Mothers' Intervention Strategies in a Structured Question-Answer Dialogue

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MOTHERS' INTERVENTION STRATEGIES IN A STRUCTURED QUESTION-ANSWER DIALOGUE

by

Marcia C. Hill

A Thesis
Submitted to the Faculty of The Graduate College in partial fulfillment of the requirements for the Degree of Master of Arts Department of Speech Pathology and Audiology

Western Michigan University Kalamazoo, Michigan April 1984
MOTHERS' INTERVENTION STRATEGIES IN A
STRUCTURED QUESTION-ANSWER DIALOGUE

Marcia C. Hill, M.A.
Western Michigan University, 1984

Language intervention strategies of the mothers of
ten normal and ten language-impaired children were
compared. An experimenter asked each child questions
of varying difficulty about a storybook, in the presence
of the mother, who was free to help her child as needed.
Both the children's and mothers' utterances were coded.
The frequency and types of mothers' strategies were
analyzed. The analysis revealed that mothers of normal
children intervened significantly more often than mothers
of language-impaired children, when all interventions were
considered. However, the differences were not significant
when only interventions related directly to the prede-
termined questions were considered. The strategies which
the mothers of normal children used significantly more
often at certain difficulty levels were focusing, repeating, checking and sustaining: positive, whereas
mothers of language-impaired children used significantly
more informing and sustaining: negative at the hardest
level of question difficulty. Clinical implications of
the findings are discussed.
ACKNOWLEDGEMENTS

I wish to express my appreciation to all who have made the completion of this thesis possible. A special thanks to my advisor, Dr. Michael Clark, for his time, encouragement, guidance and personal interest in this project. Thank you to my committee members, Dr. Nickola Nelson and Dr. Fran Lohr, for their interest, valuable suggestions and reading of the manuscript. I also thank Mr. William Dawson for his technical assistance and encouragement.

My appreciation is also extended to other colleagues in the Speech Pathology and Audiology Department who assisted by observing the experimental sessions and performing reliability measures. And to those mothers and children who participated in the study, a special thanks for their willingness and cooperation.

Finally, my deepest appreciation goes to my family who have been constantly supportive of my endeavors. Thanks especially to my husband, Kelvin, for his consistent emotional support and helpful suggestions during the past several months as this study was being completed. Thank you also to my parents for their love and influence in my life.

To all these, I remain thankful.

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CHAPTER I

BACKGROUND AND PURPOSE

Introduction

During the past several years much of the research on language acquisition has focused on the interaction between mother and child. A variety of categorization systems for language have been designed, some of which relate to strategies that mothers use in teaching language to their children. A number of studies have included both normal and language-disordered children. However, the differences between mothers of language-impaired children and mothers of normally developing children are not yet fully understood. As a contribution to this area of knowledge, it is the purpose of this study to describe and compare the language intervention strategies used by mothers of normally developing and language-impaired children in a moderately structured question-answer dialogue.

Literature Review

Historical Perspective

Throughout the 1960's, research focused on a child's linguistic growth, without particular attention to the effects of the parent-child interaction. This may have
been due in part, to the belief, based on writings of Chomsky (1957, 1965), that language input was of minimal importance. As a result of this influence, research primarily considered the syntactic knowledge of the child.

In the 1970's, however, greater attention was given to the parent-child interaction as it became apparent that language of parent to child was highly structured in ways that would seem important for language learning. Consequently, researchers took a new view of the acquisition of language and began to consider the total verbal environment and the way a mother's input facilitates her child's language development.

Studies of Normal Mother-Child Dyads

Considerable research has recently been devoted to the study of the mother-child interaction. A number of studies have considered the mother's input with regard to its formal characteristics. For example, Snow (1972, 1977) analyzed mother's speech in two separate investigations. Her first study involved mothers making a tape which their children would hear later. The results indicated that mothers simplify their syntax in comparison with adult-adult conversations; however, their speech style was not as simple and redundant as if they had been talking directly with their children. This was interpreted as demonstrating that mothers received cues from the
children that aided them in making appropriate adjustments. In a second study, Snow (1977) analyzed mothers' speech in free play and book reading situations. Results suggested that language complexity was proportional to the communication load placed on the child and the linguistic task involved. During free play, when mothers received immediate feedback from the children, mothers reduced speech complexity since social communication and understanding were of primary importance. On the other hand, mothers increased language complexity while reading books, since the language was supported by the pictures and feedback from the child was not necessarily crucial in relaying a communicative message. In a summary of her findings, Snow (1977) pointed out that mothers' simplicity and redundancy are primarily based on what cues they receive from their children, in what the children say or try to say, in addition to their attentiveness and comprehension of the language situation.

Moerk (1974) also studied mothers' form of input when he analyzed the interactions of mothers and children (ages 2;4, 3;6 and 5;0 years) at home and tabulated the behavior of both. Results showed that the mothers' average statement length had a significant correlation with the average statement length of the children. Although the mean length of utterance (MLU) varied for each mother, the average length appeared to be two to three syllables above
that of the child. Moerk concluded that mothers adapt their language on a preconscious level to the capacities of their children's language skills.

A common theme which emerges from the findings of these studies is that mothers are sensitive and versatile in the adjustments they make when communicating with their children. Other researchers have reported similar findings (Broen, 1972; Furrow, Nelson and Benedict, 1979) with respect to the mother's language input.

A special type of interaction which appears to dominate the mother-child interchange is the question-answer sequence. A study conducted by Helfrich-Miller (1983), concerning speech acts of mothers and children, suggested that mothers used questions more frequently when interacting with their children for the purpose of keeping the conversation flowing. In her analysis, Helfrich-Miller divided the 18 children (3;0 - 3;3 years) who participated in the study into high and low control groups based on conversational episodes that were child-initiated. The children in the high control group initiated more than 50% of the episodes, talked more and used more complex sentence patterns, whereas those in the low control group initiated less than 50% of the episodes. The children in the high control group had similar linguistic abilities to their mothers. Helfrich-Miller suggested that, as the child exhibited more control in the interaction, the
mother subsequently became less controlling, implying that there is also a reduction in the number of questions asked by the mother.

Howe (1980) has also indicated that questions from an adult may be used as a means of encouragement, as an opportunity to supply semantic and syntactic information, as a teaching tool for a child to engage in turn-taking, as a means for conversing with a child and holding his attention, or for instructional purposes.

Moerk (1974), in his study of verbal mother-child interactions proposed that the question-answer exchange was important because it helped the child understand and use the rules of transformation. In his 1976 study he also noted that mother-initiated interactions revealed two types of exchanges. The most frequent type was the question-answer in both its simple and expanded form; next most frequent was the mother's model and child imitation. The results of Broen (1972) and Snow (1972) also supported the conclusion that question-answer interactions occur frequently in mother-child dyads and that mothers are able to adjust and reformulate their questions if their children do not respond appropriately.

A third focus which appears in the literature about mother-child interactions is that mothers, in addition to being communicators, are also language teachers (Snow, 1979). Two studies have particularly noted the teaching
strategies of mothers. Greenbaum and Lombardino (1983) analyzed the conversational model of the child and mother. Their 18 subjects were in one of three age groups: 12, 24 and 48 months. The language teaching strategies used by mothers of 12 month old children were primarily labelling, referencing and imitation. It appeared that the major purpose of these strategies was to draw the child's attention to salient features or aspects of the interaction. In contrast, strategies used by mothers of 24 month olds in order of frequency from most to least were imitation, expansion and parallel talk. These strategies provided the child with more immediate linguistic feedback. The authors noted few teaching strategies used with 48 month old children. All of the language teaching strategies observed were thought to be positive techniques in mother-child interactions.

Similarly, Moerk (1976) observed the teaching strategies of mothers. He studied the home environment of 20 mother-child dyads when the children ranged in age from 1;9 to 5;0 years. Three types of "teaching" activities used by mothers were specifically noted: (a) mothers provide new information to the child, (b) mothers merely state the child's utterance and thereby confirm a child's previously learned rules, and (c) mothers correct children's utterances in attempts to eliminate incorrectly conceived rules. Moerk (1976) claimed that mothers were inventive
and highly versatile in supplying teaching opportunities. These findings suggest that mothers not only adjust to their children's language ability, but engage in specific types of teaching strategies. These teaching opportunities enhance the child's language learning in that the child incorporates the mother's suggestions into his own speech, indicating that he was attentive and was able to benefit from the verbal exchange (Moerk, 1976).

In addition to studies conducted on mothers' formal language characteristics, including question-answer dialogues and teaching strategies, is research concerning the semantic (MacNamara, 1972; Van der Geest, 1977; Snow, 1979; Retherford, Schwartz & Chapman, 1980) and turn-taking (Greenbaum & Lombardino, 1983; Helfrich-Miller, 1983) aspects of interactions.

In summary, studies have been conducted on a variety of aspects of mother-child interactions. Most suggest that mothers are teachers of language and are sensitive to their children's linguistic abilities. Mothers adjust appropriately in terms of MLU, grammatical complexity and content; they engage their children in question-answer dialogues and provide models and feedback so that communication is satisfactory and rewarding for both participants.

Studies Involving Language-Impaired Children

The literature reviewed thus far suggests that
mothers play a significant role in their children's language development. Researchers have attempted to determine whether the interaction of language-impaired children and their mothers falls short of that observed in normal circumstances. In addition to the mother's role in the interchange, a child has a responsibility to respond and a response is necessary for an effective conversation to take place. With a child's interjections and mother's responsiveness a conversation may run smoothly (Elliot, 1981). A number of ways in which this interaction may be mismatched have been suggested. Nelson (1973), in her study of children in the early stages of language development, states that the parent, to a large extent, sets the context of learning for the child. On the other hand, the child also has some freedom to choose what he would like to talk about. Therefore, it is reasonable to assume that if the mother and child are not focusing on the same elements, communication is hindered. Elliot (1981) similarly proposes that mothers must be willing to listen to children's attempts and follow through with topics, using the children's utterances as starting points.

Several studies have focused on a comparison of the verbal environments of language-delayed and normal children. For example, Cramblit and Siegel (1977) compared one normally developing child with one language-impaired child matched according to age. The results of this
small study indicated that adults had a tendency to respond to the language-impaired child with simple, short and fluent speech patterns as compared to the peer. These findings were in accordance to the adjustments that mothers made with younger normal children (Snow, 1972; Bellinger, 1980; Moerk, 1976).

Discourse adjustments were studied by Conti-Ramsden and Friel-Patti (1983) among mothers of language-impaired children. The language-impaired children, ages 3;6 - 5;4 and non-language-impaired children, ages 1;7 - 2;9 were matched according to MLU based on language samples elicited by clinicians and mothers. Although mother-child conversational exchanges between the two groups were not significantly different during a 15 minute free play situation, the proportion of turns initiated by the children differed. The language-impaired children initiated fewer conversational turns, which changed the style of discourse between mother and child. The initiations of the two groups of mothers, however, were not significantly different. These authors proposed that in order to maintain a conversation, mothers of language-impaired children would have to initiate more often. Both groups of mothers used basically the same number of requestives, assertives and directives when talking with their children.

Bondurant, Romeo and Kretschmer (1983) also analyzed the linguistic input of mothers to language-impaired and
normal children during a structured and an unstructured task. Significant differences were found between the two groups in both situations in the mothers' MLU, questions, directions and acceptance utterances. The results indicated that mothers of language-delayed children provided shorter utterances, more directive and fewer acceptance utterances than the mothers of normal children. Mothers of language-delayed children also tended to reject the children's proposals more frequently. Bondurant, Romeo and Kretschmer (1983) concluded that the linguistic information (i.e., content) for each group was basically the same and that the differences between the groups may be attributed to the differing abilities of the mothers to make adjustments to their children's language.

In another study (Lasky & Klopp, 1982), the procedure again involved a language sampling technique during a free play situation. As a group, there appeared to be no significant differences between the mothers of normal children and mothers of language-impaired children in the frequency of verbal or nonverbal interactions or MLU. Mothers of normal children did tend to use more questions than commands whereas mothers of language-impaired children used commands more frequently than questions. However, these frequencies were not significantly different between the two groups. In their discussion, Lasky and Klopp (1982) stated that the primary difference
in the interaction patterns of the two groups was related to the linguistic maturity of the children, with frequency of nonverbal and verbal behaviors of the mothers increasing when the children were less responsive. Furthermore, "mothers and their normal children seemed to be more together, more synchronized in this language learning game" (Lasky & Klopp, p. 17). All of these authors (Cramblit & Siegel, 1977; Lasky & Klopp, 1982; Conti-Ramsden & Friel-Patti, 1983; Bondurant, Romeo & Kretschmer, 1983) infer that the mothers of language-impaired children are not locked into an impoverished speech style, but are influenced by their dyad partners. Again, this suggests that mothers make speech adjustments and implies sensitivity to aid in their children's language learning.

Wulbert, Inglis, Kriegsmann and Mills (1978) found measurable differences between the home environments of 20 language-delayed children as compared to normal and Down's Syndrome subjects. The Caldwell Inventory of Home Stimulation was used to assess the environment of the home. This inventory is divided into six categories: (a) emotional and verbal responsivity of the mother, (b) avoidance of restriction and punishment, (c) organization of physical and temporal environment, (d) provision of appropriate play materials, (e) maternal involvement with the child and (f) opportunities for variety in daily stimulation. Results showed that the homes of language-
delayed children scored significantly below both normal and Down's Syndrome groups in five of the six categories. The greatest discrepancy appeared in those categories involving mother-child interactions (categories a, b and e).

The authors concluded that most mothers of language-delayed children did not find the interaction with their children to be a pleasurable experience, in apparent contrast to the mothers of normal children. Rather than entering into a dialogue, the mothers of language-delayed children typically lived in a parallel existence with their children and felt burdened by their responsibility.

In addition to mother-child interactions, a study conducted by Wellen and Broen (1982) yielded information about ways in which siblings adjust to the needs of language-impaired children. Wellen and Broen sought to determine the ways in which older siblings interrupt younger siblings, language-impaired or normal, who were asked to answer questions about a story. The analysis of the results indicated that older siblings are cognizant of the language impairment and adjust appropriately. However, the adjustments of the older siblings to language-impaired children generally involved direct answers to the questions rather than hints or prompts as were given to the younger normal children. Consequently, the language-impaired children were not given many opportunities to respond verbally. The authors concluded that older
siblings possibly became impatient and unwilling to wait for the language-impaired child to respond. Within a family interaction this interruption may be detrimental to the exchange between family members and language-impaired children.

To summarize, it appears that mothers of language-impaired children adjust linguistic input that is similar to that of mothers of younger normal children, yet the interactions with their children may differ. The differences are thought to be primarily due to the language-impaired children's discourse style.

Categorization Systems for Communication Techniques

Various methods have been developed for classifying and analyzing language teaching strategies adults use with children. Although different labels have been assigned by the authors, a number of similarities can be seen among the systems. The classification systems are reviewed and compared below.

Contingent Queries

Garvey (1977) defined the speech act as a "linguistically encoded social gesture by means of which a speaker is able to convey to a hearer a possible message" (p. 65). She proposed "contingent queries" as a possible modular component of discourse. As noted below, the query serves
the needs of the listener (the mother in these instances) for regulating the course of conversation.

Unsolicited queries are categorized and defined as follows:

1. **Repetition.** Speaker repeats an utterance as a result of listener's query (e.g., Speaker (S): He knows a friend of yours. Listener (L): A what? S: A friend of yours).

2. **Confirmation.** Speaker confirms listener's understanding by saying "yes," (e.g., S: I visited a friend. L: Jerry? S: Yes).

3. **Specification.** Listener requires specific information from speaker and initiates it through a query such as Who? or Which one? (e.g., S: Joe Bush knows a friend of yours. L: Who? S: That Italian fellow).

4. **Elaboration.** Listener requires speaker to give additional information to the initial utterance (e.g., S: I hear a noise. L: Where? S: Outside).

There are also solicited contingent queries where the speaker intentionally evokes a query from the listener, prior to executing a major speech act:

1. **Summons-answer.** Speaker elicits a query from listener, which has a similar function as the unsolicited query of "specification," (e.g., S: Cindy? L: What? S: I think I'd better go out and see if I can find a garage to fix our tire--so bye).
2. **Rhetorical gambit.** Speaker explains assertion he originally wanted to express by eliciting a *What?* from the conversational partner, which sets the stage so he can proceed with confidence (e.g., S: Do you know what I want to be when I grow up? L: *What?* S: I wanna be a fireman. L: Oh).

3. **Appreciation sequence.** Speaker and listener usually engage in a playful sequence; the conversation is intended as a joke but again elicited by *What?* (e.g., S: You're you--you want to know your nickname? L: *What?* S: Lisa).

The various kinds of contingent queries appear to elicit different types of replies from conversational partners. Garvey explains that the insertion of a contingent query seeks to clarify and rectify the speech act through a verbal response; however, it does not take the floor away from the original speaker. Essentially contingent queries seek to repair a conversation. This could explain mothers' intentions in asking contingent queries when conversing with their children.

The data indicate that children do issue and respond appropriately to a number of different contingent queries, some of which are only differentiated by intonation. Garvey claims that the importance of contingent query sequences is two-fold to children engaged in conversation with adults. First of all, a query from an adult provides
a child with immediate feedback on intelligibility or acceptability of his last utterance. Secondly, a child can employ a query to check his understanding of all or part of an adult's message.

**Topic Relevant Acts**

A second classification system is presented by Corsaro (1979) who describes adult topic relevant acts (TRA's). He divided these TRA's according to forms and functions, resulting in eight separate categories, six involving the interrogative form.

1. **Question with answer.** The adult asks a question and then provides a possible answer (e.g., "What was he doing there, was he dribbling the ball around?").

2. **Tag question.** This may serve two specific purposes for the adult, either to bring the child into the conversation via a question or check whether the child is interested and understanding the conversation. Tag questions primarily restrict the child's possible answers to yes/no (e.g., "Right, Buddy?").

3. **Leading question.** Adult does not provide child with the answer, but has a good idea of how the child will respond. Basically the adult uses this question to enable the child to elaborate on a previous utterance; consequently, it is a mechanism that may be considered as a teaching-learning situation (e.g., "What did Jim think..."
about your room?" "Did you ask Jim how the fishes were?"").

4. Directive question. This requests the child to behave in specified ways, or to do something the adult wants him to do (e.g., "Want to turn that T.V. off now?").

5. Summons. This is an attention-getting device which is seldom actually used in an interaction (e.g., "You know what?"). In Corsaro's study peers used this device more frequently than adults.

6. Information request. The major feature of this interrogative TRA is that it does not limit the child to a specified answer (e.g., "What do you plan to do today?").

7. Informative (noninterrogative). Rather than asking the child for information the informative provides information for the child relevant to the topic of conversation (e.g., "The cows will need to be fed tonight"). Of all the TRA's, Corsaro states that the informative is the least controlling.

8. Directive (noninterrogative). The adult tells the child to perform in some specified manner rather than asking him to do so (e.g., "Turn off the T.V.").

In order to determine the frequency of adult TRA's, Corsaro measured each with one child, between the age of 2;6 and 3;4 years, with three different adults, himself, the child's father and the child's mother. During an interaction in the child's home, Corsaro and the father engaged in similar adult TRA's, using them as a means of
control and incorporating most interrogative types. Although the mother was found to use various TRA's, she did not use the most controlling (question with answer, tag question and leading question) of these types as frequently as the men. Approximately half of the mother's TRA's were informative statements which appeared to make the child a more active participant in conversation. The author suggested that the mother's manner may have been influenced primarily by her familiarity with the child and the interactive situation. Overall, however, Corsaro's results indicated that conversations between an adult and child are adult controlled. He attributes this control to the fact that children do not have the knowledge of the adult rules for sequencing or turn-taking. Consequently they do not fill in the details as in most adult-adult conversations. Thus, to compensate for these differences, the adult assumes a controlling role.

**Dialogue Strategies**

A third categorization scheme was established by Tough (1977), who was concerned with educators encouraging language skills in their students. Her system is primarily intended for teachers, but it could also be applicable to mothers fostering language skills.

Tough classified the following as dialogue strategies:
1. **Orienting strategies** are utterances, questions or comments that give the child an opportunity to respond but also indicate a possible direction of thinking. They invite the child to think in a particular way about a topic (e.g., "What happened at your party yesterday?").

2. **Enabling strategies** are divided into three separate categories:
   
   a) **Follow-through** enables the child to give a clearer and more detailed response, possibly in answer to why? or how? questions (e.g., "How did you cut the wood?").

   b) **Focusing** enables the child to focus on a particular part of a picture or conversation by using closed questions or comments to draw the child's attention to an essential feature (e.g., "Look at this kitten. What is it doing?").

   c) **Checking** enables the child to re-think about his answer and fill in any information missing (e.g., "It's not a boat is it?").

3. **Informing strategies** provide the child with new ideas or ways of looking at a situation or may give an extension to the child's interpretations. These ideas are given to the child to help him solve a problem and complete some idea (e.g., "I think they might have had cannons on the walls to shoot the enemy").

4. **Sustaining strategies** support the child in his comment and let him know that his listener is attentive.
These strategies may be in the form of a non-verbal response, such as a smile of encouragement or nod of agreement. They also might take the form of repetition of the child's utterance with a falling intonation and pause, encouraging the child to think further and continue his phrase (e.g., "I can see that stick makes a good mast for the sail").

5. Concluding strategies are typically utterances that end a particular topic before re-orienting the conversation. In this strategy it is important to leave the child satisfied, either by recognition of his final comment or acknowledgment of his difficulties (e.g., after child explains game adult says, "That will be a good game to play at your party").

Although the above strategies are the primary categories, Tough acknowledges that there may be additional ones yet to be identified.

**Wellen and Broen's Categories**

In a fourth system, the strategies are again identified in a different perspective. Wellen and Broen (1982) conducted a study in which the interruptions with normal and language-impaired children were identified. Even though these were specifically categorized as interruption types, it is feasible that these too may be used as intervention strategies by mothers. These "interruption" types
are also general categories and may require more specific subcategories included within each category to provide additional detail. Wellen and Broen identified five types of interruptions:

1. **Direct answer.** The older sibling answered the question directly.

2. **Repeat.** The older sibling gave an exact repetition of the question.

3. **Rephrase.** The older sibling rephrased a question, primarily into an easier form.

4. **Prompt.** The older sibling gave hints or prompts in an attempt to elicit the correct answer.

5. **Irrelevant.** The older sibling gave comments that were irrelevant to the questions.

The first four types of interruption strategies may be possibly be used by a mother as helpful intervention strategies, providing further opportunity for the child to answer direct questions.

**Summary of Categorization Systems**

In summary, authors have taken various viewpoints in studying how adults may aid in conversations with young children. Corsaro (1979), Tough (1977) and Garvey (1977) were each concerned with the effectiveness of the interaction and how adults may obtain missing information from a child. Of the four types of strategies described,
Corsaro's and Tough's are the most comprehensive and provide accurate information for dialogue scoring. Above all, however, research has focused primarily on the adult-child interactions with normal children (with the exception of Wellen and Broen, 1982). Analysis has been based primarily on conversations in free play situations. These analyses of exchanges between adults and normal children provide a substantial basis on which to judge adult interactions with language-impaired children.

Purpose of Study

The current study was designed to compare the exchanges between mothers of language-impaired children and mothers of normally developing children, and to study the mother-child interactions in a moderately structured question-answer dialogue. The situation was set up with the experimenter reading a story to the children, whose mothers sat close by. The experimenter then asked predetermined questions at specific locations in the book. The exchanges of the mothers and children were coded and analyzed.

It was expected that there would be measurable differences between these two groups of mothers with regard to the types of intervention strategies used when their children had difficulty in answering specified questions. By identifying the types of strategies mothers used to
facilitate communication, it was theorized that information might be made available to speech-language clinicians so that they could provide more appropriate guidance to parents about their roles as "language teachers" with their language-impaired children.

Experimental Hypotheses

The research hypothesis was that there may be significant differences between the mothers of normal and mothers of language-impaired children in the types and frequencies of strategies used.

Specific research questions were:
1. What are the intervention strategies of mothers of normal and mothers of language-impaired children?
2. Are there significant differences in the intervention strategies used by the two groups of mothers?
3. Do the intervention strategies used by the mothers correspond to the level of difficulty of the questions asked by the adult reading the story?
4. What are the frequencies of intervention strategies used by each group?
CHAPTER II

METHODOLOGY

Subject Selection

Ten mothers of normal children and ten mothers of language-impaired children were the subjects for this study. The normal children were selected from preschool programs in the Kalamazoo area and the language-impaired children were currently enrolled for language and articulation intervention at the Charles Van Riper Language, Speech and Hearing Clinic. Each of the mothers completed a written informed consent form and confidential questionnaire (see Appendices A, B and C) prior to any formal sessions with the experimenter to ensure her understanding of and cooperation in the study. Information provided on the questionnaire aided the experimenter in ensuring that the children were appropriate for the groups they were selected to represent.

The language-impaired children in this study qualified as language-impaired by the fact that they had been diagnosed by a certified speech-language pathologist as having delayed speech and language but no demonstrable emotional, physical or auditory impairment. The normal children in the study qualified on the basis of a normal language sample and normal performance on a receptive language
measurement. The children's normal development was supported by information provided on the questionnaire by mothers who reported no concerns regarding their children's physical or speech and language development.

The process of matching and selecting subjects for the normal and language-impaired groups took place prior to the experiment and included the following steps:

1. **Receptive language measure** - The Peabody Picture Vocabulary Test (PPVT, Dunn and Dunn, 1981) was administered to each child to determine or substantiate the child's general receptive language abilities. Form M was selected since the majority of clients enrolled at the Charles Van Riper Language, Speech and Hearing Clinic had already been administered Form L of this test. Although the PPVT scores were not the primary criterion for selection, they were intended to corroborate the normal development or language impairment of the child. The language-impaired and normal children did perform differently on the PPVT. The mean percentile ranking for the language-impaired children was the 33rd percentile, with a range from 8 to 84; the mean for the normal children was at the 77th percentile, with a range from 37 to 99. (The 84th percentile score was 39 points above the next highest language-impaired percentile score.)

2. **Expressive language measure** - Each child's mean length of utterance (MLU) was determined on the basis of
a 100 utterance language sample elicited by the experimenter prior to the experimental session. In order to reduce topic variability among the children, the same toys were used in each sample obtained. The toys available to each child were: a Fisher-Price playhouse with furniture and toy dolls, playdough, a farmset with animals, colored plastic blocks, a Shirt Tails Colorform and a puzzle. During this first session, the mother was present in the room to help the child feel at ease in the situation. The mothers were free to interact with their children if they so desired; however, the primary interaction was between the experimenter and child. The language sample was recorded on a portable General Electric cassette tape recorder with an external microphone which was placed on the table in front of the child. Each child was provided the opportunity to choose one toy to play with at the table and to make additional choices as the interaction progressed. The total time for this informal play period was 30 to 40 minutes. During this time spontaneous talking was encouraged from the child through storytelling, role-playing situations and conversation related to the playing activities.

Within one week of the first session the language sample was transcribed to determine whether the child was appropriate for the study. All MLU's were based on 100 complete intelligible utterances. The transcription began
on utterance #25 so that the initial adjustment period of the child was deleted and hopefully the sample was more representative of the child's speech outside the clinic room. The counting of morphemes was completed in accordance with rules as outlined by Brown (1973), as discussed by Chapman in Miller (1981). Individual utterances were divided by pauses and intonation. Fillers such as "um," "oh," were not counted as morphemes whereas "yeah" and "uh huh" were. Children's repeated efforts at a single word or phrase were only counted once.

The aim of the MLU analysis was to choose children whose level of language ability was consistent with levels expected for children between the ages of three and four years. For the purposes of this study it was advantageous to have younger normal children and language-impaired children matched according to their language ability, judged by MLU, so that they would experience similar difficulty in answering the questions.

According to the predicted MLU and MLU ranges reported in Miller's Table of "Predicted MLUs and MLU ranges within one standard deviation of predicted mean for each age group" (1981, p. 27), children with MLUs as low as 2.47 (1 SD below the predicted MLU for 36 months) and as high as 5.34 (1 SD above the predicted MLU for 48 months) could be accepted as child subjects. The selected language-impaired children were from 47 to 64 months old and the
normal children were 37 to 47 months. As a further measure, each child's predicted MLU (determined by the equation in Miller's table) was compared with actual MLU. The language-impaired children fell short of predicted MLU by an average of -1.14 (range -2.52 to -.51) whereas the normal children exceeded predicted MLU by an average of .73 (range .37 to 1.24). Four language-impaired children fell short of predicted MLU by more than 1 SD and three normal children exceeded predicted MLU by more than 1 SD. (See Tables 1, 2 and 3 for a summary of the children.)

To ensure reliability of the transcription, a graduate student in speech-language pathology independently transcribed 15 of the 100 utterances. This person was not present at the time of the language sample recording and did not have the advantages of contextual cues, adaptation to the child's pattern of articulation errors or prolonged interaction with the child. The reliability was estimated on five randomly selected transcripts from each group by calculating differences between the MLU as determined by the experimenter and the MLU determined by the reliability transcriber. The average difference in MLU for language-impaired children was .10 (range 0 to .20) and for normal children the difference was .23 (range 0 to .67).

3. Articulation - Children with articulation errors were included in the study as long as it was possible to
<table>
<thead>
<tr>
<th>Sex</th>
<th>CA (mo.)</th>
<th>MLU</th>
<th>Predicted MLU</th>
<th>Predicted SD</th>
<th>Predicted MLU ± 1 SD</th>
<th>Predicted MLU</th>
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<td>-1.79</td>
<td>39.1 - 50.9</td>
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TABLE 3

PPVT Summary of the Two Groups of Children

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<th>PPVT SS</th>
<th>PPVT %ile</th>
<th>Sex</th>
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obtain a 100 utterance language sample of intelligible sentences or utterances. All language-impaired children displayed articulation errors. When clarification of what the child said was required, the experimenter repeated the child's utterance or consulted with the mother. The intelligibility of the language-impaired children was estimated to be 75 to 80% whereas the normal children were approximately 95% intelligible.

4. **Educational Level of Mothers** - Information on the educational status of the mothers was obtained on the questionnaire (Appendix B). Although both father's and mother's educational levels were requested, only the mother's was considered in the analysis process since the mother-child interaction was particularly under observation.

The number of years of education was ranked according to the following socioeconomic scale (Duncan, Featherman & Duncan, 1972):

- 3 - Did not enter high school
- 4 - Entered high school but did not graduate
- 5 - Graduated from high school but did not enter college
- 6 - Entered college but did not receive a degree
- 7 - Received bachelor's degree
- 8 - Took graduate work or received advanced degree

In both normal and language-impaired groups, all mothers had at least graduated from high school. Four of the 10 mothers of normal children had entered college but received no degree, 1 mother received an associate degree and 3
mothers had completed some graduate work. Five of these mothers also reported having occupations involving employment outside of the home. Two of the 10 mothers of language-impaired children had entered college but received no degree, 1 mother had received an associate degree and 1 other mother had completed some graduate work. Five of the 10 mothers also indicated employment outside of the home. The median education level was 6.25 and 5.33 for the mothers of normal and language-impaired children respectively.

5. Hearing Screening - All child subjects passed a hearing screening at standard frequencies from 500 to 4000 Hz at 0 to 15 dB HL. Hearing screenings were generally scheduled on the same day that the language sample was gathered and the PPVT administered. In one case, however, a child had an ear infection on the day of the first session and consequently the hearing screening was postponed until the experimental session, at which time the child passed within normal hearing limits. The experimental session was scheduled within two weeks of the first session, at which time no mother reported her child to have an ear infection. All hearing screenings were administered in a quiet, carpeted clinic room using a portable Beltone (Model 10D) or Tracor RA 216 audiometer.
Experimental Procedures

The experimental format was adapted from Wellen and Broen's (1982) study. Immediately prior to the experimental session, each mother was asked to accompany her child as he/she was read a story. Mother, child and experimenter then entered the test room where the storybook, entitled *The Bike Lesson* (Berenstain & Berenstain, 1964), and a portable Sony cassette taperecorder with an external microphone were placed on the table. The experimenter sat to the left and the mother to the right of the child so that each was able to see the pictures and listen to the story. The following directions were given to the child prior to reading the story:

Today we'll be reading a story. As we go along I'm going to ask you a few questions and I want you to answer them the best you can, OK?

The following directions were then given to the mother:

Today you don't have to feel like a bystander. As we go along, some of the questions will be more difficult than others. You may help ___ if you want to, but you don't have to.

These instructions were given specifically so that the mothers would respond naturally to any difficulty the child might encounter while answering the questions. After the instructions were presented, the experimenter proceeded to read *The Bike Lesson* to the child and ask predetermined questions at specific points throughout the
story (see Appendices D and E).

Question Formulation

The questions were identical to those used by Wellen and Broen (1982). It is uncertain, however, whether the questions were asked at identical locations in the story. Wellen and Broen do not document in their paper where the questions were asked in the sequence of story events; therefore the experimenter's best judgments were used to determine these locations.

A total of 30 questions were asked, with 10 questions at each of three levels of difficulty. Level 1 questions (Easy) consisted of "what," "who," "where," and yes/no questions. Level 2 questions (Harder) included "how many," "how," and "why" questions. Level 3 questions (Hardest) consisted of "when," "how often," "if-then," and "how long" questions. These three levels of difficulty were derived by Wellen and Broen (1982) from several investigators' research on the acquisition of questions (Brown, 1968; Cazden, 1970; Ervin-Tripp, 1970).

Each child was asked a question once and given sufficient time (maximum of 15 seconds) to respond. If there was no response, or a child said "I don't know," apparently without even thinking about an answer, and the mother chose not to intervene, then the experimenter would occasionally repeat the question once. The question
was either repeated exactly the same or with a carrier phrase such as, "Can you tell me..." or "Do you know...". As much as possible the experimenter's eye gaze was either on the child or the pictures of the book so that nonverbal cues were not given to the mother. If the child made no verbal response and began to fidget in his/her chair or made verbal indications of not knowing the answer, the experimenter would then proceed with the story by continuing to read, turning the page or making such comments as, "Let's read some more," "Let's see what happens," or "Let's turn the page," depending on what appeared appropriate at that specific time in the story. These comments were occasionally used as a link to the rest of the story after the mother and child completed their dialogue. Other than this minimal verbalization, the experimenter refrained from making any additional comments specifically related to the child's answers or to the questions asked. To enhance the naturalness of the situation, the experimenter responded to queries of the child such as, "Is this your room?" or "Where are the toys?"

Each experimental session was observed (via one-way mirror) by a graduate speech-language pathology student, who took note of any verbal or gestural cues given to the child by the mother that would not be evident by listening to the audiotape. The observer had a list of questions and was asked to write the number of each question down on
the page and any nonverbal actions of either the child, mother or experimenter that related to it. These comments were then included in the final transcription of the interaction and coded accordingly. Upon completion of the experimental session, the experimenter also documented general observations of the mother-child interaction throughout the story, and the behavior and responsiveness of the child to the story. Specific nonverbal behaviors that were not recorded by the observer generally were recalled from the sounds and remarks of the experimenter and mother while the tape was later transcribed.

Transcription

A transcription of the audiotaped interaction was completed within five days of the original taping. The transcription included any comments made by the child, mother or experimenter, and nonverbal or gestural cues by any of the members of the interaction as recorded by the observer or as indicated by the audiotape. Independent dialogues between mother and child not concerning the experimental questions were also transcribed. The actual story narration was not included in the transcription.

Interjudge reliability of the transcription of the experimental session was obtained by having a graduate student independently transcribe the conversation concerning two questions from each level of difficulty for five
randomly selected normal subjects and three questions from each level for five language-impaired subjects. More questions were subjected to a reliability check on the language-impaired children because of their articulation errors making intelligibility more difficult. The reliability was estimated by dividing the number of words in agreement by the total number of words transcribed. The reliability for the language-impaired group was 83% agreement for the children and 97% agreement for the mothers' utterances. A possible explanation for a lower agreement on the children's utterances may be that the articulation errors made it difficult to understand and interpret, and the transcriber was not there at the time of the taping so that nonverbal or gestural cues were not available to her. The transcription was taken solely from the audiotape. The majority of the disagreements did not affect the overall message, however. The disagreements were primarily with respect to inflections (pull/pulled), pronouns (them/him) and articles (a/the). A 95% agreement was established on the normal children's utterances and 98% agreement on the mothers' utterances.

Pause Times

A Bruel & Kjaer Level Recorder (Type 2305) was used to measure the pause times between the comments of the mother, child and experimenter. The paper speed was
10 mm/sec., writing speed was 500 mm/sec. and r.p.m. = .12.

The audiotape was connected to the Level Recorder in such a way that the tape could be heard simultaneously with the writing of the pen, allowing background noise at the time of the taping to be marked as such on the paper. Times were measured for each of the 30 questions, coded appropriately, and then included in the transcript. All time measurements were rounded off to the nearest second.

Three specific pause times were measured. The initial response time (INR) was coded to indicate the time it took the child to respond with an answer. When the answer was nonverbal (nodding of the head, etc.), particularly on the easy level yes/no questions, the (INR) was approximated, generally being one second, based on the average time it took other children to respond. The pause time that the experimenter regulated was that time between the child's or mother's comments and continuation of the story or another question. This time was coded as talkpause (TP) in all transcripts. The occasional intervention of a mother before the child had an opportunity to respond was coded as mother speaks (MS). Specific values of these time measurements are discussed in the results section.

Coding of Strategies

From the experimental transcripts described above,
intervention strategies used by the mothers were coded at each of the three levels of difficulty. The coding categorization system was initially adapted from Tough's (1977) categories. The codes in parentheses were designed for the purpose of computer analysis. The five categories retained and adapted for this study included (see Appendix F for a more detailed definition and examples of each category):

1. **Focusing (F0)** - a strategy which deliberately focuses the child's attention toward a specific aspect or feature of the story which he apparently has not considered.

2. **Checking (CH)** - a strategy which is initiated by the mother to help her child rethink his/her answer and gives the impression that he/she is not on the right track.

3. **Informing (IN)** - a strategy which provides the child information, facts, explanation or a specific interpretation as it relates directly to the question. The strategy may occur in two different forms: declarative or interrogative. The declarative states the answer explicitly or adds missing information to make the child's answer more correct or more complete. When the mother uses an interrogative, the child is generally offered a choice or proposal which he/she chooses and/or confirms.

4. **Sustaining: Positive (S-P)** - a strategy which provides the child with encouragement and indicates the
mother's approval of how the child is performing. This may take the form of a compliment such as "Good" or "That's right." The overall impression is that, "You're doing fine, keep going" or "You've done fine."

5. **Concluding Strategy (CS)** - a strategy which is generally used by the mother to bring the dialogue to an end. Her comments are usually neutral in nature indicating that she has nothing more to contribute to the conversation. (This definition differs from Tough's (1977), in which the mother acknowledges what the child has said prior to re-orienting the conversation.)

As coding was undertaken, other categories appeared necessary to describe different functions from those already identified. These additional categories served to explicitly describe the rest of the intervention strategies used by the mothers. The categorization system was then expanded to a total of 12 categories by an addition of the following seven:

1. **Repeating/rephrasing (RP)** - a strategy in which the mother brings the child back to the task by repeating/rephrasing her or the examiner's question. The repetition may be exact or may be modified into an easier form that maintains the original communicative force of the question.

2. **Confirming (CO)** - a strategy by which the mother acknowledges and verifies the child's reply by repeating
it in a declarative or interrogative form. Generally the utterance implies that all participants in the dialogue have reached a mutually agreeable and satisfactory answer.

3. **Sustaining: Negative (S-N)** - a strategy by which the mother makes a comment that is reprimanding for the child. It may occur when the child has given the wrong answer or is not paying attention to the task at hand. Tone of voice is also helpful in distinguishing it from requesting.

4. **Requesting (RQ)** - a strategy which asks the child to do something, usually pertaining to answering the question. The request may be direct such as, "Show us" or indirect as in, "We just can't hear you, Honey."

5. **Excusing (EX)** - a strategy by which the mother offers excuses at times when the question may be too difficult for the child and he/she has been unsuccessful in answering appropriately. The mother's comment provides a way out for the child and appears to "excuse" the child from answering the question.

6. **Interpreting (IT)** - a strategy which is used most often to benefit the third party involved in the interaction. The mother interprets the child's statement in such a way that the third person knows the background of the comment. The mother may also ask the other participant directly whether the child's statement was
understandable.

7. **Instructing (IS)** - a strategy which focuses the child's attention on some other aspect of the story, apart from the specific question asked. This strategy often occurs when the mother wants to help her child understand the story, or when she wants to test her child's comprehension.

Coding of the categories within the transcripts was done by "flagging" each mother's utterance with the code for its category of function. The specific code for the intervention strategy was followed by the code for the level of question. For example, an utterance in the transcript may have looked like this:

M: What bear is it (FO) (ES)?

(FO) = focusing strategy used by mother
(ES) = easy level question

In addition to the coding of the mother's utterances, the child's answers to the questions asked by the experimenter were also coded as follows (see Appendix G for further explanation and examples):

1. **Appropriate (AP)** - child's answer is consistent with the story or, when answering hardest level questions, the answer reflects the information with some accuracy.

2. **Incomplete (INC)** - child answers a question partially but is thinking in the right direction or when the mother asks the child to expand his/her answer to increase its correctness.
3. **Inappropriate (INA)** - child gives no response, or answers with "I don't know," irrelevant comments or answers that do not reflect his understanding of the story.

Since the mother could discuss a question at length with her child, the child's responses for an individual question were numbered successively as, for example, (INA), (INA2), etc. or (AP), (AP2), etc. or (INC), (INC2), etc. For instance:

Q: Why can't the baby bear ride the bike?
C: Hm (INA) (HD).
M: Why can't the baby bear ride (RP) (HD)?
C: They're chasing them (making comment about picture).
M: They sure are (CO).
Why can't that baby bear ride the bike (RP) (HD)?
C: Because he said no (INC2) (HD).
M: Oh, who said no (FO) (HD)?
C: Him (points to Daddy bear) (AP3) (HD).
M: That's right (S-P) (HD).

These successive numberings were done only on the child's utterances that were directly related to the question. Otherwise, they were left blank. As in the example above, "They're chasing them" was not coded since the child was making a comment about the bears getting chased by the farmers. However, when the mother brought the child back to the task and the child attempted an answer, then these comments were numbered successively. When the child reached an appropriate answer (as defined by that level of difficulty), coding of the child on that particular question was terminated even if the mother and child continued...
to have a dialogue about some aspect of the question. When the experimenter repeated a question, the second response or second opportunity for a response was coded as (INA2), (AP2) or (INC2) since the question repetition was considered in these instances as a type of intervention. As in coding the mother's utterances, the child's were also coded in combination with the level of difficulty of the question. As in the above example, the child's last response was coded as (AP3) in addition to the (HD) difficulty level.

After coding was completed on each transcript, the entire transcript, including nonverbal and parenthetical comments, was loaded onto floppy disks via the Apple IIe personal computer. The codes were inserted into square brackets or "flags" to facilitate retrieval and analysis by the Systematic Analysis of Language Transcripts (SALT) program (Miller & Chapman, 1983), as discussed later.

Interjudge Reliability

Interjudge reliability for coding was established by a graduate student independently coding the mother's and child's initial responses to randomly selected questions from the middle questions (#8 - 22) of each transcript. A total of 9 questions, 3 from each level of difficulty for each of the 20 subjects, was coded. All mother's utterances were categorized into one of 11
defined categories (instructing statements were not included in the reliability check since they were apart from the question) and the child's initial response was coded as one of the three options: appropriate, inappropriate or incomplete.

Prior to the coding of the utterances of the transcripts, a one hour training session was given in which the definitions and examples of each category were explained. The student was able to ask questions during that time to clarify any apprehensions or misinterpretations. Questions apart from those being coded for reliability were given to the student for practice examples. After these had been coded, the experimenter and student then went over them together to verify the reasons for coding them in such a manner.

When the coder felt reasonably confident with the definitions of the 11 categories as well as the criteria for appropriateness of the child's answers, the 20 transcripts were presented to him. For each transcript, questions #1-7 and #23-30 retained the coding of the experimenter for reference and examples. On questions #8-22, all the codes were deleted, except for the level of difficulty. Color coding was used to assist the coder in determining what utterances needed to be categorized. The student then independently coded those questions. Although there was no conferring between the coder and
experimenter on any of the specific utterances for the reliability check, the coder did have the option of asking for further examples or clarification of a particular category.

Upon completion of the coding, reliability was estimated by dividing the total number of utterances to be coded into the total number agreed upon for these selected utterances. Mother's and child's utterances were treated separately. The cumulative reliability was 89% for the children's responses and 82% for the mothers' utterances.

Analysis Procedures

All bracketed flags were retrieved via the Search program of SALT (Miller & Chapman, 1983). Prior to Search, each transcript was checked by the Transcript Utility program. The information obtained from each transcript was divided into three separate sections:

1. **Time Measurements** - talkpause (TP), mother speaks (MS), and initial response time (INR) were retrieved for each of the transcripts.

2. **Child's Responses** - all inappropriate (INA, appropriate (AP and incomplete (INC responses were retrieved by combining the specific bracketed flag with the difficulty level of the question. For example, the intersection of (INA and (ES), (INA (HD), (INA (HS) and so forth for each level of difficulty was retrieved.
3. Mother's Strategies - focusing (FO), repeating (RP), informing (IN), checking (CH), confirming (CO), sustaining: positive (S-P), sustaining: negative (S-N), concluding strategy (CS), requesting (RQ), interpreting (IT) and excusing (EX) were all retrieved in combination with the question difficulty level. For example, (FO) (ES), (FO) (HD), etc. Instructing (IS) codes and other strategies, i.e., checking, sustaining: positive, etc. used by the mothers not in conjunction with the actual answer to a question were not retrieved by the intersection with a difficulty level.

In all instances when flags were retrieved by the Search program, the information was printed to include the context of at least two lines before and after the coded line. Finally, the total of each strategy was determined for each mother at each of the three question levels.
CHAPTER III

RESULTS

In this chapter, a discussion of the results will be divided into three sections. The frequency of mothers' interventions will first be considered as it relates to the children's appropriate, inappropriate or incomplete responses. Secondly, the results concerning the types of strategies mothers use at the various levels of question difficulty will be presented. Finally, the pauses of the child, experimenter and mother will be considered in relation to the level of question difficulty.

Frequency of Intervention

One of the research questions of this study was whether mothers of normal children intervened more frequently than mothers of language-impaired children during a question-answer dialogue. Since the questions were asked of the children in the presence of the mother, it appeared appropriate to consider the children's responses as the key to the frequency of mothers' interventions. It is logical that the mothers would gauge their interventions depending on whether their children responded with an appropriate, incomplete or inappropriate answer. Therefore, as a basis for the analysis, the various categories
of children's responses were tabulated.

As a first consideration, the sums of initial appropriate and eventual appropriate responses were independently tabulated for each group of children, at the three levels of question difficulty. "Eventual" refers to the child's response, whether it be appropriate, inappropriate or incomplete, after the mother's intervention on a particular question. The group of normal children initially answered, on the average, 67% (range 30 - 100%) of the easy, 38% (range 10 - 60%) of the harder and 31% (range 10 - 60%) of the hardest level questions. The percentages of eventual appropriate answers of the normal group were, on the average, 87% (range 60 - 100%) for easy (an increase of 33%), and 69% (range 30 - 100%) for the hardest level questions (an increase of 38%).

In comparison, the language-impaired children initially answered appropriately, on the average, 80% (range 40 - 100%) of the easy, 45% (range 10 - 80%) of the harder, and 29% (range 10 - 60%) of the hardest level questions. Their eventual appropriate answers were, on the average, 93% (range 60 - 100%) for easy (an increase of 13%), 71% (range 30 - 90%) for harder (an increase of 26%), and 52% (range 20 - 80%) for hardest level questions (an increase of 23%). Table 4 provides a summary of these percentages. The unrelated two-tailed t test showed a significant difference between the two groups for the
<table>
<thead>
<tr>
<th></th>
<th>Initial (AP)</th>
<th>Range</th>
<th>Eventual (AP)</th>
<th>Range</th>
<th>Increase</th>
<th>% Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Children</td>
<td>Easy</td>
<td>67</td>
<td>30 - 100</td>
<td>87</td>
<td>60 - 100</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Harder</td>
<td>38</td>
<td>10 - 60</td>
<td>71</td>
<td>40 - 100</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>Hardest</td>
<td>31</td>
<td>10 - 60</td>
<td>69</td>
<td>30 - 100</td>
<td>38</td>
</tr>
<tr>
<td>Language-Impaired Children</td>
<td>Easy</td>
<td>80</td>
<td>40 - 100</td>
<td>93</td>
<td>60 - 100</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>Harder</td>
<td>45</td>
<td>10 - 80</td>
<td>71</td>
<td>30 - 90</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>Hardest</td>
<td>29</td>
<td>10 - 60</td>
<td>52</td>
<td>20 - 80</td>
<td>23</td>
</tr>
</tbody>
</table>
initial appropriate responses to the easy questions at \( p \leq 0.01 \) (\( t(18) = 3.88, t = 2.878 \)). However, at the harder and hardest question levels, \( t \) values were nonsignificant (\( t = 1.24 \) and \( t = .426 \), respectively).

As a second step in the analysis, a set of three ratios based on the frequencies of the mothers' interventions were determined for both groups at each level of question difficulty. Each ratio was a way of expressing the mothers' tendencies to intervene in their children's answers, and the ratios differ from each other in the way that "opportunity" is defined. The number of interventions in each ratio included only those strategies related to specific questions.

The first ratio was based on the assumption that mothers had 10 opportunities to intervene, i.e., one opportunity for each question asked of the child for each level of difficulty. This ratio was estimated by the following equation:

\[
\text{Ratio 1} = \frac{\text{number of interventions of mother}}{10 \text{ opportunities}}
\]

For example, the number of interventions, at the hardest level of difficulty, of one mother of a language-impaired child was 26, which was then divided by 10 to equal a ratio of 2.6. Ratio 1 was similarly determined for the remaining mothers, then the mean of all 10 mothers was determined to be 1.7, with a standard deviation of 1.64. Table 5 summarizes the range, mean and standard deviation
### TABLE 5

**Intervention Ratios of Two Groups of Mothers for Three Levels of Question Difficulty**

<table>
<thead>
<tr>
<th>Ratio</th>
<th>Normal</th>
<th>Language-Impaired</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Range</td>
<td>Mean</td>
</tr>
<tr>
<td>Ratio 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Easy</td>
<td>0 - 4.0</td>
<td>1.7</td>
</tr>
<tr>
<td>Harder</td>
<td>0.4 - 8.2</td>
<td>3.3</td>
</tr>
<tr>
<td>Hardest</td>
<td>0.7 - 3.6</td>
<td>2.3</td>
</tr>
<tr>
<td>Ratio 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Easy</td>
<td>0 - 9.0</td>
<td>4.4</td>
</tr>
<tr>
<td>Harder</td>
<td>0.7 - 9.1</td>
<td>4.7</td>
</tr>
<tr>
<td>Hardest</td>
<td>1.2 - 6.2</td>
<td>3.3</td>
</tr>
<tr>
<td>Ratio 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Easy</td>
<td>0 - 4.5</td>
<td>1.9</td>
</tr>
<tr>
<td>Harder</td>
<td>0.4 - 3.8</td>
<td>2.0</td>
</tr>
<tr>
<td>Hardest</td>
<td>0.8 - 4.2</td>
<td>2.0</td>
</tr>
</tbody>
</table>

Note. For all ratios, the numerator was the same number, namely number of interventions. The ratios differ according to the number used in the denominator as a way of expressing opportunities for intervention, as described in the text.
of Ratio 1 at each level of difficulty. The table values are based on the raw data. These values for the easy and harder question levels were next modified using a square root transformation since the means and standard deviations showed a relationship. No transformation was required for the hardest question level data since these showed no such relationship.

The BMDP2V Statistical Software (Dixon, 1983) was used for the analysis. Analysis of variance of the data from Ratio 1 indicated that there were marginal differences (p < .06) in the frequency of intervention between the two groups (normal mothers intervening more frequently). There was also a significant difference (p < .01) in the frequency of mothers' intervention according to the difficulty level. This result basically demonstrates that mothers intervened more frequently as the questions became more difficult. There were, however, no significant differences (p < .05) between the intervention frequencies of the mothers of normal and language-impaired children when the difficulty and group interaction was analyzed. These results are summarized in Table 6.

The second ratio was based on the assumption that the frequency of the mothers' interventions may be dependent on the children's initial inappropriate and incomplete responses. Therefore, these were combined in the denominator to represent the number of opportunities for
TABLE 6
Ratio 1 - Analysis of Variance Summary

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Tail Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>3.33853</td>
<td>1</td>
<td>3.33853</td>
<td>3.98</td>
<td>0.0613</td>
</tr>
<tr>
<td>Difficulty</td>
<td>3.66655</td>
<td>2</td>
<td>1.83323</td>
<td>10.78</td>
<td>0.0002</td>
</tr>
<tr>
<td>Difficulty/Group</td>
<td>0.24035</td>
<td>2</td>
<td>0.12013</td>
<td>0.71</td>
<td>0.5001</td>
</tr>
</tbody>
</table>

the mothers to intervene. These initial responses of the children were thought to be cues to the mother that her child needed help. See Table 5 for a summary of the range, mean and standard deviation of Ratio 2 based on the raw data. Ratio 2 was determined using the equation:

\[
\text{Ratio 2} = \frac{\text{number of mothers' interventions}}{\text{initial inappropriate + incomplete responses}}
\]

For example, using the same mother of a language-impaired child as in Ratio 1, 26 was divided by 10 (the initial inappropriate + initial incomplete at the hardest level of question difficulty) to equal a ratio of 2.6. The mean for this group of 10 mothers was 2.3 with a standard deviation of 1.72.

Once again analysis of variance showed marginal differences between the two groups (p < .06) without respect to the question difficulty level. When taking into consideration the difficulty, and the difficulty and group
interaction, these differences were nonsignificant. It might be noted that the effect of difficulty was highly significant in Ratio 1 when analyzed but not significant in the present case. This is probably an indication that mothers' frequency of intervention for the initial inappropriate plus incomplete responses did not differ with respect to the level of question difficulty. See Table 7 for a summary of these values.

TABLE 7

Ratio 2 - Analysis of Variance Summary

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Tail Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>4.60994</td>
<td>1</td>
<td>4.60994</td>
<td>3.84</td>
<td>0.0658</td>
</tr>
<tr>
<td>Difficulty</td>
<td>1.17624</td>
<td>2</td>
<td>0.58812</td>
<td>1.63</td>
<td>0.2093</td>
</tr>
<tr>
<td>Difficulty/Group</td>
<td>0.30680</td>
<td>2</td>
<td>0.15340</td>
<td>0.43</td>
<td>0.6562</td>
</tr>
</tbody>
</table>

Ratio 3 was based on the assumption that mothers' intervention strategies would be contingent on any (not just the initial) inappropriate and/or incomplete responses of the children. The equation used to determine this ratio was:

\[
\text{Ratio 3} = \frac{\text{number of interventions of mother}}{\text{all inappropriate + incomplete responses}}
\]

Using the same mother as before as an example, 26 was divided by 22 to equal a ratio of 1.2 for the hardest level
of difficulty. The mean of this ratio for the mothers of language-impaired children was 1.2, with a standard deviation of 0.82. See Table 5 for a summary of the Ratio 3 ranges, means and standard deviations based on the raw data. Results from analysis of variance of these data are shown in Table 8. In this case, differences for any of the three variables: group (p<.16), difficulty (p<.83) and the interaction between the difficulty and group (p<.82) were nonsignificant.

TABLE 8
Ratio 3 - Analysis of Variance Summary

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Tail Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>5.34017</td>
<td>1</td>
<td>5.34017</td>
<td>2.12</td>
<td>0.1626</td>
</tr>
<tr>
<td>Difficulty</td>
<td>0.32500</td>
<td>2</td>
<td>0.16250</td>
<td>0.19</td>
<td>0.8270</td>
</tr>
<tr>
<td>Difficulty/Group</td>
<td>0.33033</td>
<td>2</td>
<td>0.16517</td>
<td>0.19</td>
<td>0.8245</td>
</tr>
</tbody>
</table>

Types of Strategies

A second question asked in this study dealt with the types of strategies used by the two groups of mothers at each of the three levels of question difficulty. In order to graphically represent the popularity of the specific strategies, percentages were calculated. Figures 1, 2, 3 and 4 demonstrate the differences between the strategies.
Figure 1. Mothers' intervention strategies when their children were answering easy questions.

Mothers of Normal Children

Mothers of Language-Impaired Children
Figure 2. Mothers' intervention strategies when their children were answering harder questions.
Mothers' of Normal Children

Mothers' of Language-Impaired Children

Strategies

Figure 3. Mothers' intervention strategies when their children were answering hardest questions.

% of Each Group's Total Interventions
Figure 4. Mothers' intervention strategies in dialogues not related to the 30 questions.

Mothers of Normal Children
Mothers of Language-Impaired Children
when each group's total was used to determine the percentages. In order of decreasing frequency, the strategies that the mothers of normal children used were consistently focusing, repeating/rephrasing, informing, checking, sustaining: positive (requesting occurred more frequently than sustaining: positive at the harder question level), confirming for all the difficulty levels. Other strategies occurred with a frequency of 5% or less. In comparison, mothers of language-impaired children used different strategies at the various difficulty levels. At the easy level of difficulty these mothers used the following strategies (in order of decreasing frequency): focusing, sustaining: positive, repeating, informing, sustaining: negative, confirming, checking, requesting. For the harder level of difficulty they used: focusing, repeating, informing, requesting, checking, confirming, sustaining: positive. At the hardest level the following were used most frequently: informing, repeating, focusing, checking, confirming, sustaining: negative. The remaining strategies occurred with a frequency of 5% or less for each of the levels of question difficulty. The frequency of occurrence shows that mothers of normal children were more consistent with their intervention strategies whereas the mothers of language-impaired children varied their strategies according to the level of difficulty of the question.

As a further analysis, Chi-Square tests computed with
a calculator were used to determine whether there were significant differences between the two groups of mothers in their use of various strategies. The most frequently occurring strategies for each level of question difficulty were subjected to a Chi-square test as an initial step in the analysis. For the easy questions, confirming and requesting were collapsed to form one cell in order to meet the assumptions of the Chi-square specifically, i.e., that the expected frequency cannot be less than five in more than 20% of the cells. Concluding strategy and checking were also collapsed to form a single cell in the contingency table. The other cells contained the most frequently occurring strategies at this level: focusing, repeating, informing, sustaining: positive and sustaining: negative. When placed into a contingency table the differences between the two groups resulted in nonsignificance at \( p < .05 \) (\( \chi^2 = 9.06, \text{df} = 6, \chi^2_{.05} = 12.592 \)).

The most frequent strategies at the harder question level were: focusing, repeating, checking, informing, confirming, sustaining: positive, sustaining: negative and requesting. This Chi-square also resulted in non-significance at \( p < .05 \) (\( \chi^2 = 6.49, \text{df} = 7, \chi^2_{.05} = 14.067 \)).

The same intervention strategies were included for the hardest level Chi-square test, in addition to concluding strategy. Requesting, however, was not included since it occurred too infrequently. This Chi-square
distribution indicated significance at \( p \leq 0.01 \) \( (X^2 = 22.96, df = 7, X^2_{.01} = 18.475) \) between the two groups of mothers.

As another step in the analysis, Chi-square values were calculated to compare the two groups of mothers with respect to the individual strategies used. The assumption made for each of the contingency tables was that each response made by the children, whether it was inappropriate, incomplete or appropriate, was an opportunity for the mothers to intervene with a specific strategy. Therefore, for each level of difficulty, the total for each group changed depending on the children's performance. The frequency with which a particular intervention strategy occurred was then compared to the frequency with which no intervention or other strategies occurred. For example the contingency table for focusing (FO) at the easy (ES) level would be as shown:

<table>
<thead>
<tr>
<th></th>
<th>(FO)(ES)</th>
<th>No (FO)(ES)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>55</td>
<td>110</td>
</tr>
<tr>
<td>Language-Impaired</td>
<td>12</td>
<td>110</td>
</tr>
<tr>
<td></td>
<td>67</td>
<td>220</td>
</tr>
</tbody>
</table>

The total for the normal group (165) was determined by adding all the appropriate and inappropriate responses of the children at the easy level of difficulty. The 55 represents the frequency with which the mothers of
normal children chose to use focusing, and the 110 is the frequency that the mothers chose to use some other type of intervention strategy or did not intervene at all.

Mothers of normal children intervened significantly more frequently than mothers of language-impaired at the easy level of questions for focusing (p < .01), repeating/rephrasing (p < .02) and checking (p < .01). There were also significant differences between the two groups at the harder level of question difficulty for the following categories: focusing (p < .02), repeating/rephrasing (p < .01) and checking (p < .02). In each case, mothers of normal children demonstrated more frequent use of these strategies. For the hardest level of questions, mothers of normal children used significantly more focusing (p < .01) and sustaining: positive (p < .05) whereas mothers of language-impaired children used marginally significantly more informing (p < .05) and significantly more sustaining: negative (p < .05). The strategies which showed significantly different use by the two groups of mothers are summarized in Table 9.

In the final part of the Chi-square analysis, all the question levels were considered together. The mothers of normal children demonstrated significantly higher frequencies than mothers of language-impaired children in the use of focusing (p < .01), repeating/rephrasing (p < .01), sustaining: positive (p < .05), checking (p < .01) and
TABLE 9
Chi-square Values for Individual Strategies at Levels of Question Difficulty

<table>
<thead>
<tr>
<th></th>
<th>(FO)</th>
<th>(RP)</th>
<th>(CH)</th>
<th>(IN)</th>
<th>(S-P)</th>
<th>(S-N)</th>
<th>(CS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Easy</td>
<td>21.68***</td>
<td>5.68**</td>
<td>6.66***</td>
<td>3.89*</td>
<td>0.18</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Harder</td>
<td>6.19**</td>
<td>9.33***</td>
<td>6.04**</td>
<td>0.03</td>
<td>0.92</td>
<td>0.12</td>
<td>-</td>
</tr>
<tr>
<td>Hardest</td>
<td>15.60***</td>
<td>3.02</td>
<td>0.72</td>
<td>3.80*</td>
<td>4.32*</td>
<td>4.99*</td>
<td>0.54</td>
</tr>
<tr>
<td>All levels combined</td>
<td>39.36***</td>
<td>16.65***</td>
<td>8.56***</td>
<td>0.66</td>
<td>4.09*</td>
<td>2.38</td>
<td>6.21**</td>
</tr>
</tbody>
</table>

\[ \chi^2_{.01} = 6.635*** \]
\[ \chi^2_{.02} = 5.412** \]
\[ \chi^2_{.05} = 3.841* \]
\[ df = 1 \]
concluding strategy \( (p \leq 0.05) \).

The interventions that appeared non-related to the specific questions asked during the story were also analyzed. These were the comments that mothers made after the experimenter turned the page or following the child's answer of a specific question. Many mothers engaged in these types of dialogues and used instructing statements most frequently. Other strategies occasionally used by the mothers in these dialogues were: requesting, concluding strategy, confirming, checking, focusing, sustaining: positive, sustaining: negative and interpreting. As done for Ratios 1, 2, and 3, the frequencies of these strategies were totalled and used to determine a ratio for each mother. The denominator was 30, based on the number of opportunities mothers had with respect to the pages in the storybook. Each new page was considered to be a new opportunity for mothers to intervene, either before or after a question. An unrelated two-tailed \( t \) test showed significance at \( p \leq 0.001 \) \( (t = 24.6, df = 18, t_{0.001} = 3.992) \) indicating that the mothers of normal children intervened, in this respect, more frequently than the mothers of language-impaired children.

Pause Times

The initial response time (the time it took for a child to answer) was calculated for each group at each
question difficulty level. The initial response time, on the average, for normal children was 1.5, 2.3 and 3.0 seconds for easy, harder and hardest questions, respectively and 1.4, 2.5 and 3.8 seconds for easy, harder and hardest questions respectively for language-impaired children. The two-tailed $t$ test for unrelated means revealed nonsignificance for easy ($t = .84$), harder ($t = .343$), and hardest ($t = .64$) levels of difficulty ($df = 18$ and $t_{.05} = 2.101$).

Talk pauses (the time the experimenter waited after the child had responded to a question and before reading more of the story or asking another question) were also analyzed to determine differences, if any, between the pauses which the experimenter regulated. The pauses for easy level questions were not significantly different, as tested by a two-tailed $t$ test for unrelated means ($t = 1.46$, $df = 18$, $t_{.05} = 2.101$). There were, however, significant differences in the talk pauses for the two groups at the harder ($t = 5.15$, $df = 18$, $t_{.001} = 3.922$) and hardest ($t = 3.39$, $df = 18$, $t_{.01} = 2.878$) levels. This indicates the experimenter was waiting significantly longer on harder and hardest questions before continuing the story or asking another question with the language-impaired children. The experimenter waited, on the average, 3.8, 4.0 and 3.9 seconds, for easy, harder and hardest levels, respectively, for the normal children and 4.4,
5.6 and 5.0 seconds for easy, harder and hardest level questions, respectively, for the language-impaired children.

Seven mothers of normal children and six mothers of language-impaired children spoke prior to the children answering the question. The total frequency that "mother speaks" (MS) occurred, was 30 and 20 times, for mothers of normal and language-impaired children respectively. The average time that mothers of language-impaired children waited was 8.4 seconds whereas the mothers of normal children waited 6.2 seconds.

In summary, the children's responses, the mothers' frequency and types of strategies, and pause times were analyzed. Results indicated that the language-impaired children eventually answered more or an equal amount of questions appropriately for the easy and harder levels of question difficulty. The normal children, however, eventually answered more questions appropriately at the hardest level. Both groups were equally responsive in answering the questions as indicated by the average initial response times for each group and nonsignificance of the two-tailed t-tests. The frequency of intervention by the two groups of mothers was marginally significantly different for Ratios 1 and 2, but not significant for Ratio 3. The groups were significantly different in that mothers of normal children, for certain difficulty levels,
displayed more frequent use of focusing, repeating/rephrasing, checking, informing and sustaining: positive whereas, at the hardest level of difficulty, mothers of language-impaired children showed more frequent use of informing and sustaining: negative. The mothers of normal children also used significantly more instructing statements (comments not relevant to the test questions) than mothers of language-impaired children.
CHAPTER IV

DISCUSSION

In this chapter, the implications of the research are discussed in four sections. The first consideration involves the frequency of the mothers' interventions. The next section is devoted to the types of interventions used by mothers of both groups. In the third section, the categorization system is discussed briefly. Finally, the clinical implications of the findings are presented.

Frequency of Mothers' Interventions

The present study revealed that mothers of normal children intervened significantly more frequently than mothers of language-impaired children, when all of their interventions were considered, including those that did not immediately follow the set of predetermined questions. The differences were not significant when only interventions related directly to the set of predetermined questions were considered. The mothers of the normal children may have been more verbal in between questions because their children were younger in age, and perhaps, were not as familiar with the experience of riding a bike as the older language-impaired children. However, considering only interventions related to questions, even as the
questions became increasingly more difficult, the frequency of intervention of both groups was not significantly different. The total frequency of interventions by the mothers of normal children in all conditions was higher, however, possibly because the normal children gave more inappropriate responses overall, providing their mothers with additional opportunities to help. Mothers of language-impaired children showed a lower total frequency of interventions, but when compared with the number of their children's inappropriate replies, they appeared to be as responsive as the mothers of normal children. The lack of significant difference between the initial response times of the two groups of children is, in a way, congruent with the above findings of no significant difference in the responsiveness of the two groups of mothers. These two findings, together, suggest a responsive reciprocal interaction between the mothers and their children in both groups.

Both groups of mothers attempted to lead their children to eventual appropriate responses, suggesting that they were equally concerned that their children perform successfully on the task. On the average, however, the interventions by the mothers of normal children led to a greater increase in appropriate responses than the interventions of the mothers of language-impaired children, implying that even though the normal children initially
responded less appropriately, their mothers continued to be more persistent in obtaining appropriate responses or that their children were able to benefit more from the intervention provided.

This is demonstrated by the fact that normal children's eventual appropriate responses were 20%, 33% and 38% higher than their initial appropriate responses for the easy, harder and hardest question levels, respectively. Comparative figures for the language-impaired children were 13%, 26% and 23% for the easy, harder and hardest level questions, respectively. It should also be noted that the language-impaired group gave significantly more initial appropriate answers for easy level questions than the normal children; however, the initial appropriate answers to the harder and hardest level questions were not significantly different for the two groups. These percentages suggest that the mothers of normal children experienced more success with their intervention strategies, even though they were not significantly different from the mothers of language-impaired children in the frequency of intervention at any of the question levels.

Another way of interpreting the effectiveness of the mothers' strategies may be to consider the eventual appropriate responses of the children. At the hardest level of question difficulty the normal children obtained 69% for eventual appropriate answers in comparison to 52%
obtained by the language-impaired children. This seems to demonstrate that, when looking at eventual appropriate responses to hardest questions, mothers of normal children may have achieved more success in the use of their strategies in that the children eventually reached higher levels of appropriate answers, in addition to showing a greater improvement from initial levels of appropriate answers, as discussed above. Here, of course, it should be emphasized that the language-impaired children were, by definition, less capable language users than the normal children, and their lower level of success cannot be causally related to their mothers' behavior. Nevertheless, it is interesting that the language-impaired children were less able to benefit from their mothers' interventions, perhaps influencing their mothers' further attempts to intervene; or perhaps, the children were less successful because their mothers tended to use different types of intervention, as discussed in the following section.

The mother intervention frequencies not related to the predetermined questions asked of the children were interesting because the mothers of normal children were involved in significantly more dialogues of this type (consisting primarily of instructing strategies) than the mothers of language-impaired children. There are several possible reasons why this was so. One is that the younger normal children generally had a shorter attention span.
and were more intrigued by the unfamiliar surroundings than were the older language-impaired children, who were perhaps more interested in the story due to their personal experiences, in addition to being familiar with the clinic setting. Another possible reason is that the mothers of the normal children desired to amplify details and test their children's comprehension of the story. This may be indicative of how they normally read a story to their children.

In comparison, mothers of language-impaired children rarely engaged in dialogues not directly related to the experimenter's questions, conversing rather with their children specifically about the examiner's questions. The language-impaired children's articulation errors may have made it more difficult and time consuming for their mothers to engage in dialogues extraneous to the specific questions asked in that they possibly might have needed to clarify more utterances than they felt time allowed. In addition, the mothers of language-impaired children may have viewed the experimenter as another clinician and felt it unnecessary to intervene apart from the questions asked of their children.

It was also noted that both groups of children played a significant role in the "instructional" dialogues which were ancillary to the direct questions. Similar to Helfrich-Miller's (1983) findings, there appeared to be
low and high initiation groups of children. The impressions of the experimenter were that the language-impaired children initiated conversation extraneous to the formal exchange less frequently than the normal children, although there were individual differences among the children. The initiations of the language-impaired children had a tendency to be directed to the experimenter, perhaps causing their mothers to see intervention as unnecessary. Possibly the older language-impaired children were behaving as they were expected to in clinical therapy sessions. They may have viewed the experimenter as another clinician and consequently thought that person to be the one with whom they should converse. However, even in instances where the normal children directed a question to the experimenter, their mothers often made additional comments either to aid the child's understanding or make interpretive statements to the experimenter.

In separately analyzing the verbal characteristics of the mothers in each group, it was evident that there were individual differences among the mothers, such as their responsiveness to the children's predicament, physical proximity and tone of voice. Each mother seemed to adjust her discourse style according to what she perceived her child to be capable of comprehending and contributing to the task. Generally the mothers of normal children seemed to expect their children to more responsive than mothers
of language-impaired children, judging from the frequency of the independent dialogues they initiated. Overall, the mothers appeared to be perceptive of their children's understanding in that they responded according to the feedback they received from their children. This is consistent with Snow's (1972, 1977) theory of feedback, which she suggested as being necessary for appropriate adjustment. As Conti-Ramsden and Friel-Patti (1983) suggest, it may be necessary for the mothers of language-impaired children to take the responsibility of initiating for the sake of keeping the conversation flowing and receiving the appropriate feedback from their children.

Types of Intervention Strategies

A second question raised in this study concerns the types of strategies that mothers of normal and mothers of language-impaired children employ. The analysis of the types of strategies revealed that both groups of mothers use similar strategies but with differing frequency during a question-answer dialogue.

Mothers of normal children were most consistent in the use of five particular strategies: focusing, repeating/rephrasing, informing, checking and sustaining: positive. Focusing and repeating/rephrasing were the most frequently used at all levels of question difficulty, suggesting that these mothers thought their children were...
capable of answering appropriately after additional details were pointed out or the question was repeated or modified. Informing occurred most frequently at the hardest question level, but was relatively stable in frequency at all levels of difficulty. The use of sustaining: positive was also more frequent at the hardest level. This increased use of both informing and sustaining: positive suggests that the mothers were aware that their children were experiencing more difficulty with the hardest questions and so gave them more encouragement, as well as more of the answers. These trends were also reflected in the data of individual mothers in that each appeared to use focusing and repeating/rephrasing most often, although the absolute frequencies of the strategies varied among the mothers.

The inconsistency of the strategies used by mothers of language-impaired children, as a group, may suggest that they may know when to intervene but are less certain of how to intervene most effectively (remembering that their children were less successful in the long run). Unlike the mothers of normal children who, as a group, consistently favored the same strategies for all difficulty levels, mothers of language-impaired children favored different strategies at each level. Of course, it is not necessarily the case that the methods of intervention shown by the normal mothers should be taken as the criterion of effectiveness. All that is clear from
the data of this study is that the mothers of language-impaired children behaved differently, and conceivably the differences they showed were appropriate, since their children were different from the normal children. At the easy level questions, where their children answered more appropriately, the mothers of language-impaired children, as a group, used mostly focusing and sustaining: positive. These types of strategies are supportive and encouraging for the child. As the questions became increasingly more difficult, the strategies shifted to using more informing and sustaining: negative. This may suggest that this group of mothers knew that the questions were too difficult and possibly became impatient at their children's repeated inappropriate attempts. The high frequency of informing for the hardest level of difficulty, however, was primarily influenced by one of the most talkative mothers of a language-impaired child. Her informing strategies comprised almost half of this particular category. At the other levels of difficulty, informing was more evenly distributed among mothers of the language-impaired children.

Nevertheless, mothers of language-impaired children used significantly more sustaining: negative than the mothers of normal children when helping their youngsters answer specific questions. This finding is in accordance with Bondurant, Romeo and Kretschmer (1983) in that their...
study also showed that mothers of normal children exhibited more accepting utterances as compared to more rejecting utterances given by the mothers of language-impaired children. In the present study, this was particularly found to be the case as the questions increased in difficulty level.

The Chi-square analyses and the significant values obtained at the various levels of difficulty also support the trends as indicated by the percentages. It is evident that mothers of normal children used significantly more focusing on all levels of difficulty, more repeating and checking at easy and harder levels and more informing at the easy level and sustaining: positive at the hardest level only. The mothers of language-impaired children, on the other hand, used significantly more informing and sustaining: negative at the hardest level of question difficulty.

In retrospect, the implications drawn from the group data should also be substantiated by analyzing the individual mothers' strategies. It would be particularly beneficial to observe whether, in fact, any consistent shifts from focusing and sustaining: positive at the easy level of question difficulty to informing and sustaining: negative at the hardest level of difficulty occurred. By analyzing the individuals separately, the possibility of one mother skewing the results could be overcome.
In summary, with respect to a third research question regarding any relationship between types of strategies used and the level of question difficulty, the findings of this study indicate that no particular changes occurred in the strategy types used by mothers of normal children as the level of question difficulty increased. However, the types of strategies used by mothers of language-impaired children did appear to vary as the questions increased in difficulty. Overall, the strategies most frequently used by mothers of normal children tended to be positive techniques involving their children, whereas the mothers of language-impaired children, as a group, eventually used strategies which seemed to limit their children's participation.

Categorization System

Tough's (1977) categories of "teaching strategies" were most helpful in developing the categorization system unique to this study. The categories describing the mothers' strategies were intended to focus on the communicative aspect of dialogues and how these strategies influenced the child's responses. Of the categorization systems reviewed previously, Tough's (1977) seemed to lend itself to the inclusion of a third person in the interaction the most. Therefore, most of the categories used by the mothers were similar but some strategies evident in
this study, such as excusing and interpreting, differed from those in Tough's scheme in that they were specifically used by the mothers to include the experimenter in the dialogue. Repeating/rephrasing served a similar function in that a third party asked the question and it was the mother's responsibility to help her child complete the task. Although Tough (1977) took into consideration sustaining strategies, her description primarily related to steps that teachers can take to encourage their students. In this study, the sustaining: negative was added to recognize the fact that mothers may not always play the role of encouraging their children but may use reprimanding to bring the children back to task or to indicate their frustration at their children's inability to understand.

Clinical Implications

The results of this research indicate the need for parental participation in the speech-language therapy process. It appears that mothers of language-impaired children generally know when their children need help, yet may need additional instruction concerning how to intervene most effectively. Again, the results of this study do not permit immediate unequivocal conclusions regarding which intervention strategies would be most effective for mothers of language-impaired children to use. However,
perhaps information about those strategies which appear to be most characteristic of the approach of mothers of normal children would prove to benefit mothers of language-impaired children in the interactions with their children. The mothers of the language-impaired children in this study did in fact achieve effective intervention, as seen in the increase from initial to eventual appropriate responses by their children at all question levels, but it is conceivable that even more effective intervention would have resulted from a pattern of strategies more similar to that seen with the mothers of normal children.

Mothers specifically may need to be instructed with regard to the types of activities that lend themselves to dialogue. Based on the results of this study, it appears that story reading may enhance language learning providing that mothers interact and focus on a variety of aspects of the story. "Instructional" dialogues, i.e., those ancillary to the predetermined questions, were apparently effective for mothers of normal children in the experimental situation as a way of keeping the children's attention and filling them in on some of the pertinent details. Perhaps clinicians could ask mothers of language-impaired children to participate in similar dialogues with their children during a therapy session and suggest ways to facilitate the interaction more.

The strategies that appeared most frequently in the
transcripts of the normal children and their mothers in this study were focusing, repeating, checking and sustaining: positive, of which the first three maintained active involvement of the children in the dialogue. It is also possible that these strategies were also the most helpful, in the sense of contributing the most to the increase from initial to eventual appropriate responses. However, this hypothesis has not been directly tested in this study. It would probably be possible to do so by examining the individual dialogues related to the test questions, with particular attention to the mother's interventions and the child's progress toward appropriate responses. However, the analysis would be complicated by the fact that frequently a sequence of different strategies was used within a single dialogue. Future research may yield firmer information on this matter.

Informing was also a frequently used strategy in both groups of mothers, and probably it also has merit as a technique when a mother is helping her child answer a difficult question. In particular, when a child with a language deficit encounters a task that is too difficult, it would seem that the mother must be sensitive to his frustration in not being able to succeed. In these instances, informing would be an appropriate choice.

Most of all, clinicians must emphasize the need for successful communication and a variety of language
The mothers of language-impaired children may have to learn to be more adept in providing language experiences. With the increased involvement of parents, both in observing therapy and in providing added stimulation at home, language-impaired children's therapy may be minimized in that their improvement may be more rapid.

Future Research

An area that needs further research is that of identifying the variables of the mother-child interaction with regard to the strategies that mothers use. Specifically, it would be beneficial to investigate the effectiveness of the dialogue strategies used by mothers of language-impaired children. For instance, a clinician (or mother) could use a predominance of focusing in a task which requires the child to arrive at specific answers. The effectiveness of this approach could then be compared with the effectiveness of using a great deal of informing. The participation of the child could also be studied in a similar comparison, to determine whether one strategy is more effective than another in assisting the child to learn to initiate language more freely in a dialogue. Conceivably, there may be particular combinations of strategies which are most effective in certain situations.

In other studies concerning the mother-child interaction, it would also be profitable to make videotape
recordings of the dyad. This would allow for further
description of nonverbal cues that both mother and child
give to one another. These cues may serve different func-
tions from the verbal strategies already identified in
this study.

Another possible way to study the kinds of language
intervention strategies that were the focus of this study
would be to pair mothers of normal children with language-
impairment children and mothers of language-impairment chil-
dren with normal children in a similar book-reading task.
The strategies observed could then be compared to the ones
that the mothers used when interacting with their own
children. This type of design would control for individu-
al differences and past experiences with the clinical
process among mothers.

Summary and Conclusions

The present study revealed several findings regarding
the language interaction between mother and child in a
specific kind of structured question-answer dialogue.
Differences in the results are related to the frequency
and types of intervention strategies used by mothers of
normal children and mothers of language-impairment children
and in the eventual success of the children's responses.
The initial response times of the children were also
studied. Based on the findings of this research, the
following conclusions can be drawn:

1. Mothers of normal children did not intervene significantly more frequently than mothers of language-impaired children, although the difference between the two groups approached significance under two definitions of opportunity-for-intervention (Ratios 1 and 2).

2. Mothers of normal children engaged in significantly more "instructional" dialogues than mothers of language-impaired children.

3. Mothers of normal children used significantly more focusing, repeating, and checking, for easy and harder levels of question difficulty, and more focusing and sustaining: positive, for the hardest level of question difficulty, than mothers of language-impaired children.

4. Mothers of language-impaired children used significantly more informing and sustaining: negative, at the hardest level of question difficulty, than mothers of normal children.

5. Initial response times of the two groups of children were not significantly different at any of the difficulty levels of questions.

6. The language-impaired children initially responded appropriately more frequently than the normal children at the easy and harder levels of question difficulty; however, the two groups were similar in the
frequency of their initial appropriate responses to the hardest level of questions.

7. The eventual frequencies of appropriate responses of the two groups of children were similar at the easy and harder difficulty levels, but at the hardest level of question difficulty, the normal children obtained a higher percentage of eventual appropriate responses than the language-impaired children.
Dear Mother:

My name is Marcia Hill and am presently a graduate student in Speech-Language Pathology at Western Michigan University. As part of my degree requirements I am completing a thesis in the area of child language. My research project, under the supervision of Dr. Michael Clark, deals specifically with the development of children's language. I would like to request your help.

I am interested in finding young children and their mothers who would be willing to participate in my research. The experimental procedure will consist of two separate sessions of no more than one hour in which the experimenter (myself) will interact with the child (with mother present).

The steps for participating in the study are:

1. Fill out and return the enclosed forms (Questionnaire and Informed Consent Release Form) as soon as possible. An addressed envelope is provided for your convenience. If you have any questions please feel free to call myself at 381-8835 or Dr. Clark at 383-0963.
2. Receive a telephone call from myself where you will be given further instructions and when we can schedule a time when we may meet at the Van Riper Language, Speech and Hearing Clinic.
3. Meet me at the Clinic for Session #1 where I will interact with the child, administer a hearing and vocabulary test to him/her.
4. Meet me at the Clinic for Session #2 where I will read the child a story and ask him/her some questions about it.

Your names and the information you provide will remain confidential, except to myself and my thesis committee members. Upon completion of the study, a summary of the results will be made available to you if you are interested.

Once again, your participation would be a great help and very much appreciated. Please feel free to contact me at 381-8835 or Dr. Clark at 383-0963 if you have any concerns or questions.

Sincerely,

Marcia Hill

Graduate Education and Training Program Accredited by
Boards of Examiners in Speech Pathology and Audiology, American Speech-Language-Hearing Association

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APPENDIX B

Informed Consent Release Form

I, ______________________ and my child, ______________________
freely and voluntarily consent to participate in the experiment described in the attached letter.

I also understand that we may choose to withdraw from this experiment at any time, and that our participation or withdrawal will in no way affect our standing with this university or our role as a consumer of its clinical offerings.

I understand that we will not be exposed to any experimental procedure which would in any way be detrimental to our physical or psychological well beings.

I understand that other individuals will be participating in the experiment and that my child's performance will not be compared with that of other children on an individual basis. I also understand that our names will remain anonymous to everyone, except for Marcia Hill and her thesis committee members and that the information I provide on the questionnaire will remain confidential.

We engage in this study freely, without monetary payment and with no other contingencies being placed on our participation. I also understand that we will not directly benefit personally from the results of this experiment.

I understand that I have had and will have the opportunity to ask questions about the nature and purpose of this study, and upon completion of this study, at my request, I may obtain a summary of the results and additional explanation about the research and its implications.a

Signed ______________________
Date ______________________

aFor additional information contact Dr. Michael Clark (383-0963) or Marcia Hill (381-8835).
QUESTIONNAIRE
Marcia Hill, Master's Thesis
Western Michigan University

Parent(s) ______________________________ Telephone ____________
Address ________________________________ _______________________
Street City State Zip Code

Name of child ______________________________ Sex ___ Birthdate ________

Preschool program ____________________________ _______________________

Family Members at Home

Name Age Speech, Language or Hearing Problem (if any):

Father ____________________________ __________________________
Mother ____________________________ __________________________
Sisters ____________________________ __________________________
Brothers ____________________________ __________________________

Father's occupation ____________________________ __________________________
Mother's occupation ____________________________ __________________________

Father's highest level of education: (Check one)
___ Did not enter high school
___ Entered high school but did not graduate
___ Graduated from high school but did not enter college
___ Entered college but did not receive any degree
___ Received bachelor's degree
___ Took graduate work or received advanced degree

Mother's highest level of education: (Check one)
___ Did not enter high school
___ Entered high school but did not graduate
___ Graduated from high school but did not enter college
___ Entered college but did not receive any degree
___ Received bachelor's degree
___ Took graduate work or received advanced degree

General Developmental History of Child
Was there a normal pregnancy and birth? _____ If no, please explain. ________

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Was your child adopted? ______ If so, at what age? ______

Were there any problems with feeding or early development (e.g., rate of growth, excessive fussiness, etc.)? ______

If so, please explain ______

Give approximate age in months/years when your child began to: creep on all fours _____, sit alone _____, walk alone _____.

Speech and Language Development

Give approximate age when your child began to: say single words _____, say two words together _____.

Did your child babble before talking ____? How many words per sentence (on the average would you estimate your child is saying now: 2____, 3____, 4____, 5____ or more ____ words. Do you feel your child is talking at the same level as other children his/her age? ______ Was/is a language other than English spoken in the home? ______ If so, please explain. __________________________

Is your child understood most of the time by his/her parents ____? brothers and sisters ____? playmates ____? strangers ____? Does your child understand most of what is said to him/her? ______ Does your child like to: a) listen to stories read to him/her ____? How often? ______ For how long at a time? ______________________ b) watch T.V.? ____ What programs? ______________________ For how long at a time? ______________________

Hearing

Have you ever questioned your child's response to quiet noises or speech? ______ Has your child had ear infections? ______

If yes, how often? ______ How recent? ______ How was the infection treated? ______________________ Has your child had a hearing test? ______ From whom? ______________________ When? ______________________ Results of hearing test ______________________.

Available Times

What times would be best for you and your child during the week? We will eventually be scheduling 2 appointments. If there are any times that you absolutely are unavailable, please indicate those as well.

Mon. _____ Tues. _____ Wed. _____ Thurs. _____ Fri. ______

This form was completed by: ______________________

Date ______________________

Relationship to child
APPENDIX D

Script and Questions for The Bike Lesson

"Come here, Small Bear. Here is something you will like."
"Look, Ma, look! A brand-new bike."

Q1: Is that a bear?

Q2: How many bears are there?

"Thanks, Dad! Thanks! For me you say? I am going to ride it right away!"
"Not yet, not yet, not yet, my son.... First come the lessons, then the fun. How to get on is lesson one."

Q3: When can the baby bear ride the bike?

Q4: How do you get on a bike?

"Lesson one? Is that lesson one?"

Q5: If Daddy bear knows how to get on a bike, then why did he fall down?

Q6: Whose bike is that?

"Yes. That is what you should not do. So let that be a lesson to you."
"Yes it was, Dad. Now I see. That was a very good lesson for me. Dad! Where are you going? You showed me how. Why don't you let me ride it now?"

Q7: How often does the baby bear get to ride the bike?

"Not yet. Not yet. Before you do I'll have to give you lesson two. Just watch, Small Bear. Just watch your Pop. Lesson two is how to stop."

Q8: How many bicycles do the bears have?

"A very good lesson. Thank you, Pop. May I ride it now that you showed me how? May I? May I ride it now?"
"Not yet. Not yet. You have more to learn. I'll have to show you how to turn. Just watch me..."

Q9: What are those?

"This is lesson number three."
"Wow! What a lesson! That number three! That may be a little too hard for me."
"This is what you must never do. Now let this be a lesson to you."
"It surely was, Dad! Now I see. That was a very good lesson for me."

Q10: Who is that up there in the chimney?
Q11: Why is the baby bear bringing the board?

"When I get you down may I ride it then? May I? May I? Just say when."

Q12: How often does the baby bear help the Daddy bear?

"Wait, my son. You must learn some more. I have yet to teach you lesson four. When you come to a puddle what will you do? Will you go around or ride right through?"

Q13: Is the baby bear running?
Q14: When he gets to that puddle, how could he get over it?

"It's not so good to ride right through."
"You're right, Dad. I can clearly see why that lesson was good for me."

Q15: How long will the Daddy bear have to sit in the puddle?

"When I get you out, may I ride it then? Please, Dad... Will you tell me when?"
"Of course. You may ride it. You can. You will."

Q16: If that stick breaks, what will happen?

"...After lesson five. How to go down hill."

Q17: Where is the Daddy bear going?

"Wow! What a lesson! That looks hard, going down hill through a chicken yard. Dad, please tell me...will I ever get to ride it? Or will I just keep running beside it?"

Q18: Why can't the baby bear ride the bike?

Q19: When do you think the farmer will catch the bears?

"Will I? Will I? Will I? When?"
"Pretty soon, Son. But not just yet. There is still one lesson you have to get. Lesson six is the hardest yet."
Q20: What are those?

"To be a good rider, to really know how, you will have to learn about safety now. To be safe, Small Bear, when you ride a bike, you can not just take any road you like. Before you take one you must know...where that road is going to go. See? This is what you should not do. Now let this be a lesson to you."

"It surely was, Dad. Now I see. That was another good lesson for me."

Q21: How long can the bear hang on to the tree before he falls off?

Q22: How will the Daddy bear get back up on the cliff?

"May I ride it now? May I ride it now?"
"After one more lesson. It will be the last. There is one more thing. I can teach it fast."

Q23: If that tree breaks, what will happen to the baby bear?

Q24: What is this?

"When I ride on a road I take great pride in always riding on the right hand side."
"But, Dad! Are you riding on the right hand side?"

Q25: Is there a truck coming on the road?

"I guess I know my hands, Small Bear. My right is here. My left is there. Or am I wrong? Now could that be? Left hand...? Right hand...? Let me see..."

Q26: Why is Daddy bear looking at his hands?

Q27: What is the baby bear looking at?

"Left hand on the left hand side...Right hand on the right hand side."

Q28: How many drivers flew out of their cars?

"Thank you, Pop! You showed me how. But, please, please, PLEASE may I ride it now? Look, Ma! Now I can ride it! See! Dad had some very good lessons for me."

Q29: When did the baby bear finally get to ride the bike?

Q30: Why is the baby bear smiling?

THE END
APPENDIX E

Questions According to Level of Difficulty

Easy Questions  (Mean length = 5.2 words)

1. Is that a bear?
6. Whose bike is that?
9. What are those?
10. Who is that up there in the chimney?
13. Is the baby bear running?
17. Where is the Daddy bear going?
20. What are those?
24. What is this?
25. Is there a truck coming on the road?
27. What is the baby bear looking at?

Harder Questions  (Mean length = 8.2 words)

2. How many bears are there?
4. How do you get on a bike?
8. How many bicycles do the bears have?
11. Why is the baby bear bringing the board?
14. When he gets to that puddle, how could he get over it?
18. Why can't the baby bear ride the bike?
22. How will the Daddy bear get back up on the cliff?
26. Why is Daddy bear looking at his hands?
28. How many drivers flew out of their cars?
30. Why is the baby bear smiling?

Hardest Questions  (Mean length = 12.33 words)

3. When can the baby bear ride the bike?
5. If Daddy bear knows how to get on a bike, then why did he fall down?
7. How often does the baby bear get to ride the bike?
12. How often does the baby bear help the Daddy bear?
15. How long will the Daddy bear have to sit in the puddle?
16. If that stick breaks, what will happen?
19. When do you think the farmer will catch the bears?
21. How long can the bear hang on to the tree before he falls off?
23. If that tree breaks, what will happen to the baby bear?
29. When did the baby bear finally get to ride the bike?
APPENDIX F
Definitions for Coding Mothers' Strategies

1. Focusing *(FO)*

This strategy deliberately focuses the child's attention toward a specific aspect or feature which the child has not considered and is essential in answering the question. It may be declarative or interrogative in form or a nonverbal cue, such as pointing.

e.g. a) Q: Whose bike is that?
   C: His. The Daddy's (INA) (ES).
   M: Is it (CH) (ES)?
   C: Uhhuh. Yes. Yes mom (INA2) (ES).
   M: What about back here *(FO)* (ES)?
   (Begins turning pages to show C what happens at the beginning of the story).
   M: Who bought the bike *(FO)* (ES)?
   M: Remember *(FO)* (ES)?
   C: Forgot what page. Got that page.
   M: Who's he giving the bike to *(FO)* (ES)?
   C: This guy (points to baby bear) (INC3) (ES).
   M: So whose bike is it (RP) (ES)?

b) Q: What's the baby bear looking at?
   C: At the road (INC) (ES).
   M: What's on the road *(FO)* (ES)?
   C: Traffic (AP2) (ES).

c) Q: What is this?
   C: A hill (INA) (ES).
   M: No, this thing that the baby bear is holding (points to rope) right here *(FO)* (ES).
   C: Hill (INA2) (ES).
   M: What do you call that thing (RP) (ES)?
   C: A hill! Hill (INA3) (ES).
   M: The thing that the baby bear is pulling on (CH) (ES)?
   M: Is a hill (CH) (ES)?
   C: Yeah (whines) (INA4) (ES).
   M: This thing here *(FO)* (ES).
M: See it's around the bike and it's around the Daddy bear *(FO)* (ES). What do you call that (RP) (ES)? You know what to call that, you have one at home *(FO)* (ES). What is that (RP) (ES)? Sometimes you use it on your bike *(FO)* (ES).

C: Mommy turn the page.


2. Checking *(CH)*

Checking is initiated by the mother to help her child rethink his/her answer or to question her child as to whether she heard correctly. The function of the strategy appears to allow the child an opportunity to change his/her answer because the mother sees it as incorrect. Generally, the mother will repeat the child's answer in a question form with rising intonation. The distinguishing feature from other strategies is that the mother gives both the listeners and her child the impression that he/she is not on the right track in answering the question.

e.g. a) Q: How often does the baby bear get to ride the bike?

C: 'Cause he tells him, uh (what's him) what's him too (INA) (HS).
M: How often does he get to ride the bike (RP) (HS)?
C: I don't know (INA2) (HS).
M: You don't know *(CH)* (HS)?

b) Q: Is that a bear?

C: Looks like it's a chink (INA) (ES).
M: Huh *(CH)* (ES)?
C: Looks like what *(CH)* (ES)?
M: A what *(CH)* (ES)?
C: Chink, chink, chink (INA3) (ES).
3. Informing *(IN)*

The mother uses this strategy to provide the child with information, facts, an explanation or a specific interpretation as it relates directly to the question. The information may appear in two different forms: as a declarative or an interrogative.

When the mother uses a declarative sentence she may state the answer explicitly or make the child's statement more correct by adding the missing information.

e.g. a) Q: Whose bike is that?

   C: (points to Daddy bear) (INA) (ES).
   M: Is that Dad's bike (CH) (ES)?
       I thought he bought it for the baby bear *(IN)* (ES).

b) Q: How often does the baby bear get to ride the bike?

   C: When he get older (INA) (HS).
   M: So far he hasn't been able to because his dad's riding the bike all the time (M laughs) *(IN)* (HS).

As an interrogative, the mother generally provides the child with the answer so that he/she has to agree or disagree with the proposal. The mother may also provide options, one of which is the correct answer.
In these instances the child usually chooses one of the options.

e.g. d) Q: When can the baby bear ride the bike?
   C: (shrugs shoulders) (INA) (HS).
   M: How about when he gets older *(IN)* (HS)?
      When he gets a little bigger *(IN)* (HS)?
   C: Um (INA2) (HS).
   M: Or when his father says he can *(IN)* (HS)?
   C: Um, I don't know (INA3) (HS).

e) Q: When did the baby bear finally get to ride the bike?
   C: (no response) (INA) (HS).
   M: Did he learn the lessons *(IN)* (HS)?
   C: (nods head yes) (INC2) (HS).
   M: So, when did he ride the bike (RP) (HS)?
      After his lessons *(IN)* (HS)?
   C: Yes (AP3) (HS).

f) Q: If Daddy bear knows how to get on a bike, then why did he fall down?
   C: Because he got on the bike (INA) (HS).
   M: Did he get on the right or the wrong way *(IN)* (HS)?
   C: The wrong way (AP2) (HS).
   M: Yep (S-P) (HS).

4. Repeating/Rephrasing *(RP)*

   The mother uses this strategy to bring the child back to the task by repeating/rephrasing her or the experimenter's question asked. The repetition may be exact or it may be modified into an easier form. There may also be instances where the mother says, "Hmmp?" or says the child's name. These are occasions when the exact content of the question is not repeated but the communicative force, i.e., the child's responsibility to answer, is still evident. The function of
repeating/rephrasing is to ask the child the same question but indirectly.

e.g. a) Q: How many drivers flew out of their cars?
   M: Not how many, how many flew out of their cars *(RP)* (HD)?

b) Q: How do you get on a bike?
   C: My bike. I have a little one (INA) (HD).
   M: How do you get on it *(RP)* (HD)?
   C: Just step on the pedal (AP2) (HD).
   M: Uhhuh (S-P) (HD).

c) Q: If Daddy bear knows how to get on a bike, then why did he fall down?
   C: Don't know (INA) (HS).
   M: Why did he fall down, C *(RP)* (HS)?
   C: Because it was too big (INA2) (HS).
   M: The bike was too big for him (CH) (HS)?
   Or is the bike too small for him (IN) (HS).
   C: Too small (AP3) (HS).

d) Q: When can the baby bear ride the bike?
   C: I dunno (INA) (HS)
   M: Somebody have to show him how (IN)(HS)?
   Hmm *(RP)* (HS)?
   The lessons (IN) (HS)?
   C: How got (INA2) (HS) --

5. **Confirming *(CO)***

   The mother uses this strategy to confirm or verify the child's reply by repeating it in a declarative or interrogative form. When interrogative in form, it differs from "checking" in that the mother is not necessarily questioning the appropriateness of the child's response, but rather she is indicating that all participants in the dialogue have reached a mutually agreeable and satisfactory answer.
e.g. a) Q: Why is Daddy bear looking at his hands?
C: Because he not paying attention a truck. He not gonna hit him (INA) (HD).
M: He's not paying attention to the truck, huh *(CO)* (HD)?

b) Q: How do you get on a bike?
C: (Gotta), just gotta put your feet over the bike. Over the seat (AP) (HD).
M: Lift your leg up huh *(CO)* (HD).

c) Q: What is this?
(previous dialogue)
C: I don't know (INA4) (ES).
M: What is this, Honey (RP) (ES)?
C: I don't know (INA5) (ES).
M: Can you tell me (RQ) (ES)? Is that a rope (IN) (ES)?
   Hmm (RP) (ES)? Maybe he doesn't know (EX) (ES).
C: Rope (AP6) (ES).
M: A rope *(CO)* (ES).

6. Concluding Strategy *(CS)*

This strategy is generally used by the mother to bring the dialogue to an end. The mother's comments are usually neutral in nature indicating that she has nothing more to contribute to the conversation at that time. Also, the mother's tone of voice is neutral so that the listener detects no positive or negative implications in the comment.

e.g. a) Q: How many bears are there?
(previous dialogue)
C: 1,6,5,2 (INA2) (HD).
M: 1,6,5,2 (CH) (HD)? Can you count (RQ) (HD)? How many (RP) (HD)?
C: Mom I just count!
M: *OK *(CS)* (HD).
Is that how many there are (RP) (HD)?
C: Uhhuh (INA3) (HD).
M: Oh, OK *(CS)* (HD).
b) Q: When can the baby bear ride the bike?
C: Later (INC) (HS).
M: Later when (FO) (HS)?
C: Pretty soon (INC2) (HS).
M: Oh *(CS)* (HS).
C: And when this guy gets off (AP3) (HS)!
M: Oh *(CS)* (HS).

7. Sustaining: Positive *(S-P)*

There are two types of sustaining: positive that a mother may use. The first is when the mother provides encouragement to the child through verbal or nonverbal communication. This strategy is used subsequent to a child's appropriate response to a question. Such verbal responses such as, "That's right," "Yep," or "Uhhuh" indicates the mother's approval of her child's performance. In this instance she is nonverbally saying to her child "You've done fine". This may also serve as a termination point of the dialogue between mother and child. The second type, however, may be the type of reinforcement provided by the mother which tells the child nonverbally that "you're doing fine so keep going". The mother's comments may then take the form of "I think you know" or "You know what these are."

e.g. a) Q: How many bears are there?
C: (I got this) I got this book. I got the same one you do (INA) (HD).
M: How many bears are there in the picture (RP) (HD)?
C: One, two, three (AP2) (HD).
M: Very good *(S-P)* (HD).
b) Q: If Daddy bear knows how to get on a bike then why did he fall down?
   C: 'Cause he got on the bike (INA) (HS).
   M: Did he get on the right way or the wrong way (IN) (HS)?
   C: The wrong way (AP2) (HS).
   M: Yep *(S-P)* (HS).

c) Q: When did the baby bear finally get to ride the bike?
   C: I dunno (INA) (HS).
   M: When his dad got off (IN) (HS).
   C: When Dad got off (AP2) (HS).
   M: Right (laughs) *(S-P)* (HS).

8. Sustaining: Negative *(S-N)*

   The mother usually makes a comment that is reprimanding for the child. It may occur when the child has given the wrong answer or is not paying attention to the task at hand. The mother generally sounds disgusted or perturbed when she makes this kind of comment which differentiates it from "requesting."

   e.g. a) Q: How often does the baby bear get to ride the bike?
      C: Don't know (INA) (HS).
      M: (You're not even-) You're just guessing and your answers are "I don't know" *(S-N)* (HS).
      * You do too know *(S-N)* (HS)!
      Have you been listening to the story *(S-N)* (HS)?
      C: (nods head).
      M: OK then tell her (RQ) (HS).
      C: Umm (INA2) (HS).
      M: When will he be able to ride the bike (RP) (HS)?
      C: When he get bigger (INA3) (HS)!
      M: OK (CS) (HS).

   b) Q: What is the baby bear looking at?
      C: Nothing (INA) (ES).
      M: What are they looking at on the road (FO) (ES)?
C: Nothing (INA2) (ES).
M: What's on the road, huh (FO) (ES)?
   He's looking at something coming at him
   (IN) (ES).
   What's coming at him on the road (FO)(ES)?
   (points to picture).
C: The alligator (INA3) (ES).
M: You're being silly *(S-N)* (ES).
   What is this (referring to truck) (FO)
   (ES)?
C: The alligator (INA4) (ES).
M: Silly girl *(S-N)* (ES).
   Truck (IN) (ES).
C: The alligator (INA5) (ES).

9. Requesting *(RQ)*

The mother makes a request of the child, usually
pertaining to answering the question. Generally the
mother says something like, "Count them" or "Can you
count them." Sometimes the request may be indirect
such as, "You know what? The taperecorder can't hear
your finger." There may also be instances where the
mother makes a request related to the child's behavior
such as, "Sit up, Honey." The mother's tone of voice
distinguishes a request from sustaining: negative.
When the mother requests she asks her child nicely
rather than in a reprimanding manner.

e.g. a) Q: Is there a truck coming on the road?
   
   C: No (INA) (ES).
   M: Look down the road (FO) (ES).
   Do you see any truck coming (RP)(ES)?
   C: A firetruck (AP2) (ES).
   M: Where's the firetruck (FO) (ES)?
   M: Show us *(RQ)* (ES).
   C: (child points).
   M: Oh (CS) (ES).
Q: Is that a bear?
C: (nods head yes) (INC) (ES).
M: Can you talk *(RQ)* (ES).
C: There's a bear (AP2) (ES).
M: There's a bear (whispers) (CO) (ES).
C: There's a bear.
M: There's a bear (CO) (ES).

10. **Excusing *(EX)***

This strategy is offered by the mother at times when the question is too difficult for the child and he/she has been unsuccessful in answering it appropriately. The mother's comment provides a way out for the child. The child appears to know that he is "excused" from answering the question.

e.g. a) When can the baby bear ride the bike?
   C: (no response) (INA) (HS).
   = Examiner repeats question.
   M: You know don't you, C (M moves chair closer to C) (S-P) (HS)?
   C: Uhhuh (INA2) (HS).
   M: Don't you think he's too small for that bike yet (IN) (HS)?
   C: Uhhuh (AP3) (HS).
   M: Huh (RP) (HS)?
   What do you think (RP) (HS)?
   C: I know.
   M: You're still kind of bashful aren't you *(EX)* (HS).

   b) Q: Why is Daddy bear looking at his hands?
   C: Because they're dirty (INA) (HD).
   M: (laughs) See he's looking at his right hand and his left hand, Daddy is (points to picture) (FO) (HD).
   C: That man's--
   M: That's a hard question for a three year old *(EX)* (HD).
11. **Interpreting *(IT)*

Interpreting is used most often to benefit the examiner. The mother will interpret the child's statement in such a way that the examiner knows the context of the situation. It may also be a comment directed to the examiner.

Another purpose of interpreting is for the mother to ask the examiner whether the child's statement was understandable. This is mostly used by mothers who have children with articulation errors.

**e.g. a)** (C attempts to fill the examiner in on his own bike).

M: Do you understand what he's saying *(IT)*?
M: He says he's got a Duke's bike--*(IT)*.
C: Know what? XX--
M: Two wheels in back and one in front and he's gonna get one of those when he gets big *(IT)*.

**b)** (After question has been asked and the C answers and makes an additional comment).

C: Jesus has a tall bike.
M: Jesus has a real tall bike, huh *(CO)*.
C: Yeah, very tall.
M: (to examiner) Working out where Jesus is and all that ya know *(IT)*.

12. **Instructing *(IS)*

The mother uses this strategy to focus the child's attention on some other aspect of the story, separate from the specific questions asked by the examiner.

Often this occurs when the examiner turns the page and the mother wants to help the child understand the story and offers explanations of the events. She
generally states her comments in a declarative form and offers specific information related to the story events. The mother may also test her child's comprehension of the story or of what she has previously said by asking questions.

e.g. a) (Focusing the child's attention on the rope that the baby bear is helping the Daddy bear with).

M: He doesn't want to hang there *(IS)*. He might fall if he hangs there *(IS)*.
C: Why?
M: Because he's out in the middle of the air *(IS)*. There's nothing under him to hold him up *(IS)*. He needs to get up here (points to cliff) *(IS)*.

b) (Examiner begins to turn page to continue story).

M: Can we (go) stay on that page (IT)?
= E says, sure and turns the page back.
M: Do you know which is the right hand side, C *(IS)*?
C: What side?
M: Do you know which is your right hand *(IS)*?
What's your right hand *(IS)*?
C: This one.
M: Right, good (S-P).
What's your left hand then *(IS)*?
C: This one (shows her left hand).
M: Good (S-P).
Uhhuh, good (S-P). I knew he knew it but (I just) sometimes I like to test him on it (IT).
APPENDIX G

Definitions for Coding Children's Responses

1. **Appropriate *(AP)*

   A child's response is considered appropriate when he/she answers the question in a manner consistent with the story. The easy level questions have definite answers. For example, the answer must be "yes" to the question, "Is that a bear?" in order for it to be considered appropriate. There may be occasions where the child answers nonverbally (nodding the head "yes") which would also be considered appropriate providing the mother views the nodding of the head sufficient. So, for example, two children may both nod their heads to the question, "Is that a bear?" and only one may be counted as appropriate since the mother does not require her child to respond verbally.

   e.g. a) Q: Is that a bear?

   C: (nods head "yes") *(AP)* (ES).
   (Considered *(AP)* (ES) because the mother does not require further verbalization from the child).

   b) Q: Is that a bear?

   C: (nods head "yes") *(INC)* (ES).
   M: Can you say yes *(RQ)* (ES)?
   C: Yes *(AP)* (ES).
   (In this instance the mother indicated that she wanted a verbal response in addition to the nodding of the head. Therefore this was coded as *(INC)* (ES).)

For harder and hardest level questions the appropriateness is directly related to the question type.
(What? When? Where? How often? How many?). If the child has been given the answer previously in the story, then an answer that reflects that information with some accuracy would be considered appropriate. e.g. a) Q: When did the baby bear finally get to ride the bike?
   C: When the lessons were done *(AP)* (HS).

When the child has to make predictions in answering the question (such as "How" questions) then the key to appropriateness is whether he/she attempts to focus on that specific aspect.

e.g. a) Q: How often does the baby bear help the Daddy bear?
   C: Three? *(AP)* (HS) (child was able to comprehend that the question was asking for a number of times).

Other reasonable predictions to questions would also be considered appropriate.

e.g. b) Q: How will the Daddy bear get back up on the cliff?
   C: Get a ladder *(AP)* (HS).

2. **Incomplete ** *(INC)*

Responses are considered incomplete when the child answers the question partially but is thinking in the right direction or when the mother asks him/her to expand the answer. When a child makes a nonverbal response (nodding the head) and the mother intervenes, this indicates the insufficiency of the child's answer and therefore is coded as an incomplete response.
Generally it is the mother's response to the child's answer that provides the cue as to whether it is (INC) or (INA).

**e.g. a)** Q: How often does the baby bear get to ride the bike?
   
   C: He hafta run by his Daddy *(INC)* *(HS)*.
   M: Did he get to ride the bike yet *(FO)* *(HS)*?

**b)** Q: How do you get on a bike?
   
   C: Put your feet over it *(INC)* *(HD)*.
   M: And then what *(FO)* *(HD)*?

3. **Inappropriate *(INA)*

   No response or answers such as "I don't know" or irrelevant comments are considered inappropriate. Answers that do not reflect the child's understanding of the information presented in the book are also considered inappropriate.

   **e.g. a)** Q: How often does the baby bear ride the bike?
   
   C: (no response) *(INA)* *(HS)*.
   M: How many times *(RP)* *(HS)*?
   C: Not until he knows how *(AP2)* *(HS)*.
   M: Not until he knows how *(CO)* *(HS)*?

   **b)** Q: How many drivers fell out of their cars?
   
   C: He did cross right into a rock! He gonna hurt hisself again *(INA)* *(HD)*.
   M: Yeah, he could *(CO)* *(HD)*.
   M: She asked the question, How many drivers fell out of the truck *(RP)* *(HD)*?
   M: Can you see how many are out *(RP)* *(HD)*?

   **c)** Q: How many drivers fell out of their cars?
   
   C: (counts all the drivers) *(INA)* *(HD)*.
   M: How many flew out *(RP)* *(HD)*?
   C: Two *(AP2)* *(HD)*.
BIBLIOGRAPHY


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