topic within that exchange. A reinitiation occurred when a speaker used two or more consecutive utterances to try to get the listener to talk about a topic the speaker had just introduced.

Reliability of Transcription and Coding

Interobserver agreement was estimated on 20% of the transcripts. Average utterance-by-utterance percentage agreement (occurrence agreements/occurrence agreements + disagreements) exceeded .84 on the aspects of the transcriptions that would affect the analysis for the effect of the interaction Styles (mean percentage agreement was between .84 and .99). These selected variables were (a) presence of utterance or pause, (b) identification of speaker, (c) segmentation of the utterances, and (d) transcription of child utterances. Transcription for an utterance was considered an "agreement" if the transcribers agreed on the number of morphemes in the utterance and if any differences in the morphemes that were transcribed would not affect the meaning or coding of the transcript. This definition of agreement is sufficient to estimate the reliability of the variables for this study, but may not be sufficient for other variables that could be derived from these or other transcripts.

Cohen's (1960) kappa was computed for coded variables on 20% of the transcripts. The coded variables were (a) adult topic-continuing wh-questions, (b) adult topic-continuing comments, (c) adult nonprescribed utterances, (d) child single-word continuing utterances, (e) child multiword continuing utterances, (f) child initiations, and (g) child reinitiations. Kappa estimates interobserver reliability while controlling for chance agreement due to frequent occurrence. All coded variables had mean kappas above .85.

Intraclass correlations were used as estimates of interobserver reliability for average mean length of utterance across sessions. This reliability estimate for MLU was derived from independent transcripts. Intraclass correlations were used because such coefficients are particularly useful for extremely variable scores and control for chance agreement due to limited variance in scores (Mitchell, 1979). The reliability coefficient for the average MLU was .98.

Data Transformation

The SALT software program was used to derive the children's mean length of utterance in morphemes (MLU) from the transcripts of the two interaction sessions. The average MLU from both sessions was used in the analysis of the relationship between developmental level and Style effect on child continuations. Using the average MLU from both sessions instead of one of the MLUs from one of the sessions represents a more stable estimate of the children's MLU because more contexts have been sampled (Nunnally, 1978).

Additionally, custom designed computer software (Yoder & Tapp, 1990) transformed the coded transcripts into a file containing a single line of 3-digit codes. The files containing the 3-digit codes were then input into one of two other programs to test the significance of the sequential dependence between adult topic-continuing comments preceding child continuations. One program was LAGSEQ (Yoder & Tapp, 1990), which derived the Allison-Liker *z*. The other was RESAMPLING STATS (Simon & Bruce, 1991), which derived the *p* value for the sequential dependence using the resampling method (Yoder & Tapp, 1993).

Analysis

Two × two repeated measure ANOVAs were used to test interaction effects between Order and Style. The within-subjects factor were Style (I and II) and Order (1st and 2nd).

A Pearson's product moment-correlation was used to test whether the difference in the number of child continuations occurring in the two Styles was a function of the child's MLU. It should be noted that a significant relationship between MLU and differences between Style on child continuations is equivalent to an interaction between Style and MLU. This interaction was tested in this manner instead of the usual ANOVA because (a) Style is a within-subject factor, and (b) MLU is a continuous variable.

MLU was kept as a continuous variable, instead of treating it as a categorical variable (e.g., ANOVAs by Brown's [1973] stages) for two reasons. Creating artificial categories from a naturally continuous variable results in the loss of information about the individual differences between children within a stage. The loss of information could result in failing to find a relationship when there actually is one. Finally, creating arbitrary stages (Brown's stages, 1973) from the continuous variable would result in few children falling into each stage, thus violating one of the necessary conditions for ANOVAs.

Sequential analysis was used to test whether topic-continuing comments in Style II had a negative sequential dependency on child continuations. A negative sequential dependency would support the notion that topic-continuing comments inhibited child continuations. To determine whether child continuations occurred less frequently than one would expect by chance processes, we conducted two types of sequential analysis. The first is the frequently used Allison Liker *z* score (Bakeman & Gottman, 1986). Allison-Liker *z* scores, and all other commonly used sequential analysis test statistics, assume that pairs of behaviors are sampled independently from each other. They are not sampled independently when analyzing social interaction (Yoder & Tapp, 1993). Therefore, we also tested the significance of the sequential dependencies using a novel application of resampling tests (Yoder & Tapp, 1993), which do not assume sampling independence.

Resampling tests create an empirically derived probability distribution of the number of times child continuations follow adult topic-continuing comments. This distribution is created by randomly shuffling the original sequence of events. After each shuffle, the computer program counts the number of times child continuations occur after adult topic-continuing comments. This process occurs repeatedly (1,000 times in this case) to produce the probability distribution. If the actual number of times child continuations occurred after topic-continuing comments is less than 5% of the 1,000 sets of shuffled data, then there is evidence of significant negative sequential dependency and evidence that is consistent with inhibition of child continuations.

We recognize that it is too early to have the usual support for this use of resampling tests (e.g., monte carlo studies) to be widely accepted. At this stage of investigating resampling tests as a method of sequential analysis, convergent results across these two analysis methods lends greater support than either *z* scores or resampling tests alone.

To compare the sequential dependency between topic-continuing questions in Style I and child continuations with that of topic-continuing comments in the Style I, we used paired *t*-tests to test the difference in the transitional probability within subjects. It is well known that transitional probabilities (e.g., child continuations following adult topic-continuing wh-questions/number of topic-continuing wh-questions) is not appropriate for comparing sequential dependencies when the total number of instances of the consequent event is different in the two patterns to be compared (Bakeman & Gottman, 1986). However, it should be noted that the two transitional probabilities to be compared in the present study are from the same session, are from the same child, and have the same consequent behavior (i.e., child continuations). Therefore, the "base rate" of the consequent behavior is the same between patterns to be compared. Thus the present use of transitional probabilities is appropriate.

Results

Adult Implementation of the Styles

ANOVAs on the independent variables indicated all non-significant Order × Style interaction effects. Table 2 indicates the means, standard deviations, and presence of significant

TABLE 2. Means and standard deviations of the variables that describe the adult's implementation of the Styles.

Variables	Style I		Style II		Pairwise difference	
	M	*SD*	*M*	*SD*	*M*	*SD*
Experimental:						
No. of adult topic-continuing comments	38.25	19.37	164.30**	38.25	−80.7	39.5
Proportion of adult utterances that are topic-continuing comments	.35	.06	.94**	.05	−.60	.07
No. of adult topic-continuing questions	142.26**	17.4	.26	.75	142	17
Proportion of adult utterances that are topic-continuing wh-questions	.60**	.06	.003	.008	.60	.06
Control:						
No. of nonprescribed* utterance types	11.82	10.9	8.39	7.30	3.4	12.5
Proportion of adult utterances that are nonprescribed	.05	.04	.05	.04	.002	.06
Other:						
No. of adult utterances	237.91**	26.6	172.96	36.7	65	43
No. of 2-sec pauses	158.91	53	202.48**	44.8	−43.5	45.5

*Nonprescribed utterances = directives for action, topic initiations, and yes/no questions.
**$p < .05$.

main effects for the differences between Styles on the variables that we intended to manipulate (i.e., experimental variables), for those we intended to avoid using (i.e., control variables), and for those we allowed to vary (i.e., others).

As indicated in Table 2, the adult staff member used more topic-continuing comments and more pauses in Style II than in Style I. When executing Style I, she spoke more often and used more wh-questions that continued the topic than when executing Style II. She also was successful at virtually never using directives for action, topic initiations, or questions that could be adequately answered with a "yes" or a "no" response in either Style.

Summary-Level Effects of the Styles on Child Continuations

Main effects of Style. No interaction effects between Order and Style were found for any dependent variable. Table 3 presents the means and standard deviations for several measures of continuations in Style I and Style II. It should be noted that the Style main effect is tested with a within-subjects ANOVA. That is, the mean of the difference within subjects is compared with zero. The means for each Style are given for descriptive purposes only.

As indicated in Table 3, children used more continuations in Style I than in Style II sessions (effect size = .93). This pattern was seen in all but two of the children. Although the children did use more transcribable utterances in Style I ($M = 179$; $SD = 65$) than in Style II ($M = 141$; $SD = 76$; $F = 9.44$; $p < .05$), the greater number of child continuations in Style I was not due only to this greater amount of transcribable speech in Style I. There was also a greater proportion of child utterances that were continuations in Style I than in Style II (Effect size = 1.00; $F = 16.25$; $p < .05$). When the length distinction for continuations is considered, it appears at first glance that Style affects the incidence of both multiword

TABLE 3. Main effects for Style on child continuations.

Variables	Style I		Style II		Pairwise difference	
	M	*SD*	*M*	*SD*	*M*	*SD*
No. of child continuations/20 min	159	64	109	61	51*	55
No. of child single-word continuations/20 min**	73.04	24.4	45.35	18.5	27.7*	27.3
No. of child multiword continuations/20 min	86.22	58.7	63.17	51.4	23.*	38.7
Proportion of child utterances that were continuations	.88	.07	.77	.14	.11*	.11

*Within subjects ANOVA significant at .05 level for test of difference mean as different from 0.
**The main effect for Style on single-word replies should not be interpreted because of the interaction between MLU and Style on this variable.

(Effect size = .60) and single word (Effect size = 1.01) continuations, with more continuations of both length occurring in Style I. However, the following analyses conveyed a more complex picture.

The relation between child's productive language level and the magnitude of the effect of the Styles on child continuations. The range of the average MLU for both sessions was 1.13 to 3.39 (mean = 2.15; *SD* = .63). Contrary to predictions, there was a nonsignificant relation between MLU and the difference in the number of child continuations between Styles ($p > .05$).

To explore individual differences in response to the Styles, we conducted three more analyses. It was reasoned that length of continuations may interact with developmental level of the child (as measured by MLU) to predict whether Style I would scaffold continuations. We thought that because developmentally older children had been using single-word utterances and continuing the topic for several years, they may not need the help that adult topic-continuing wh-questions provide to use single-word utterances to continue the topic. It was thought that developmentally younger children may still need help continuing the topic even with single-word utterances because all forms of verbal conversing is a relatively new development in their lives.

However, we did not know whether the dependent measure for the test of the interaction between developmental level of the children and Style on length of child continuations should be continuous or categorical. Therefore, we conducted three exploratory analyses to test the relation between average MLU and the following variables: (a) the difference between the number of single-word continuations between Styles, (b) the difference between the number of multiword continuations between Styles, and (c) the difference between MLU of the continuations between Styles.

There was a negative association between MLU and the difference in the number of single-word continuations occurring in the two Styles ($r = -.43$; $p < .05$). The difference in single-word continuations between Styles was more consistent in children in the lower range of the MLU scores than in children in the higher range of the MLU scores and favored Style I. The existence of this relation is equivalent to an interaction between Style and MLU in predicting the number of single-word continuations. When interaction effects are present in the data, main effects should not be interpreted because the main effects oversimplify reality (Pedhazur, 1982). The association between MLU and the difference in the MLU and number of multiword continuations occurring in the two Styles was nonsignificant. The association between average MLU across Styles and the difference in MLU of the continuations between Styles was also nonsignificant.

Sequential Level Effects of Topic-Continuing Wh-Questions and Comments

To determine whether the summary-level main effects of Style were due to the possibility that Style II inhibited child continuations, we tested whether child continuations followed adult topic-continuing comments in Style II less often than one would expect by chance processes (i.e., a negative sequential dependency).

There was virtually no evidence of such inhibition. The mean cross correlation for the sequential dependency between adult topic-continuing comments in Style II and child continuations was .06 (*SD* = .06). However, because significance is influenced by the total number of events in the sessions and because the total number of events was often close to 800, it is possible that very small negative coefficients (the lowest was -.05) could still be significantly different from chance. Using the Allison Liker *z* approach, none of the subjects showed significant negative sequential dependencies. Using the resampling tests approach, only 1 of the 23 showed significant negative sequential dependencies.

The next step was to determine if it was adult topic-continuing wh-questions or the greater number of adult utterances in Style I than in Style II that was responsible for the summary-level results. We compared the sequential dependency between child continuations and the two main types of the adult utterances seen in Style I: adult topic-continuing wh-questions and topic-continuing comments. If the sequential dependency was equivalent, then the greater number of adult utterances would be supported because Style II consisted almost entirely of one of the adult utterance types under test: topic-continuing comments. If the sequential dependency between child continuations and adult topic-continuing wh-questions was greater than that with topic-continuing comments, then the hypothesis that topic-continuing wh-questions were primarily responsible would be supported. Child continuations were more than twice as likely to follow topic-continuing wh-questions in Style I (mean transitional probability = .52, *SD* = .17) than to follow topic-continuing comments in Style I (mean transitional probability = .25; *SD* = .13) (mean of the differences in transitional probability = .27, *SD* of difference = .02; paired $t = 11.52$; $p < .0001$).

Discussion

The results of this study indicate that children used more topic continuations in Style I than in Style II. This difference was not due solely to the fact that children used more transcribable utterances in Style I than Style II. There was a greater proportion of child utterances that were continuations in Style I than in Style II. A closer look at the length of the continuations indicated that, regardless of their developmental level, children used more multiword continuations in Style I sessions than in Style II sessions. However, the differences in adult behavior in the two Styles affected the single-word continuations of children with relatively low MLUs more than it did children with relatively high MLUs.

Previous studies investigating conversational recruiting strategies that may elicit child continuations used nonexperimental research designs to identify adult utterance types (Chapman et al., 1981; Kenworthy, 1986; Yoder & Davies, 1990; Yoder et al., 1992). These studies sought to use the sequence of behaviors to identify adult utterance types that may elicit child continuations. Previously occurring behaviors

or some other unmeasured variable can cause various behaviors to occur together frequently, even when the antecedent behavior does not cause the consequent behavior to occur. For example, Yoder and Davies (1990) and Yoder et al. (1992) found significant sequential dependencies that are consistent with the notion that adult turn-abouts elicited child continuations. However, another explanation for the results was that child continuations may be elicited by the occurrence of both adult turn-abouts and previous child talk on the topic of conversation. In fact, the only way to determine whether adult utterances elicit child continuations is to experimentally manipulate the adult utterance types that are thought to elicit child continuations. The current study used such a design.

Whenever two styles are compared, it is possible that differences the two styles produce are due to the inferior style inhibiting the child variables, rather than the superior style eliciting them. Additionally, whenever more than one difference between Styles exists, one must systematically investigate which variables are most likely to account for the results. Both issues are considered below.

It is unlikely that Style II inhibited child continuations. The adult interactor successfully avoided using utterance types that past literature indicated to be inhibiting of child language and social interaction in similar subjects (Bloom et al., 1976; Mahoney & Robenalt, 1985; Miller, 1981; Yoder & Davies, 1990; Yoder & Kaiser, 1989). Additionally, past research on young children with developmental delays (Yoder & Davies, 1990; Yoder, et al., 1992) indicated that adult topic-continuing comments rarely have negative sequential relations with child conversational participation in almost all subjects, regardless of the sequential analysis method used to test significance. In the present study, the convergence of the results from two sequential analysis methods lends strength to the argument that there was indeed virtually no evidence of a negative sequential dependency between topic-continuing comments and child continuations in Style II.

The results indicated that there were two primary differences in the way the adult interacted with the child in the two Styles. First, the adult interactor used topic-continuing wh-questions in Style I but used virtually no topic-continuing wh-questions in Style II. Second, the adult talked more often in Style I than in Style II.

Children were more than twice as likely to continue the topic after adult topic-continuing wh-questions than after adult topic-continuing comments. Because virtually the only utterance type in Style II was topic-continuing comments, this finding supports the explanation that adult topic-continuing wh-questions are primarily responsible for the Style effects on child continuations.

The only unexpected result of the current study was that children with relatively long MLU's used multiword continuations more often in the Style with topic-continuing wh-question than in the Style with topic-continuing comments only. Originally, we thought that children who were capable of using multiword constructions and continuing the topic would not need and would, in fact, be constrained by the type of questions we used (i.e., what? what do? and where going?). Instead, topic-continuing wh-questions helped even children whose MLUs would place them in the simple and complex sentence stages to use multiword utterances to continue the topic. Apparently, using multiword constructions and maintaining the topic are still sufficiently new skills that adult question-asking is an aid to these children's multiword conversational participation. This interpretation is supported by the finding that the two different Styles did not affect the use of single-word continuations by children with these relatively long MLUs. Apparently, children in the simple and complex sentence stages are sufficiently fluent in continuing the topic with single-word continuations that adult use of topic-continuing wh-questions is no longer a help to them.

The clinician in charge of children with developmental disabilities must decide how frequently to use topic-continuing wh-questions based on several considerations. If one wishes to help the child continue the topic, then using topic-continuing wh-questions may be warranted. However, if one wishes to help the child learn to be a more independent conversationalist (Fey, 1986), it would be more appropriate to reduce the number of questions as the child becomes more active in conversing after topic-continuing comments. Doing so may give the child more control of the initiation and development of the conversational topic (Brinton & Fujiki, 1989).

The combination of the experimental design, closely monitored and controlled interaction Styles, and sequential analysis of immediate dependencies of particular aspects of the styles with child continuations leads us to confidently conclude that topic-continuing wh-questions help many children with disabilities continue an established topic. The evidence for this effect is strongest for multiword continuations for children at all of the investigated MLU levels and for single-word continuations for children at the lower MLU levels. The present study adds to the growing body of evidence to support the notion that questions and directives that continue the child's topic and follow the child's attentional lead are scaffolds to the child's engagement with people and objects (Landry & Chapieski, 1989; Landry, Garner, & Swank, 1992).

However, there is reason to discuss whether it is advisable to use the unusually high proportion of topic-continuing wh-questions that was used in Style I. If one wants to assess typical child conversational participation, using topic-continuing wh-questions 60% of the time is not warranted. However, when attempting to create opportunities for expansions and other contingently used language facilitation techniques, the use of a high number of topic-continuing wh-questions is a reasonable choice. When the child becomes more able to participate in the conversation without the adult using so many questions, the number of topic-continuing wh-questions may be reduced.

In summary, the results strongly support the notion that certain types of questions (i.e., those that continue and extend the topic and begin with "what," "what do," "who," and "where going") elicit child continuations in young children with developmental disabilities. Future research is needed to completely understand the importance of this finding for diagnostic and intervention activities.

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References

Akhtar, N., Dunham, F., & Dunham, P. J. (1991). Directive interactions and early vocabulary development: The role of joint attentional focus. *Journal of Child Language, 18,* 41–50.

Bakeman, R. & Gottman, J. (1986). *Observing interaction: An introduction to sequential analysis.* Cambridge: Cambridge University Press.

Barnes, S., Gutfreund, M., Satterly, D., & Wells, G. (1983). Characteristics of adult speech which predict children's language development. *Journal of Child Language, 10,* 65–84.

Bayley, N. (1969). *Bayley scales of infant development.* New York: Psychological Corporation.

Bloom, L., Rocissano, L., & Hood, L. (1976). Developmental interaction between information processing and linguistic knowledge. *Cognitive Psychology, 8,* 521–552.

Blount, B.G. (1977). Ethnography and caretaker-child interaction. In C.E. Snow & C.A. Ferguson (Eds.), *Talking to children: Language input and acquisition* (pp 297–308). Cambridge: Cambridge University Press.

Brinton, B., & Fujiki, M. (1989). *Conversational management with language-impaired children.* Rockville, MD: Aspen.

Brown, R. (1973). *First language: The early stages.* Cambridge: Harvard University Press.

Bruner, J.S. (1978). The ontogenesis of speech acts. *Journal of Child Language, 2,* 1–19.

Bzoch, K., & League, R. (1971). *Receptive-expressive emergent language scale.* Baltimore: University Park Press.

Camarata, S., & Nelson, K. (in press). Treatment efficiency as a function of target selection in the remediation of child language disorders. *Clinical Linguistics and Phonetics.*

Chapman, R.S., Miller, J.F., MacKenzie, E.H., & Bedrosian, J. (1981). *The development of discourse skills in the second year of life.* Paper presented at the Second International Congress for the Study of Child Language, Vancouver.

Clancy, P.M. (1989). Form and function in the acquisition of Korean wh-questions. *Journal of Child Language, 16,* 323–348.

Cohen, J. (1960). A coefficient of agreement for nominal scales. *Educational and Psychological Measurement, 20,* 37–46.

DuBose, R.F., & Langley, M.B. (1977). *Developmental activities screening inventory.* Hingham, MA: Teaching Resources.

Ervin-Tripp, S., & Miller, W. (1977). Early discourse: Some questions about questions. In M. Lewis & L. Rosenblum (Eds.), *Interaction, conversation, and the development of language* (pp. 9–26). New York: Wiley.

Fey, M.E. (1986). *Language intervention with young children.* Boston: Little, Brown.

Foster, S. (1981). The emergence of topic type in children under 2:6: A chicken and egg problem. *Papers and reports on child language development, 20,* 52–60.

Foster, S. (1985).The development of discourse topic skills by infants and young children. *Journal of Child Language, 5,* 31–45.

Furrow, D., Nelson, K., & Benedict, H. (1979). Mother's speech to children and syntactic development: Some simple relationships. *Journal of Child Language, 6,* 423–442.

Garnica, O. (1977).Some prosodic and paralinguistic features of speech to young children. In C. Snow & C. Ferguson (Eds.), *Talking to children: Language input and acquisition* (pp. 63–88). Cambridge: Cambridge University Press.

Garvey, C. (1977). The contingent query: A dependent act in conversation. In M. Lewis & L.A. Rosenblum (Eds.), *Interaction in conversation, and the development of language* (pp. 63–93). London: John Wiley & Sons.

Hedrick, D.L., Prather, E.M., & Tobin, A.R. (1984). *Sequenced inventory of communication development, revised.* Seattle: University Park Press.

Hoff-Ginsberg, E. (1987a, April). *Conversation as a resource-limited process for two-year-olds.* Paper presented at the Society for Research in Child Development. Baltimore, MD.

Hoff-Ginsberg, E. (1987b). Topic relations in mother-child conversations. *First Language, 7,* 145–158.

Kaye, K., & Charney, R. (1980). How mothers maintain "dialogue" with two-year olds. In D. R. Olsen (Ed.),*The social foundations of language and thought* (pp. 211–230). New York: W.W. Morton.

Kenworthy, O.T. (1984). *The influence of selected discourse and auditory factors upon the language acquisition of hearing-impaired children.* Unpublished doctoral dissertation. University of Wisconsin, Madison.

Kenworthy, O.T. (1986). Caregiver-child interactions and language acquisition of hearing-impaired children. *Topics in Language Disorders, 6,* 1–11.

Landry, S.H., & Chapleski, M.L. (1989). Joint attention and infant toy exploration: Effects of Down syndrome and prematurity. *Child Development, 60,* 103–118.

Landry, S. H., Garner, P., Swank, P. R. (May, 1992). *Increased exploratory responses: Effects of neonatal risk and maternal behaviors.* International Conference on Infant Studies, Miami, FL.

Lee, R., & Ashmore, L. (1983). Receptive and expressive wh-question performance by language-delayed children. *Journal of Child Language, 16,* 99–109.

MacDonald, J. D. (1989). *Becoming partners with children: From play to conversation.* San Antonio: Special Press.

Mahoney, G., & Powell, A. (1988). Modifying parent-child interaction: Enhancing the development of handicapped children. *Journal of Special Education, 22,* 82–96.

Mahoney, G., & Robenalt, K. (1985). A comparison of conversational patterns between mothers and their Down syndrome and normal infants. *Journal of the Division of Early Childhood, 10,* 172–180.

Maurer, H., & Sherrod, K.B. (1986). Context directives given to young children with Down syndrome and nonretarded children: Development over two years. *American Journal of Mental Deficiency, 91,* 579–590.

Miller, J. (1981). *Assessing language production in children: Experimental procedures.* Baltimore: University Park Press.

Miller, J., & Chapman, R. (1983). *SALT: Systematic analysis of language transcripts.* Baltimore: University Park Press.

Mirenda, P.L., & Donnellan, A. M. (1986). Effects of adult interaction style on conversational behavior of students with severe communication problems. *Language, Speech, and Hearing Services in Schools, 17,* 126–141.

Mitchell, S.K. (1979). Interobserver agreement, reliability, and generalizability of data collected in observational studies. *Psychological Bulletin, 86,* 276–290.

Nelson, K.E. (1989). Strategies for first language teaching. In M. Rice & R. Schiefelbusch (Eds.), *Teachability of language* (pp. 263–310). Baltimore: Brooks.

Newport, E., Gleitman, L., & Gleitman, H. (1977). Mother, I'd rather do it myself. In C. Snow & C. Ferguson (Eds.), *The acquisition of communicative competence* (pp. 109–149). Baltimore: University Park Press.

Nunnally, J. (1978). *Psychometric theory.* New York: McGraw-Hill.

Olsen-Fulero, L., & Conforti, J. (1983). Child responsiveness to mother questions of varying type and presentation. *Journal of Child Language, 10,* 495–520.

Pedhazur, E. J. (1982). *Multiple regression in behavioral research.* New York: Holt, Rinehart, and Winston.

Rosenberg, S. (1982). The language of the mentally retarded: Development, processes, and intervention. In S. Rosenberg (Ed.), *Handbook of applied psycholinguistics* (pp. 329–392). Hillsdale, NJ: Lawrence Erlbaum.

Simon, J. L., & Bruce, P. C. (1991). *Resampling stats: Probability and statistics. A radically different way.* (Available from Peter Bruce, 612 N. Jackson St., Arlington, VA. 22201)

Sparrow, S.S., Balla, D.S., & Cicchetti, D.V. (1984). *Vineland*

Adaptive Behavior Scales. Circle Pines, MN: American Guidance Service.

Stutsman, R. (1948). *Merrill Palmer Scales of Mental Tests.* New York: Harcourt, Brace, & World.

Tannock, R. (1988). Mothers' directiveness in their interactions with their children with and without Down syndrome. *American Journal of Mental Retardation, 93,* 154–165.

Terman, L.M., & Merrill, M.A. (1973). *Stanford-Binet Intelligence Scale, Form l-m.* Lombard, IL: Riverside Publishing Company.

Yoder, P.J., & Davies, B. (1990). Do parental questions and topic continuations elicit replies from developmentally delayed children?: A sequential analysis. *Journal of Speech and Hearing Research, 33,* 363–573.

Yoder, P. J., Davies, B., & Bishop, K. (1992). Getting children with developmental disabilities to talk to adults. In S. Warren & J. Reichle (Eds.), *Causes and effects in communication and language intervention* (pp. 255–276). Baltimore: Brookes.

Yoder, P.J., & Kaiser, A.P. (1989). Alternative explanations for the relationship between maternal verbal interaction style and child language development. *Journal of Child Language, 16,* 141–161.

Yoder, P. J., & Tapp, J. (1990). SATS: Sequential analysis of transcripts system. *Behavior Research Methods, Instruments, & Computers, 22,* 339–343.

Yoder, P. J., & Tapp, J. (March, 1993). *Resampling tests: A new way of analyzing sequences of events without violating the assumption of sampling independence of observations.* Poster presented at the Society for Research in Child Development, New Orleans, LA.

Zimmerman, I.L., Steiner, V.G., & Evatt, R.L. (1969). *Preschool language scale.* Columbus, OH: Merrill.

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Appendix A

Matched Toy Sets

Toy Set A:	Toy Set B:
(a) Fisher-Price house with four people and one dog	(a) Fisher-Price garage with accompanying people and prompts
(b) plastic school bus with one Fisher-Price person	(b) Little Tykes fire truck and four firemen
(c) Fisher-Price Zoo with nine people and accompanying animals	(c) Lego Preschool Carnival set with accompanying characters and prompts
(d) *Romper Room Book of Colors*	(d) *Good Night Moon*
(e) two toy microphones	(e) two toy Princess-style telephones
(f) Dunkin Donut toy set containing donuts and accompanying containers and utensils	(f) Burger King set of toy hamburgers and french fries with accompanying containers
(g) Sesame Street pop-up toy	(g) Fisher-Price cash register and coins
(h) Sesame Street's Big Bird in a Rocker wind-up toy	(h) Wind-up toy with three Sesame Street characters

In addition, each session had a baby doll and accompanying prompts and a plastic tea set.

Appendix B

Example of Styles

Legend: p = 2 sec. pause; x = unintelligible word; [cop] = continuing adult question; [cc] = continuing adult comment; [tc] = child topic continuation; [i] = child initiation; [s] = child single-word utterance; [m] = child multiword utterance

Style I:
Child: Comb it {child holding doll, but no comb} [m] [tc].
Adult: What should I do with it [cop]?
Child: I do it [m] [i].
Child: I here {reaches for doll} [m] [i].
Child: I do it [m] [i].
Adult: You want to play with the doll [cc].
Child: Go you house [m] [tc].
Adult: You're going to come to my house [cc].
Child: dinner [s] [tc].
Adult: What do you want for dinner [cop]?
Child: Eat [s] [tc].
Adult: What do you want to eat for dinner [cop]?
Child: x.
Adult: What [cop]?
Child: Shut up [m] [tc].
Adult: You want me to shut up [cc].
Child: Yeah [s] [tc].
Adult: Bye [cc]?
p {child puts down doll and looks around}.
p.
p.
p.
p {child gets on play phone, but does not talk yet}.
p {adult gets on other play phone}.
p {adult puts phone up to doll's ear}.
Adult: What do you want to say to the baby [cop]?
Child: Hello [s] [tc].

Style II:
Child: Baby {gets plate with play food} [s] [tc].
p.
Adult: You're getting the plate so the baby can eat [cc].
p.
Adult: You're going to fix the baby a treat [cc].
p.
Adult: All the plates are over there {points to plates} [cc].
p {child picks up a plate}.
Adult: You're getting it off the floor [cc].
p {child tries to pick up stack of plates}.
Adult: That one is hard to pick up [cc].
Child: Look {points to tray table} [s] [tc].
p.
Adult: We can bring the table down here [cc].
Child: Here [s] [tc].
p {child puts doll in chair with plate in front of her}.
Child: Chair [s] [tc].
p.
Adult: That way the baby can get to her food [cc].
Child: x chair [s] [tc].
Adult: Baby's in the chair [cc].
p.
p {child puts down baby and goes to cash register}.
p.
p.
p.
p.
p {adult brings doll and doughnuts to cash register}.
p.
Adult: Baby wants to buy some doughnuts [cc].

Effect of Adult Continuing Wh-Questions on Conversational Participation in Children With Developmental Disabilities

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