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DEVELOPMENT OF TURN-TAKING IN A YOUNG CHILD  
IN RELATIONSHIP TO PAUSES IN THE MOTHER'S SPEECH

Amy Finch

Abstract: The development of turn-taking skills was analyzed during interactions of one mother-child pair. This analysis investigated the frequency and length of dyadic pauses in the mother's speech. It was hypothesized that these dyadic pauses were turn-yielding signals that the mother used to cue her child to take her turn in the conversational interaction. It was further hypothesized that there would be changes in the frequency and length of dyadic pauses as the child became a more active participant in the turn-taking process. The results of this study indicated that both the frequency and length of pauses changed with increases in the linguistic skills of the child. These results are discussed in light of the methodological procedure used as well as to the changes in the child's responses.

Recent directions in psycholinguistic research have been to investigate the development of conversational skills in children. One component of conversational skills which the child must learn is the ability to take his turn. The turn-taking system involves the rules by which two or more speakers interact or cooperate in order to keep the conversation flowing and orderly.

Various components of the turn-taking system have been identified and studied during adult-adult interactions. One component of the turn-taking system is dyadic pauses. These dyadic pauses are periods of joint silence which occur at the completion of a sentence, clause, phrase, or lexical item and which may be used by the speaker as one turn-yielding signal. Turn-yielding signals are cues used by the speaker to transfer the turn from one individual to another (Duncan, 1976). These turn-yielding signals occur at terminal junctures which Sacks, Schegloff, and Jefferson (1974) identified as transition-relevance places. These transition-relevance places are logical points where speaker-switching could be made.

Snow (1978) has recently investigated the development of turn-taking skills in young children and has proposed that these skills develop during routines established between the child and his primary caretaker. She has indicated that the interactions between mothers and their children can be described in relation to the nature of their conversations and "that the changes in maternal speech result from the development of the baby's ability to take her turns in the conversation" (Snow, 1977, p. 11).

If Snow's assumptions are correct, one might expect changes to occur in both the frequency and length of unfilled pauses which follow the mother's utterances. These changes might result from the ability of the child to be a more active participant in the turn-taking process.

A review of the pertinent literature has been organized in relation to three topics. One deals with the turn-taking systems in adult-adult interaction, another with pausological methodology, and the third with adult-child interaction.

### Turn-Taking Systems in Adult-Adult Interactions

The adult turn-taking system has been described by several investigators, each of whom looks at different aspects. Jaffe and Feldstein (1970) focused on unfilled pauses, Sacks and associates (1974, 1978) on the linguistic, and Duncan (1976) on the paralinguistic and nonverbal parameters.

Jaffe and Feldstein (1970) have pointed out that a perceptible pause occurs approximately 75% of the time during the transition from the terminal vocalization of one speaker to the initiation by the next speaker. They have suggested that this "silence is required to transform a listener into a speaker" (p. 10). They found that the combination of the syntactic boundary and silence was more effective in eliciting a speaker-switch than either alone.

The system described by Sacks, Schieffloff and Jefferson (1974, 1978) has two major components. The turn-constructive component deals with the units involved in turn-taking, whereas the turn-allocation component is concerned with the organization of the system. They indicated that the units determine where turn-taking should occur. The organization process occurs through two selection procedures: those in which the next turn is allocated by the current speaker selecting the next speaker; and those in which a next turn is allocated by self-selection.

Duncan (1976) has described a turn-taking system which consists of two participants (speaker and auditor), various interactional states involving the participants, and a set of speaker and auditor signals which aid in the coordination of speaking turns. The major aspects of this system which were used in the present study are the turn-yielding signals, and backchannel responses. One of the turn-yielding signals identified by Duncan was unfilled pauses which he defined as an appreciable silent pause following a phonemic unit. Duncan found that as more turn-yielding signals were displayed, the probability of a turn-taking attempt by the listener was increased. Backchannel responses refer to the listener's use of various devices which provide feedback to the speaker while he is talking. He identified five major classes

of backchannel responses: vocal agreements, e.g. m-hm; sentence completion; brief restatements; requests for clarification; and head nods and shakes.

### Pausological Research

Although the adult-adult literature indicated that pause may be one of the cues utilized in the turn-taking process, no mention of this use in the adult-child literature could be found, except a brief comment by Bloom, Rocissano, and Hood (1976) in their categorization of adjacent and non-adjacent speech. Overall, the literature of adult-child interactions has not emphasized pauses and in those studies which have, it was in relation to the segmentation of speech. Both Broen (1972) and Dale (1974) have hypothesized that this segmentation by the use of pauses at the end of utterances provides the child with syntactic information.

Braehler and Zenz (1975) discussed standards for pausological research. They stressed that researchers studying pauses in speech should use comparable and consistent methods across studies. Only in this way can information gathered on one group or in one situation be compared to information on another group. The standard methods included instrumentation settings, response definitions and cut-off points for unfilled pauses.

### Turn-Taking Systems in Adult-Child Interactions

Snow's (1977) analysis of the turn-taking system in adult-child interactions has been one of the most extensive. She studied the speech of two mother-child pairs at several stages of development. Using the turn-taking system described by Sacks and associates, she described the developmental trends that occurred at the following ages: three, seven, 12 and 18 months. She indicated that "whereas getting one's turn is a major goal in the adult conversations..., getting the child to take her turn seemed to be the primary goal of the mothers studied" (p. 12).

Snow (1977) found that the mothers interpreted their children's yawns, sneezes, coughs, coo-vocalizations, smiles and laughs as conversational turns during the early developmental stages. However, mothers became more demanding as to what they accepted as a response as the child developed more sophisticated motor and verbal skills. By twelve months of age the children were responding with more consistency to maternal utterances and were initiating more adjacency-pairs with their own activities.

As the children increased their linguistic skills, they also increased their ability to participate in the turn-taking sequences

and their unit-types consisted more frequently of words. Snow indicated that the mothers not only expected their children at 18 months to take their turns, they also expected them to respond appropriately. She found that much of the turn-taking during this period consisted of sequences centered around a child's response, the mother's correction of that response, and the child's corrected response.

Snow suggested that even though there was still imperfect turn-taking, the interaction at 18 months "gave the strong impression of being a real conversation, both in terms of the frequency of speaker-switching and in terms of the apparent effectiveness of the communication" (p. 19). However, she also pointed out that this conversation was dependent upon the "mother's willingness to follow up on any conversational opening given by the child, and to fill in for the child whenever necessary" (p. 19).

Although Snow provided a detailed description of the mother's and child's use of various turn-taking skills, she did not indicate how she divided the utterances into unit-types. She also did not describe how the utterances were marked for turn-allocational components.

Snow (1978) described the adult's use of questions and question sequences in the turn-taking system. She indicated that between the ages of three and 18 months there was a progressive decrease in the length of question sequences as well as an increase in the percentage of sequences terminated by a child's response. Snow attributed these modifications in the mother's speech to changes in the child's ability to participate in the turn-taking system as well as the mother's different definition of an acceptable response.

Lieven (1978) has also studied mother-child pairs in order to observe changes in the turn-taking system. Lieven indicated that there were differences between mothers in how much they said to their child, how much they responded to the child's utterances, and the amount of turn-taking. She stated that the extent of turn-taking and the content and scope of the turns was probably important in children's development of language.

This brief review of the literature has indicated that several studies have investigated turn-taking skills in young children. However, there has been little research regarding the coding of utterances and the use of cues which the mothers employ to signal the child that it is his turn to talk. No studies were identified which used dyadic pauses in studying the turn-taking system of adult-child interaction.

This study was designed to investigate the development of turn-taking skills in a child from 16 months to 49 months of age in relationship to the dyadic pause time in the mother's speech. It was

hypothesized that the pauses serve as a turn-yielding signal which the mother used to indicate to her child that it was the child's turn to talk. The specific hypotheses were:

1. There is no difference in dyadic pauses as measured by the adjusted frequency and length of unfilled pauses in the mother's speech during interaction with her child.
2. There is no difference in dyadic pauses as measured by the adjusted frequency and length of unfilled pauses in the mother's speech during interaction with her child as compared to her interaction with an adult.

### Method

Since this study was a part of a larger ongoing longitudinal research project, the subjects, recording sessions, and procedures utilized in the preparation of the linguistic transcripts in the original study will be reviewed. The second part of the methodology will pertain specifically to the present study and will include selection criteria for samples, data analysis and reliability measures.

Subject The subject of this study was a mother who was videotaped weekly or biweekly over a two and one-half year span of time while interacting with her daughter. The taping was begun when Annika was thirteen months of age and continued until she was forty-nine months of age. Annika was the third of four children and was the youngest in the family when the taping was begun. The older siblings were both boys. The fourth child, a boy, was born during the time period that the taping was being done. All family members were native speakers of English and Annika's speech and language development was considered within normal limits. The father was a University of Kansas professor during the time of the taping and the mother was a pharmacist who worked from three to twelve hours a week outside of the home.

Recording Sessions Videotape equipment (Sony, 1/2 inch, reel to reel videotape recorder--Model AV-3600; Sony video camera--Model AVC-325 DDX) was placed in the home during the two and one-half years. The equipment was arranged by the parents for the taping at a time convenient to the mother. The only instruction given to the mother was: Encourage your child to talk. No analysis of the videotapes was initiated until all of the taping sessions were completed so that there would be no interference from the researcher regarding expectations of the mother-child interaction. In addition, the involvement of the present experimenter did not occur until after the taping sessions and written transcripts were completed. Appendix A lists



the tape number and date for all videotaped sessions as well as the samples for the present study. A few sessions (8-7-75, 8-25-75, 9-3-75, and 9-15-75) were videotaped at the University of Kansas Speech and Hearing Clinic because the family was in the process of moving. The last tape (12-14-77) was also videotaped at the Clinic since the video equipment was no longer in the home.

Linguistic Transcripts A verbatim hand-written transcript was prepared from each videotape. The first fifty frames of each tape were not utilized on the assumption that both mother and child were "warming up" during those initial two minutes. All of the utterances of the mother were transcribed by one assistant while the utterances of Annika were transcribed by a second assistant. Each utterance is on a separate line and is numbered consecutively. The following definitions were utilized in these transcripts: 1) An utterance is a vocalization, a word, or a group of words, the terminal boundary of which is determined by the intonation contour, pause, and/or content. 2) A speech unit is one or more utterances of one person bounded before and after by an utterance of another person. 3) A communication unit is one speech unit of each speaker in the dialogue.

Selection Criteria for the Turn-Taking Samples Twenty-four two-minute samples ( $\pm 10$  seconds) from the previously mentioned data base were analyzed. A plus-minus ten-second criterion was used so that the samples could start and end at the completion of one of the following conversational units: 1) discourse structure as defined by Keenan and Schiefflin (1976) as "any sequence of two or more utterances produced by a single speaker or by two or more speakers who are interacting with one another (at some point in time and space)" (p. 340); 2) adjacency pair units such as question-answer and requests-acknowledgments; 3) unit types which according to Sacks and associates (1975) include "sentential, clausal, phrasal, and lexical constructions..." (p. 702). The ten-second criterion was important both for the measurement of pauses as well as for the description of the turn-taking system since it has been suggested that the completion of these units constitutes an initial transition-relevance place for the turn-taking process (Sacks, et al., 1974).

Several criteria were devised in order to select samples to be analyzed. These criteria related to internal features such as homogeneity of activity across all samples, and external features such as time sampling. Since book activities and conversations were frequent throughout all tapes, only these activities were utilized for analyses. These activities promoted verbal interaction on the part of at least one of the participants whereas toys and objects tended to elicit non-verbal activities, especially motoric responses. Also, as Annika developed linguistically, toys and objects during the taping sessions were eliminated.

places. They included both speaker turns as well as backchannel responses. Each unfilled pause which occurred at the end of an utterance was analyzed as to whether or not it was a dyadic pause.

Response Measures Pausological research is affected by methodological difficulties such as the use of subjective judgment of location of unfilled pauses, lack of uniformity in definition of response measures, and varying cut-off points for pauses (O'Connell and Kowal, in press). In order to maintain uniformity in definition of response measures and cut-off points so that comparisons could be made with research by O'Connell and associates, the following definitions and response measures were used.

1. Unfilled Pauses (UPs) Based on Acoustic Information Only. An unfilled pause was defined as silence with a duration of at least 270 milliseconds. Measurement of unfilled pauses was obtained from the B & K graphic record of amplitude over time with silence being the absence of acoustic energy. This permanent graphic record was used to locate and measure duration of unfilled pauses. These pauses were thought to be of a length that could be detected by a child and therefore could serve as a turn-yielding signal. Dyadic pauses which were defined as pauses occurring at transitional-relevance places were measured from 270 milliseconds upward.

2. Derived Measures of Unfilled Pauses. Comparison of absolute measures of unfilled pauses results in unequivalent comparisons since the longer time the speaker talks, the more opportunities one has for unfilled pauses. Therefore, adjusted measures of unfilled pauses were used since the mother's participation varied depending on Annika's ability and/or motivation to participate in the activity. The following derived measures were calculated for unfilled pauses.

a. Adjusted Frequency of Unfilled Pauses. Adjusted frequency of UPs takes into consideration the sample length and was defined as the ratio of frequency of UPs to total number of syllables in the speech sample of the mother.

b. Adjusted Length of Unfilled Pauses. Adjusted length of UPs was defined as the ratio of total length of UPs in seconds to the total number of syllables in the mother's speech sample.

3. Unfilled Pauses based on Both Acoustic and Nonverbal Information. Each videotaped sample was analyzed for information regarding the use of nonverbal responses by the child. The nonverbal responses included looking, pointing, nodding the head yes or no and shrugging the shoulder to indicate I don't know. Each transition-relevance place was analyzed and if a nonverbal response was present, the experimenter timed the length of the unfilled pause following the mother's utterance until the nonverbal response occurred. A stopwatch was used to time the unfilled pause. This resulted in an approximate length of unfilled pause utilizing both acoustic and nonverbal information. The same cut-off points and derived measures as discussed above were used in analyzing

these pauses.

Reliability Measures Both intrajudge and interjudge reliability was calculated in terms of agreement/(agreement + disagreements) for occurrences of speaker-selected transition-relevance places for two two-minute samples over the two-year period. Both acoustic and nonverbal information were utilized. Interjudge reliability was established using one observer who viewed the two samples and indicated for each utterance where there were transition-relevance places (speaker-selected). Intrajudge reliability for the two two-minute samples was 88% and 95% while interjudge reliability for two two-minute samples was 90% and 92%.

### Results and Discussion

The samples were grouped according to Brown's (1973) stages of language development. This grouping resulted in the following developmental stages and ages: Prestage I (16 to 24 months of age), Stage I (25 to 31 months), Stage II (33 to 34 months), Stage III (35 months), Stage IV and above (36 to 49 months).

Frequency Data Figure 1 presents the percentage of transition-relevance places (TRPs) which involved a pause  $\geq 270$  milliseconds. A slight decrease was noted in the percentage of utterances followed by a perceptible pause in Prestage I through Stage II. During

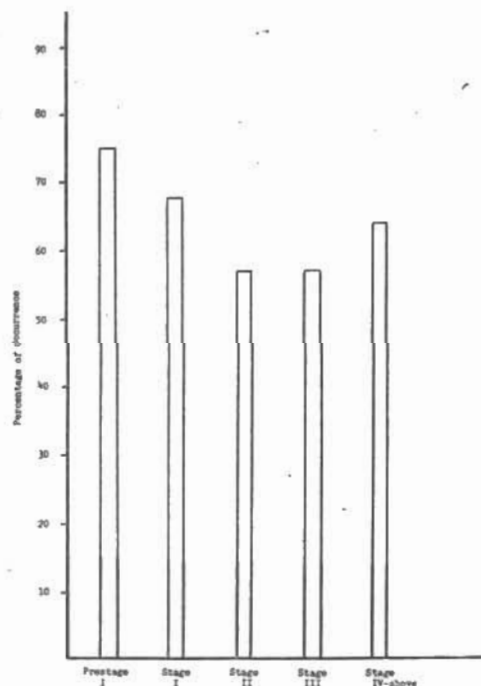


Figure 1. Percentage of occurrence of dyadic pauses ( $\geq 270$  milliseconds) following transition-relevance places.

Prestage I, 75% of the mother's utterances were followed by perceptible pauses, whereas the range was 57 to 68% in later MMLU stages.

Figure 2 presents the adjusted frequency of dyadic pauses when analyzing pauses using only acoustic information and when using both acoustic and nonverbal information. Overall, the adjusted frequency using acoustic cues only decreased from Prestage I through Stage II, and then increased slightly. When the nonverbal and acoustic information were combined, there was a similar pattern.

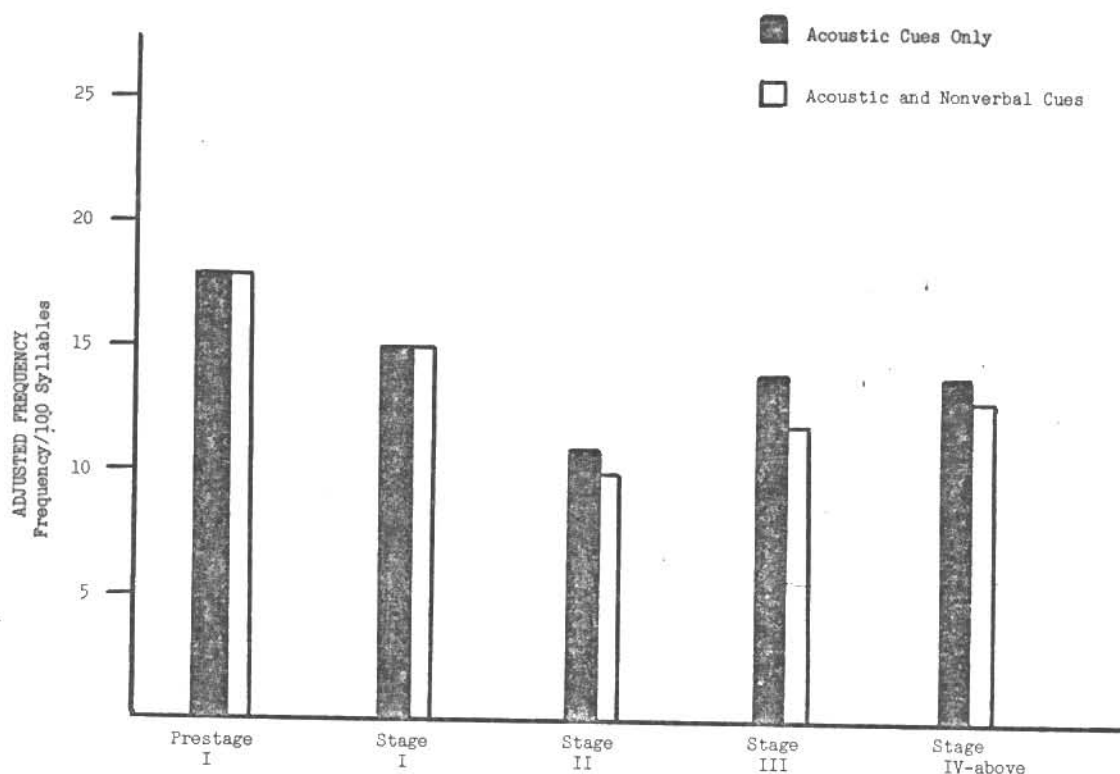


Figure 2. Frequency of dyadic pauses ( $\geq 270$  milliseconds) using acoustic cues only, and combined acoustic and nonverbal cues.

The adjusted frequency based on the combined acoustic and nonverbal information was further analyzed in terms of mother-child sequences, i.e., mother utterances followed by a child

response and mother-mother sequences, i.e., mother utterances followed by another mother response (Figure 3). This analysis indicated an

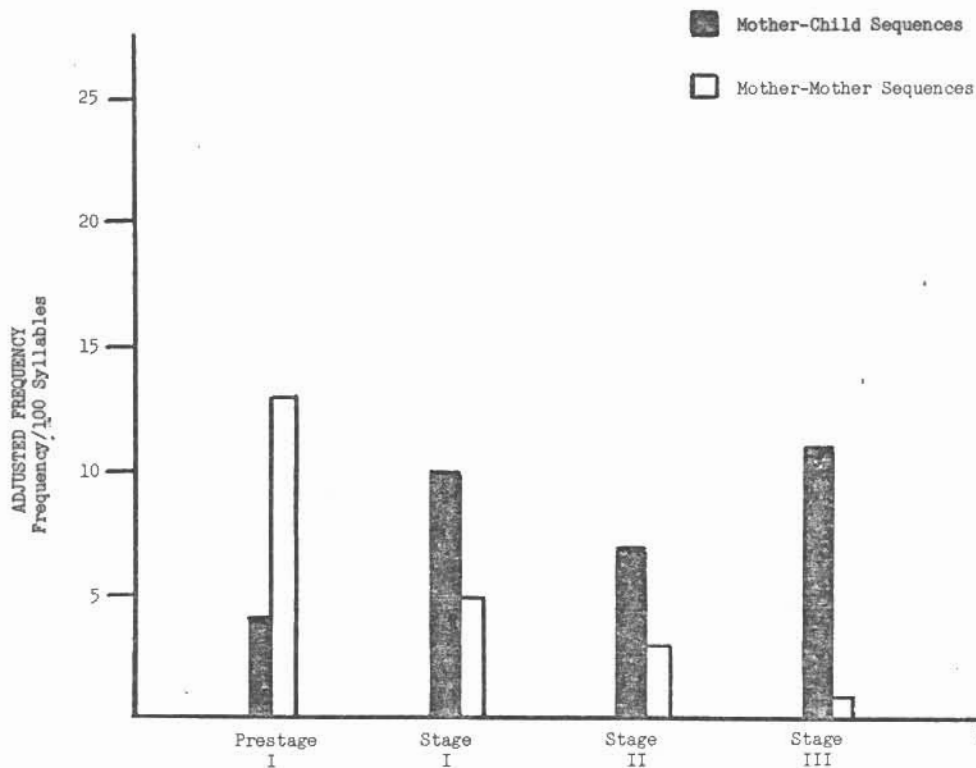


Figure 3. Frequency of dyadic pauses ( $\geq 270$  milliseconds) using acoustic and nonverbal information in mother-child and mother-mother sequences.

increase in the frequency of mother utterances followed by a child response from Prestage I to Stage I, and a levelling off for the later stages. There was a marked decrease in mother-mother sequences from Prestage I through Stage III. The above information shows that turn-taking was occurring more frequently with advances in the child's linguistic skills.

The increase in the adjusted frequency of pauses followed by a child response was supported by the fact that the mean length of maternal turns (i.e., the mean number of utterances in the mother's

turn not followed by a child response) decreased with an increase in Annika's linguistic skills (Table 1). The mean length of maternal

	PRESTAGE I	STAGE I	STAGE II	STAGE III	STAGE IV
MEAN	3.54	1.6	1.3	1.5	1.5
RANGE	7.8-2.7	2.1-1.4	1.34-1.33	1.5	1.8-1.2

Table 1. Length of maternal turns based on the number of utterances per turn across MLU stages.

turn decreased from 7.8 utterances during early Prestage I to 2.7 during the last two samples of this period. From Stage I onward the mean length of the mother's turn was less than or equal to 2.0 utterances. These data support Snow's (1977) statement that one goal of mother-child interaction is to get the child to take her turn, in contrast to the goal of adult-adult interaction to get or keep one's own speaking turn.

This child-centered goal was also supported by a comparison of the percentage of transition-relevance places in the two interactions which were speaker-selected by the mother. The percentage of occurrence of speaker-selected transition relevance places ranged from 38% in Prestage I to a high of 78% in Stage III (Figure 4). In the mother-adult

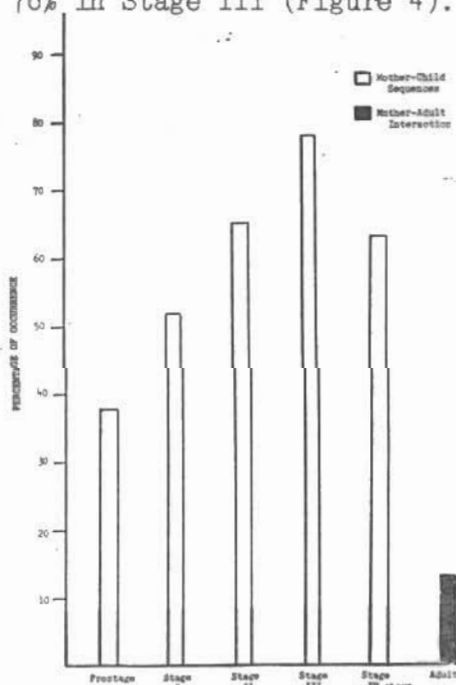


Figure 4. Percentage of occurrence of speaker-selected TRPs in mother-child and mother-adult interaction.

interaction only 14% were speaker-selected by the mother.

The analyses thus far indicated that although the adjusted frequency of perceptible pauses followed by a child response increased from Prestage I to Stage I, the percentage of perceptible pauses was decreasing, at least from Prestage I through Stage II, with advances in the child's linguistic skills. It may be that the child was responding in a shorter time and the pauses as a result fell below the 270 millisecond cut-off point. There was however a slight increase in the perceptible pauses during the last Stage. Annika may have been taking longer to respond as her linguistic skills were improving.

Although the frequency of perceptible pauses decreased slightly during the later MLU stages when both nonverbal and acoustic information were utilized, the combined use increased the number of mother-child sequences by 15% in Prestage I, 8% in Stage I, 24% in Stage II, 26% in Stage III, and 38% in Stage IV and above. Thus, more information was gained regarding the child's ability to take her turn when using both acoustic and nonverbal information.

Figure 5 presents the adjusted frequency of dyadic pauses during

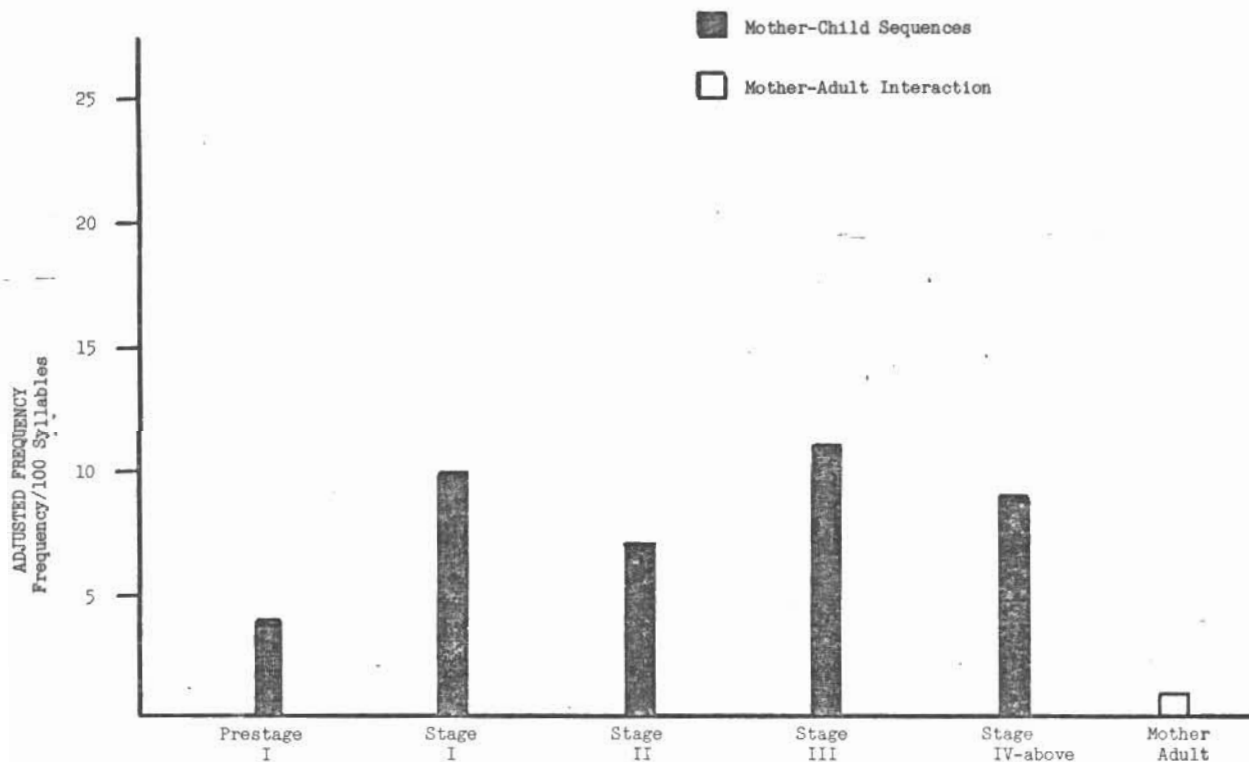


Figure 5. Frequency of dyadic pauses ( $\geq 270$  milliseconds) of mother-child sequences and mother-adult interaction.

the mother-child sequences as compared to mother-adult sequences. At no stage of development did mother-child sequences approximate the low frequency of perceptible pauses in mother-adult interactions except in Prestage I where the child was not responding frequently.

Length of Pauses The adjusted length of perceptible pauses in the mother's speech was also analyzed using acoustic only and the combined acoustic and nonverbal information (Figure 6). The adjusted length decreased as a function of advances in the child's linguistic skills. Furthermore the analysis using both acoustic and nonverbal information

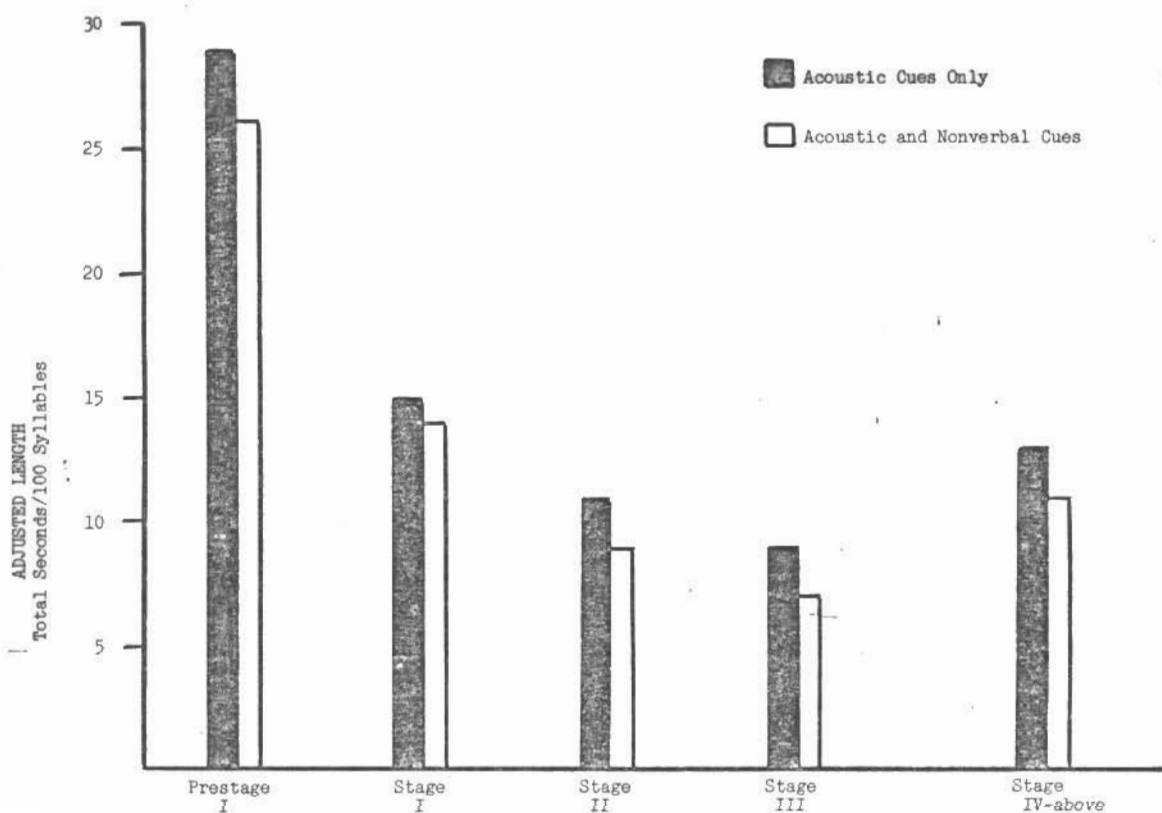


Figure 6. Length of dyadic pauses ( $\approx$  270 milliseconds) using acoustic cues only and both acoustic and nonverbal cues.

resulted in a greater decrease in the adjusted length at all stages of development. This result suggested that nonverbal turns frequently anticipated verbal turns.



Figure 7 presents the adjusted length of dyadic pauses based on both acoustic and nonverbal information when analyzed in terms of mother-child and mother-mother sequences.

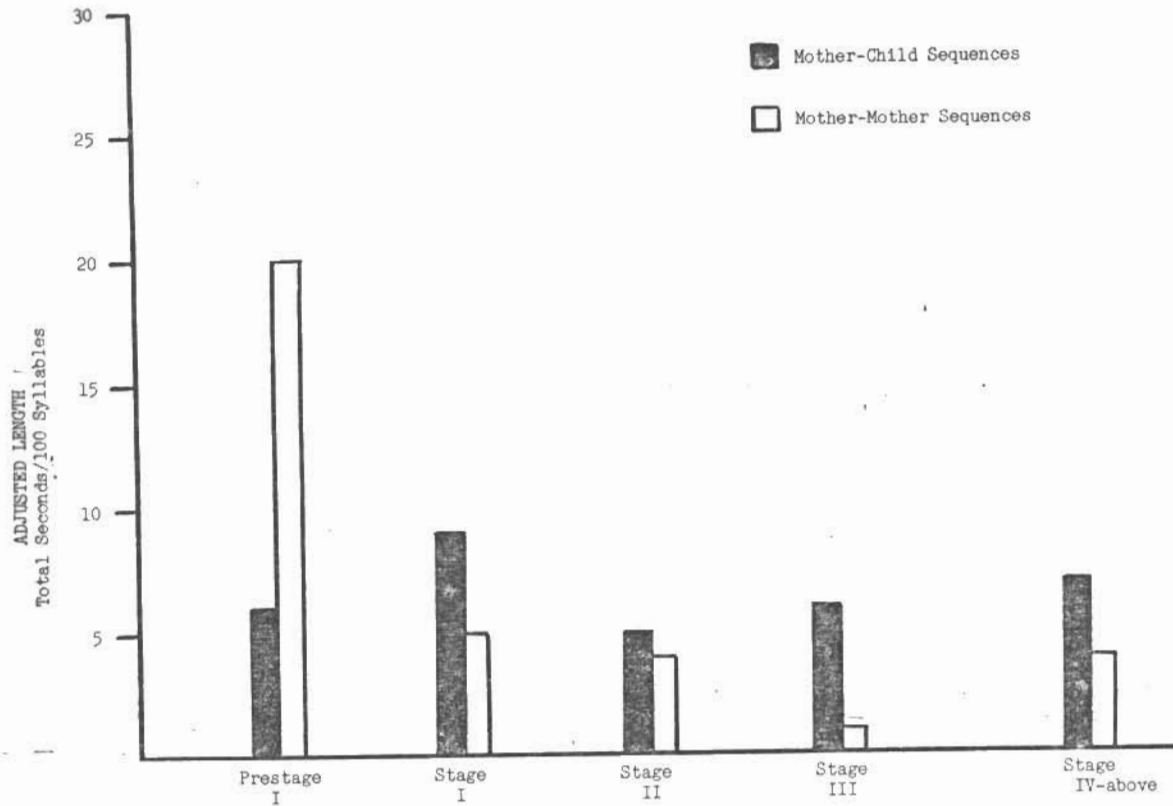


Figure 7. Length of dyadic pauses ( $\geq 270$  milliseconds) using acoustic and nonverbal information in mother-child and mother-mother sequences.

Overall, the adjusted length in mother-child sequences was similar throughout all stages. This would suggest that when the child responded, she seemed to take approximately the same amount of time. However,

as Figure 8 shows, a further analysis indicated differences in the adjusted length following speaker-selected and self-selected transition-relevance places. There were only slight differences in the duration of pauses following speaker-selected transition-relevance places across

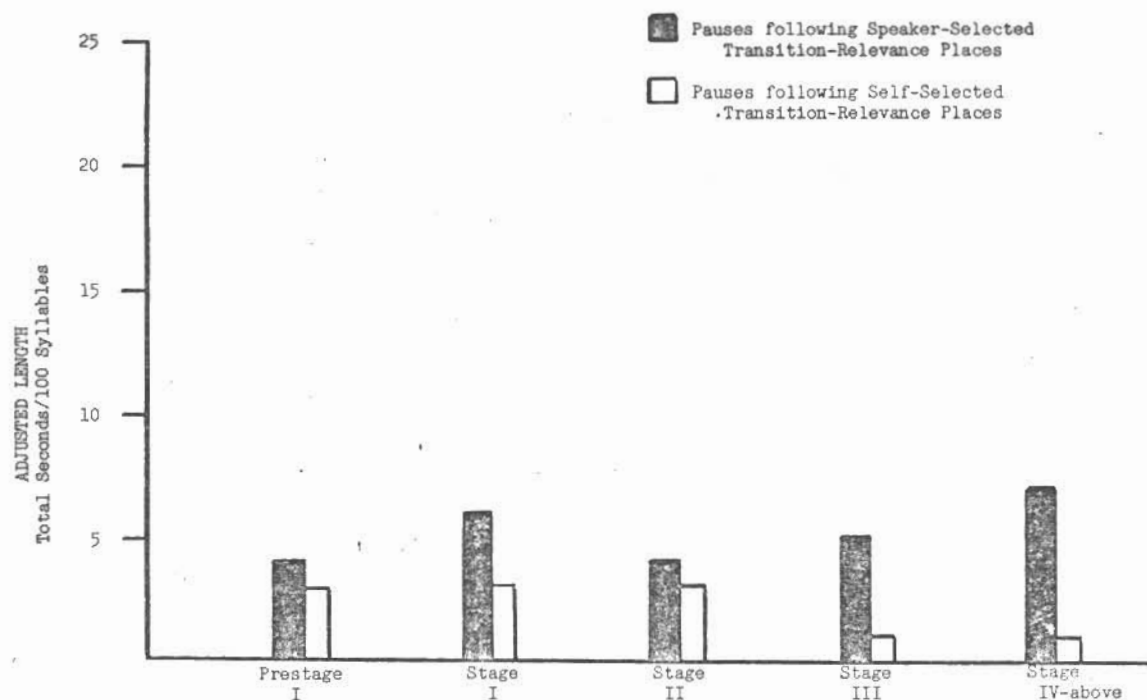


Figure 8. Length of dyadic pauses ( $\geq 270$  milliseconds) using acoustic and nonverbal information in mother-child sequences. Comparison of dyadic pauses at speaker-selected TRP's and self-selected TRPs.

stages although a slight increase was noted during Stage IV and above. However, there was a decrease in the adjusted length following self-selected transition-relevance places from Stage II on. This finding suggested that Annika responded more quickly at self-selected transition-relevance places than at speaker-selected transition-relevance places. These figures suggest speaker-selected transition-relevance places were more difficult for her.

In analyzing the differences in length of dyadic pauses in mother-child sequences, contingency of the child's responses was considered (responses which maintained the mother's topic by answering questions, adding relevant information and/or repeating part or all of the mother's

utterance). Contingent responses were high even beginning in Prestage I. In Prestage I, 74% of Annika's responses were contingent, 81% in Stage I, 86% in Stage II, and 93% in Stage III and above. The contingent responses were further analyzed by determining whether or not they followed a speaker-selected or self-selected transition-relevance place. The percentage following speaker-selected transition-relevance places was consistently higher at all stages of development as compared to self-selected transition-relevance places (Figure 9). It is possible

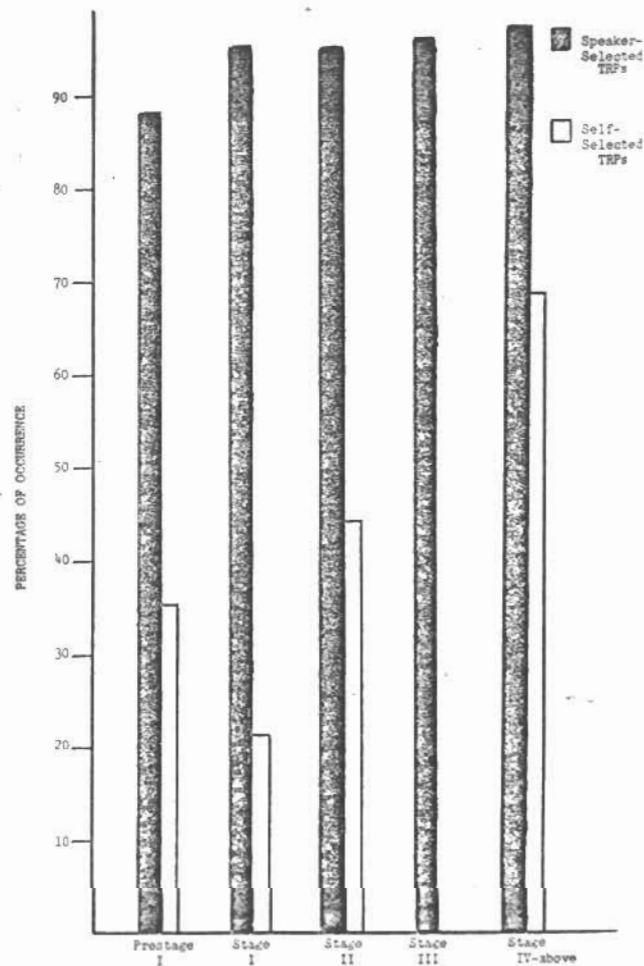


Figure 9. Comparison of percentage of occurrence of contingent responses following speaker-selected and self-selected TRPs.

that contingency of response may also affect the adjusted length of pauses, with the result being longer dyadic pauses. The contingency may also contribute to the increase in perceptible pauses found during Stage IV.

Another change apparent in the adjusted length of pauses (Figure 7) is shown in mother-mother sequences. The adjusted length of pauses in these sequences decreased, with the greatest difference occurring between Prestage I and Stage I. The fact that the adjusted frequency of mother-child sequences also increased during this same period suggests that the mother was not having to wait to see if her child would respond.

Figure 10 compares the mother-child sequences with the mother-adult interaction. At all MMLU stages the adjusted length of pauses during the mother-child sequences approximated or was shorter than the adjusted length during mother-adult interaction.

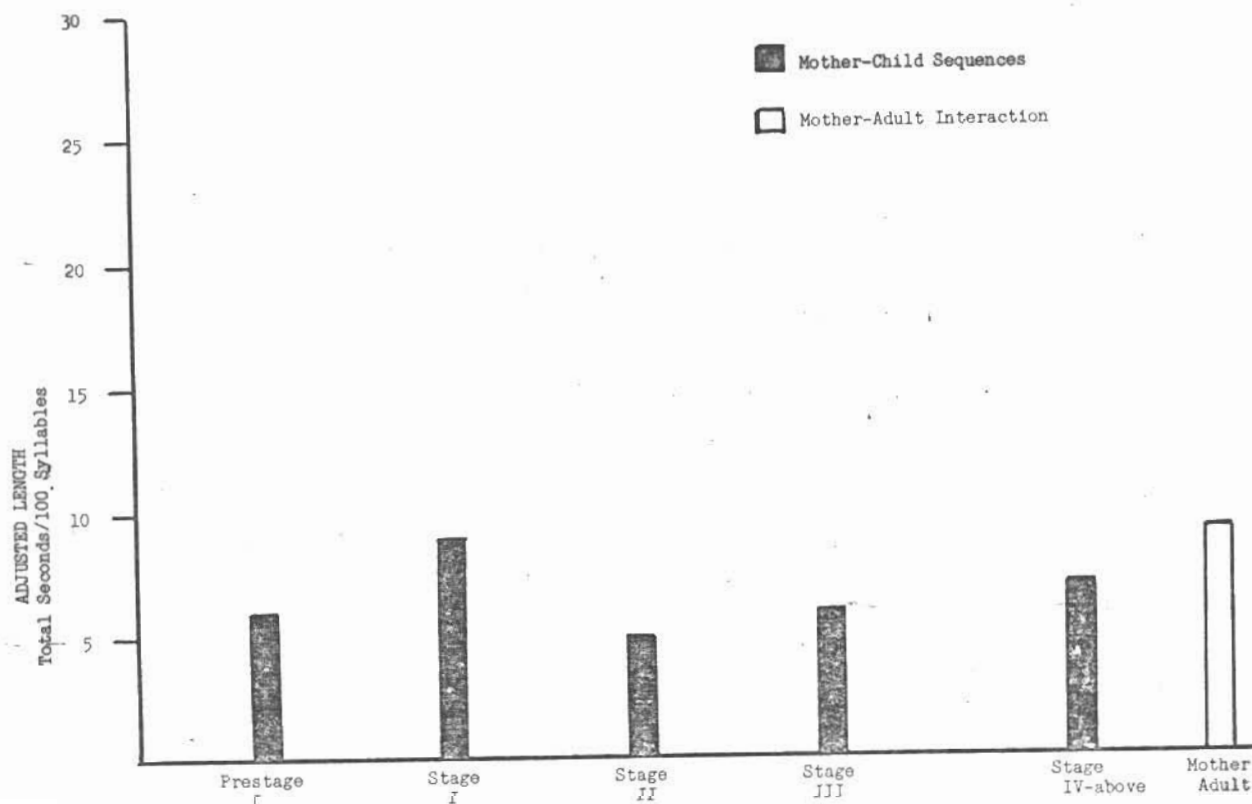


Figure 10. Length of dyadic pauses ( $\geq 270$  milliseconds) of mother-child sequences and mother-adult sequences.

### Discussion

The methodological procedure used in this study has been standardized in structured experiments in controlled environments by O'Connell and associates (deJohnson, O'Connell, & Sabin, 1979; Kowal, O'Connell, & Sabin, 1975; O'Connell, Kowal & Hörmann, 1969; O'Connell & Kowal, 1972; Sabin, Clemmer, O'Connell, & Kowal, 1979; and O'Connell & Kowal, in press). The

results of the present study indicated that this procedure can be applied to naturalistic data and reflect its orderliness. Unfilled pauses can reveal orderliness in the development of turn-taking skills in a young child. However, the percentage of perceptible pauses following transition relevance places showed a slight decrease from Prestage I through Stage III. This finding reflected the child's responding in a shorter period of time and resulted in dyadic pauses which were below the 270 millisecond cut-off point. Perceptible pauses of this magnitude may not be serving as a major turn-yielding signal in the later stages of linguistic development.

Since the percentage of perceptible pauses showed a slight decrease, the pausological method utilized in the study did not provide information on all transition relevance places. However, it did provide more information than one would expect by chance alone (i.e., from 57 to 75% of transition relevance places identified).

The results also supported the usefulness of analyzing both acoustic and nonverbal information when studying the turn-taking system. The combination is needed if the study has not been designed to control or eliminate nonverbal responses. As Duncan (1976) has noted, backchannel responses include head nods and shakes. Therefore, information regarding one aspect of the child's development of turn-taking skills is overlooked if these responses are omitted from the analysis. The overall effect of the nonverbal information on the adjusted length of dyadic pauses was to decrease the length at the first four stages of development. The effect of this information on the adjusted frequency was to increase the frequency of responding at all stages. This information indicated that the child was responding in less time and more frequently than the acoustic data alone had indicated.

The present study demonstrated that both the adjusted frequency and length of dyadic pauses in the mother's speech changed as a function of the child's mean morpheme length of utterance. The adjusted frequency of dyadic pauses followed by a child response increased generally through the stages of development with a corresponding general decrease in *mother-mother sequences*. These data support Snow's (1977) and Lieven's (1978) results that turn-taking increases as the child becomes linguistically capable of responding.

The adjusted length of dyadic pauses in the mother's speech also changed as a function of mean morpheme length of utterance as shown by an overall decrease in the length of these pauses. A difference was noted in the length of pauses following speaker-selected transition-relevance places as compared to self-selected transition-relevance places. The dyadic pauses following speaker-selected transition-relevance places remained approximately the same across all stages whereas there was a decrease in adjusted length of dyadic pauses following self-selected transition-relevance places. These data suggested that the child responded

more quickly at self-selected transition-relevance places which might indicate that speaker-selected transition-relevance places were more difficult for her. This information supports Bloom's (1974) suggestion that the child will be communicatively more effective in those situations where the utterance originates from the child's own mental representation rather than having to rely on linguistic information only. This latter situation might occur more frequently at speaker-selected transition-relevance places than at self-selected ones.

### Summary

The data on adjusted frequency and length of dyadic pauses in the mother's speech during interaction with her child revealed that both changed with increases in the child's linguistic skills. Although the overall frequency of transition relevance places followed by perceptible pauses decreased slightly, the adjusted frequency of perceptible pauses followed by a child response increased from Prestage I to Stage I with a levelling off for the later stages. This finding suggested that the child was becoming a more active participant in the turn-taking process from Stage I onward. The combined results of frequency of dyadic pauses suggested that perceptible pauses were not serving as a major turn-yielding signal at least in the more advanced linguistic stages of development.

The adjusted length of pauses in the mother's speech decreased with advances in the child's linguistic development. The data analyses also indicated that although adjusted length of pauses following speaker-selected transition-relevance places in mother-child sequences remained approximately the same across stages, the length of pauses following self-selected transition-relevance places during these sequences decreased across stages. These latter pauses were always shorter in length than those following speaker-selected transition-relevance places which suggested that these speaker-selected transition-relevance places were more difficult for the child.

The results also indicated that the adjusted frequency of dyadic pauses in mother-child sequences was never as low as the adjusted frequency of dyadic pauses during mother-adult interaction which supported the child-oriented goal of these conversations. However, the adjusted length of dyadic pauses during mother-child sequences was similar to that found for mother-adult sequences. This was true for all stages of development.

The present study utilized only one mother-child interaction and, therefore, these interpretations must be considered characteristic of their interactions. The study also investigated only one of several possible turn-yielding cues. Future research should investigate other possible turn-yielding signals. The analyses should include the types

of turn-yielding cues utilized, how these cues are modified over time, and how these cues relate to the adult turn-taking system.

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## Appendix A, cont.

Tape Number	Date	Sample Number	Weeks Between Samples	Reasons Tape Not Used
10	3/31/76			
11	4/7/76			
12	4/14/76	11	4	
13	5/4/76			
14	5/10/76	12	4	
15	5/27/76			
16	6/10/76	13	4	
17	6/25/76	14	2	
18	7/7/76			Another child present
19	7/21/76			Another child present; no book activity or conversation
20	8/11/76	15	7	
21	8/27/76			Another child present
22	9/17/76	16	5	
23	10/4/76			
24	10/18/76	17	5	
25	12/4/76	18	7	No taping between 10/18/76 and 12/4/76
1	1/1/77	19	4	
2	2/5/77	20	5	
3	2/24/77	21	3	
4	3/24/77			No book or conversational activity
5	4/28/77	22	9	
6	5/26/77	23	4	
7	12/14/77	24	30 (4 mo.)	No taping between 5/26/77 and 12/14/77