A MULTIDIMENSIONAL CODING SYSTEM
FOR DESCRIBING VERBAL INTERACTIONS
OF TEACHERS AND CHILDREN

Volume 1

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I declare that this thesis has been composed by myself and that the work in it is my own. No part has been submitted in support for another degree or qualification of this or any other University or Institute of Learning.

Barbara Zerline Perman-Cohen
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ABSTRACT

The present research is a system for coding the verbal interactions of teachers and children. Its purpose is to facilitate the interdisciplinary study of the teaching-learning process as one instance of the general communicative process. The coding system is based on data collected in conversations recorded on audio tapes in a dyadic setting between hearing-impaired children and their teachers in two schools in Great Britain. Hearing-impaired children were studied because a wide range of linguistic, cognitive, and affective competencies can be found amongst them. In addition, their communicative behaviours and those of their teachers tend to be exaggerated in many respects; thus, it is easier to study these behaviours in such a population than in the general population.

The coding system is also based on previously developed coding systems and other research studies on various aspects of conversation and discourse processes. It includes procedures for dividing the conversation into units ("moves"), and for assigning a pedagogical function (soliciting, responding, reacting, structuring) to each move. The categories and codes describing the pedagogical function of reacting for both teachers and children are greatly expanded over those found in other systems so that (a) the role of the teacher as reactor and as active listener, as well as solicitor, can be described, and (b) the child's role in the teaching-learning process can be studied. Each move is coded with respect to seven categories ("details"), including: pausing, turntaking, language, cognitive level, conversational function, and link to other moves.
A conceptual framework for the coding system was developed that divides teacher and child behaviours into five levels, each higher level reflecting a relative increase in the degree of dependence of behaviours assigned to that level upon other aspects of the conversational context. It is suggested that this is a useful model for coding verbal interaction. It is further suggested that the design and format of the coding system can serve as a model for other systems for coding interaction.

Procedures for testing reliability of the coding system are outlined. The general test of reliability which was conducted resulted in better than 90% agreement between coders.

Three closely interrelated features of the conversational setting were selected as the primary focus of the coding system: the control exercised by the teacher over the nature and extent of the child's participation, the control exercised by the teacher over the unfolding of the subject matter, and the actions taken by the teacher in response to the nature and extent of the child's participation.

Preliminary analysis of some of the coded data suggests that teachers exercise control over the nature and extent of a child's participation by the responses they prescribe and the language and cognitive levels they solicit, as well as through their pausing and turntaking behaviour. The control exercised by teachers over the unfolding of the subject matter is reflected in sequences of moves within segments of the interaction, as well as in sequences of segments. Thus, trains of thought can be described. The actions taken by teachers in response to the nature and extent of the child's participation provide feedback to the child that he can use to evaluate the appropriateness and correctness of his participation, and also an opportunity for the
teacher to continue or alter the type and degree of control previously used.

On the basis of preliminary analysis of the data it is hypothesized that the quality of interactions between hearing-impaired children and their teachers may greatly influence the linguistic, cognitive, and affective growth of the children. The process by which this may occur is discussed. It is thought that messages about the nature of conversation, about the functions language serves in conversation, and about the roles of the participants are conveyed through combinations and patterns of behaviours. Over time, such messages are internalized by each participant, creating in each a set of beliefs and expectations that influence future interactions.

It is suggested that the coding system might be used in studying verbal interaction in the general population as well, and may be especially valuable for studying the interactions of children and their caregivers. It is also said to have potential for advancing our theoretical understanding of the interdependence of the linguistic, cognitive, and affective components of the teaching-learning process.
Chapter 1
INTRODUCTION

Numerous attempts have been made to further our understanding of the process of communication between adults and children and, in particular, the functions language serves in this process. Researchers from a variety of disciplines have investigated this subject for many reasons. Some researchers have been interested in understanding the process of language acquisition and development; others have described discourse processes. Some have focused on how cultural information is transmitted, while still others have investigated the role of language in the teaching-learning process, that is, the communicative process in the context of the school. Some researchers have investigated individual aspects of the communicative process, such as pauses and turntaking. Others have concentrated their efforts on describing and analysing multiple behaviours that have been recorded by observational techniques.

Each of these studies has contributed to our understanding of various aspects of language as it functions in communication between adults and children. There is a need now to synthesize what has been learned from them into a fuller, more integrated understanding of the communicative functions of language in conversation. Dore (1979, p. 360) has stated:

At the very least, a model of conversation must deal with the levels of propositional context, grammatical form, illocutionary function, cognitive process, conversational procedure and social frame. Hints as to how each of these domains operate are available in the literature, across
several disciplines...it is time to try to integrate the insights into these domains and to bring this integration to bear on actual conversation in order to test models for observational adequacy if possible.

The task of the present research was to develop a means of describing in an integrated way some of the ways that language functions in the communicative process, in order to facilitate analysis of that process. Combined in a single coding system are various individual aspects of verbal interaction that have been studied previously. These have been elaborated and refined to increase both their precision and their range. This will enable researchers to investigate interrelationships among these aspects that may not have been studied previously, that may have escaped notice, or that may have been difficult to study. In addition, certain important features of language in the communicative process which have not previously been significant features of multidimensional coding systems have been added. A means of coding these has been designed, and they have become an integral part of this system.

To develop the coding system, the functions of language in the communicative exchange between adults and children were studied in one particular context: in conversations between adults and children in educational settings. Many researchers (Cazden, John, and Hymes, 1972; Wood, McMahon, and Cranstoun, 1980) have found that the school setting is a valuable place to study the structures and functions of language in conversation. They perceived a need to begin such studies with a form of discourse "which has much more structure and direction....and where one participant has acknowledged responsibility for the direction of the discourse, for deciding who shall speak when, and for introducing and ending topics....and where all participants
were genuinely trying to communicate" (Coulthard and Sinclair 1975, p. 6). It was, then, the teaching-learning situation—a specific instance of communication occurring between adults and children—that was chosen to be explored in this research.

Because no coding system can possibly attempt to describe all aspects of conversation, this investigator selected a particular focus for the behaviours to be studied. Three closely interrelated features of the conversational setting were selected as the primary focus of the coding system. Related research by this investigator suggested that these three features might well be influential in the teaching-learning process and, in particular, on the linguistic, cognitive, and affective competencies attained by children (Perman, 1978). The three features are:

(1) The control exercised by the teacher over the nature and extent of the child's participation (e.g., the extent to which the teacher prescribes, through the questions she asks, the role the child plays in the conversation, as well as the language and the cognitive level of the child's responses).

(2) The control exercised by the teacher over the unfolding of the subject matter during the course of the conversation (e.g., the overall organization of subject matter; the decisions the teacher makes while she is engaged in the teaching process concerning when to move the content of the conversation forward and when to stop for repair of content or language already introduced).

(3) The actions taken by the teacher in response to the nature and extent of the child's participation (e.g., continuing with her own train of thought in spite of the child's initiating a different train
of thought; acknowledging the child's contribution and going on with her own train of thought; deferring to the child's train of thought).

Pilot groups were chosen for the development of the coding system. These consisted of teachers and children chosen from two schools for hearing-impaired children. Hearing-impaired children were chosen for the pilot groups for two reasons. First, preliminary data and the experience of the investigator as a teacher of the deaf suggested that the difficulties of communication imposed by deafness influence the dynamics of the teaching process. Behaviours of deaf children and their teachers seem to be more pronounced and exaggerated because they converse without being able to take many of the normal rules of conversation or its content for granted. Second, differences among hearing-impaired children who have attained varying levels of linguistic, cognitive, and affective competencies are more evident and span a wider range than among the general population. This facilitates the study of the effect of teacher behaviours on certain outcomes in children.

The coding system was developed on the basis of the data described in chapter 2 and also in consideration of the studies done by others, which are reviewed in this chapter. The coding system itself is described in chapter 3. The procedures used for establishing reliability and the results of the reliability testing are reported in chapter 4. Possible directions for research and analysis utilizing the coding system are offered in chapter 5.
1.1 BACKGROUND OF THE STUDY

PREVIOUS CODING SYSTEMS

Early Researchers

In an effort to understand the communicative process in classrooms, namely, the teaching-learning process, early research was focused on the study of teaching. Smith (1950, 1960) was one of the early researchers to develop categories and to analyse classroom interaction. He recognized that descriptions of the actions of teachers were needed as a first step in describing the strategies of teachers and in subsequently developing a theory about the teaching process. He classified behaviours of teachers into categories such as defining, classifying, evaluating, and admonishing. Hughes (1959) divided teaching acts into the categories of those that control, those that facilitate, and those that deal with content development, as well as those that deal with responsiveness. By calculating frequencies of teaching acts in each of her categories, she attempted to infer particular qualities of teaching and their impact on what a student learns.

By 1964, efforts to understand the teaching-learning process were expanded to include the study of the behaviour of students. In that year Aschner, who was studying the teaching of gifted children in conjunction with Gallagher, introduced the idea of looking also at what the student does in order to evaluate the effect of the teaching process on students. They were concerned with tracing sequential relationships between the verbal actions and responding actions of individuals in the course and conduct of classroom instruction (1961,
Throughout the 1960's, efforts to study the teaching-learning process continued. Flanders (1963, 1970) greatly elaborated on these earlier works by developing a coding scheme consisting of a number of categories describing the behaviours of teachers and their students. Flanders' work on classroom climate provided the impetus for many studies of interaction between teachers and children that have been conducted since then. Categories such as accepting feelings, praising, asking questions, and giving directions were coded for teachers; in addition, a few categories were coded for students. Some of the categories of teacher behaviour were designated as indirect influence, while others were labeled as direct influence. These designations followed in the tradition of previous research that sought to infer characteristics of teachers from their behaviours. The shortcomings of Flanders' work were that the variables chosen for study were limited and that they also lacked consistency. Nevertheless, Flanders' system represented a major step forward in the study of the teaching-learning process.

This is especially true because it introduced a means of looking at sequences of the behaviours that had been coded.

Taba et al.

Though the work of these researchers cannot be said to have been of direct influence on the present coding system, their work set the stage for subsequent studies that are more closely related to the current work. The first major subsequent study was the work of Taba, Elzey, and Levine (1964) on thinking in elementary school children. The work of these educators was closely related to the current work because the coding system they developed took into consideration the
importance of the overall context of the verbal exchange in the teaching-learning process; thus, they gave recognition to the ways in which particular behaviours affect other behaviours. Taba, as principal investigator, reflected on the research done previously in a manner that expresses the thoughts of the current investigator as well:

The fundamental trouble with both studies of teacher characteristics and rating of teacher effectiveness is that both are based on an inappropriate paradigm which divides teaching as a series of discrete competencies, behaviours, or characteristics. Teaching is an organic complex in which each individual act, such as an effective response or content structuring, acquires a different meaning depending upon the nature of the whole teaching-learning situation. (1964, p. 43)

This consideration of the context of the individual acts of the teaching-learning process led Taba to the development of three sets of codes to describe the relationship between teaching behaviours and the levels of thinking of students. In addition, she set out to look at patterns and combinations of behaviours, defining them as teaching strategies. In addition to these contributions, Taba had an effect on the current work because her coding system took into consideration, more than earlier ones, the "evolutionary" nature of the teaching process— that is, the way the teacher behaves in relation to the ongoing events in the interaction, while the situation is "unfolding."

Also, Taba and her colleagues provided a means of tracing the process by which higher and lower levels of thinking are stimulated in children.

Bellack et al.

The work of Bellack and his colleagues (1966) was also influential in the development of the current coding system. While
Bellack's research was conducted around the same time as Taba's, his work had different foci and thus made different kinds of contributions to the current work. Bellack set out to develop a coding system primarily for the purpose of studying teaching itself. His coding system provided the present investigator with a scheme for dividing up the verbal interaction of teachers and children. In addition, he had an interest in the language behaviour of teachers and the functions language serves in the classroom. In order to examine the functions language serves and the meanings transmitted in the verbal interaction between teachers and children, Bellack identified what each speaker said, the pedagogical significance of the speaker's talk, and the content of the communication. For Bellack, an understanding of the language rules that govern conversation was important. He felt that by identifying the verbal turns, or "moves," made by teachers and children, one could study the rules the participants implicitly follow in making these moves, and thereby better understand the functions that verbal actions come to serve in classroom discourse.

Brophy and Good (1970) developed a coding system that included a variety of verbal behaviours of teachers and that also allowed for the description of possible student-initiated behaviour. Their coding system was developed to describe differential teacher behaviours with a view to understanding the process by which high and low achievers are influenced by expectations that are communicated to them by their teachers. Their work focused on dyadic interaction and included measures of both cognitive and affective behaviours.
Coulthard and Sinclair

The coding systems discussed so far represent some of the research that was carried out by educators on aspects of the communicative process. Another system for coding the verbal interaction of teachers and children was developed by linguists whose purpose was to study discourse processes. This coding system, developed by Coulthard and Sinclair (1975), is relevant to the current one in several ways: (1) they based their system on some of the ideas of both Taba and Bellack; (2) they chose a classroom setting in which to develop their system; and (3) they approached the study of the verbal interaction in the classroom from the perspective of discourse processes.

Coulthard and Sinclair were primarily interested in studying structural and functional aspects of discourse within a linguistic framework. In developing their system, they asked questions similar to those asked by this investigator concerning verbal interaction, such as: How are successive utterances related? Who controls the conversation and how does he do it? How, if at all, do the other participants take control? How do the roles of speaker and listener pass from one participant to another? How are new topics introduced and old ones ended? (1975, p.4)

Coulthard and Sinclair considered the coding systems developed by others at the outset of their work. They were interested in Taba's coding system but felt that the categories she devised, which had been developed to focus in particular on cognitive tasks in the interaction, could not be related directly to linguistic data. They felt that Flanders' system was not consistent enough: a few of his categories were related to the linguistic data, but others were not.
Although Bellack did not work within a linguistic framework, Coulthard and Sinclair viewed his system as providing a basis for doing the functional and structural analysis of discourse that they set out to do. They recognized Bellack's system as a major advance in the analysis of discourse, although with certain shortcomings. They adopted as their unit of discourse the move, as it was defined by Bellack.

Dore, Wells

Dore has argued that conversation plays a crucial role in the learning of language (1979, p. 337). In order to support his view, he studied the talk of nursery school children using a coding scheme devised by his research team. Dore's scheme is based upon four criteria: grammatical form, illocutionary force, conversational status, and contextual relevance. (p. 353)

Although the work of Wells and his colleagues was done outside the school setting, in the homes of pre-school children, his approach to the study of conversation between adults and children is important to mention. Wells devised a coding scheme to include interpersonal function, cognitive content and discourse structure of the talk of pre-school children (Wells, 1973). His research included many more aspects of communication than were considered in the current work because a variety of situations in the home setting were studied.

Wood et al.

The psychologist Wood and his colleague Howarth et al. (1982; in press) also recognized the importance of studying conversations between children and their teachers. They have been analysing
conversations between deaf children and their teachers using a coding system originally devised by Wood, McMahon, and Cranstoun (1980). In coding conversations between deaf children and their teachers, Wood coded transcripts of conversations in two stages: first, in which conversational moves were classified into categories of "level of control," and second, in which the teacher's speech was analysed in terms of the functions being displayed in each utterance (1982, pp. 297-298).

**STUDIES OF PARTICULAR TEACHER-CHILD BEHAVIOURS**

In addition to studies that have resulted in the development of coding systems, various researchers have studied individual aspects of teacher-child behaviour in an effort to understand the nature and effect of those behaviours. The present system integrates new categories based on these studies of particular aspects of teacher-child behaviour that have not previously appeared in multidimensional coding systems.

**Rowe's studies of pausing**

It was apparent to this investigator from experience in the classroom and from preliminary work with the data that the use of pauses by teachers and children plays an important role in determining the nature and extent of the participation of each in the conversation. The work of M. B. Rowe (1974a, 1974b, 1974c) confirmed these findings.

Rowe observed that most teachers pause for a very short period of time after asking a question. She found that increasing the length of their pauses produced results such as (1) an increase in the length of
responses; (2) an increase in the number of unsolicited but appropriate responses; (3) a decrease in the failures to respond; (4) an increase in incidences of responses from students cited by teachers as relatively slow; and (5) an increase in the variety of moves made by children (1974b, p. 81). Rowe's research provided the basis for coding these behaviours in the current coding system.

Various studies of turntaking

A feature of the teaching-learning process closely related to pausing is turntaking. A preliminary look at the data and observation in classrooms over many years by this investigator revealed that conversations with some hearing-impaired children are replete with utterances spoken in violation of the normally accepted "rules" for taking turns in conversation. Interruption, speech interjected during another speaker's utterance, and simultaneous speech were found to be characteristic of conversations with some deaf children. This observation was thought to have great potential significance for the study of the communicative process.

The works of Rowe (1974a, 1974b, 1974c); Duncan (1972); Sacks, Schlegoff, and Jefferson (1974); Duncan and Niederche (1974); and Bennett (1981), among others, were influential in the development of the coding of turntaking in the current coding system.

Other studies

Other researchers have shown there to be interaction between particular teacher behaviours and the nature and extent of participation by children. The work of Berninger and Garvey (1981) who studied questioning behaviour and turn-allocation in
child discourse, and the work of Mishler (1978) on utterance structure and function in interrogative sequences are examples. Their consideration of relationships between a few specific aspects of verbal behaviour influenced the development of categories in the current coding system.

### 1.2 Conceptual Framework of the Coding System

To facilitate description and analysis of the teaching-learning process, a coding system must reflect an awareness of the organic nature of that process. Each individual teacher or child act comprises numerous aspects, some of which may be understood in isolation, but most of which can be understood only in the light of the surrounding acts. Thus, the coding system was designed with the awareness that different aspects of teacher and child behaviours are dependent to differing degrees on the context of the conversation.

The various aspects of teacher and child behaviour in the teacher-child setting have been divided into five levels. At each higher level there is a relative increase in the degree of dependence of the behaviours assigned to that level on other aspects of the conversation context. Viewed in this way, the various aspects of conversation are characterized as being more or less dependent on context. The five levels of the conceptual framework are the following:

**Level 1** comprises behaviours of teachers and children that can be coded without regard for surrounding behaviours or utterances. It
describes behaviours in their simplest context. Only one behaviour of a single speaker is considered at this level.

Level 2 describes the degree to which a teacher and child interact in accordance with certain normally accepted rules of discourse. In particular, it focuses on the mechanics of the communicative exchange. Level 2 behaviours are coded in the context of their relationship to certain structural features of one preceding or following utterance.

Level 3 codes describe the pedagogical function of a speaker's utterance with respect to the preceding utterance in the conversation. Where level 2 codes depended only on structural features of the utterances, level 3 codes depend on the context and meaning of the utterances.

Level 4 codes describe the manner in which and the degree to which pedagogical functions assigned to level 3 are actually carried out. While level 3 codes depend on the general function of an utterance in relation to a previous utterance, level 4 codes are concerned with more specific interactive aspects of adjoining utterances.

Level 5 codes describe the larger context of the conversation. They record how particular behaviours of a speaker are related to utterances other than the preceding one. The overall structure of the conversation and the train of thought can be perceived at this level.

In deciding which behaviours at each of the five levels should be included in the present coding system, this investigator wanted to design a coding system that might achieve a balance between the numerous elements of the conversation that she wanted to study and the limitations of the process of classroom observation and transcription,
between the desire to describe comprehensively numerous aspects of the classroom process and the need to develop a compact and manageable tool for researchers. In order to achieve this balance, the focus was placed on three closely interrelated features that have been theorized as being important to the teaching-learning process (Perman, 1978).

The first feature was the control exercised by the teacher over the nature and extent of the child's participation. Much of this control is seen by this investigator as being expressed through the questioning behaviour of teachers. (Numerous other researchers have also focused on questioning behaviours of teachers and have found such behaviours to play an important role in the nature and extent of children's participation (Taba, 1964, 1966; Mishler, 1975, 1978; Barnes, 1971; Rowe, 1974a; Garvey and Berninger, 1981). Thus, various aspects of the soliciting behaviours of teachers receives a great deal of attention in the coding system.

The second feature considered to be important was the control exercised by the teacher over the unfolding of the subject matter during the course of the conversation. This reflects a concern for the way in which the teacher reveals her plan for conveying the subject matter to the child: how the teacher organizes the subject matter, taking the child from a level of little or no knowledge of the subject matter to a fuller knowledge of it. (Other investigators have studied certain aspects of this feature, e.g., Keenan and Schieffelin, 1976) who studied how topics change in conversation and whose work gave some preliminary direction to some aspects of this research.)

The third feature chosen as a primary focus was the actions taken by the teacher in response to the nature and extent of the child's participation. These actions include continuing with her own train of
thought although the child has initiated a different train of thought; acknowledging the child's contribution and then going on with her own train of thought; and deferring to the child's train of thought. These actions taken by the teacher serve two functions. First, they can provide feedback to the child, which he can use to evaluate the appropriateness and correctness of his participation. Second, they allow the teacher to continue or alter the type and degree of control she previously used. Such actions taken by the teacher might include a teacher's deciding to move the conversation forward, or to stop for repair of content of language already introduced. The works of Prorok (1980) and Brophy (1981) are earlier studies that addressed certain aspects of this feature.

These three features were considered to have great practical implications for our understanding of the teaching-learning process and for our understanding of some aspects of discourse processes, including:

a) the potential functions of language in communication and, more specifically, how language functions as a vehicle for teaching about both structural and functional aspects of communication;

b) the relationship of the verbal message to other aspects of the communicative exchange, such as the way in which the content and form of the verbal message supports or undermines other goals of the teaching-learning process;

c) the nature of the rules established by each participant for their communicative interaction, including an understanding of how each participant affects the other's participation;

d) the relationship of local messages (i.e., aspects communicated in contiguous utterances) to global messages (i.e., aspects
communicated through larger sequences and within a broader conversational context.

1.3 INTRODUCTION TO THE DESIGN

The present coding system was developed to describe various dimensions of the verbal interactions of teachers and children. The data upon which the system is based were collected in a setting known as "individual speech" or "individual conversation" or "sharing time" in schools for hearing-impaired children. A large picture poster was chosen for use in the conversations between a teacher and a child. The poster was chosen because it offered great flexibility to teachers and children in terms of how subject matter could be discussed. A detailed account of the design of the study is given in chapter two.

1.4 INTRODUCTION TO THE CODING SYSTEM

For the purposes of the coding system, conversation was seen as a game in which speakers are players. The utterances of the speakers serve as the moves of the game. The move was chosen as the unit of discourse used in this coding scheme. While this view of conversation is attributed by Bellack et al. (1966, p. 3) to Wittgenstein, it was Bellack himself who introduced the means of dividing the conversations into moves that has been adopted here. Bellack further assigned pedagogical functions to the moves of each participant. The pedagogical functions used in the present coding system reflect
Bellack's categories: soliciting, responding, reacting, and structuring.

Each move is described further by a number of categories called details. The details included are:

For all moves:
- Pausing
- Turntaking

For solicitations:
- Type of response prescribed
- Language solicited
- Cognitive level solicited
- Conversational function
- Link

For responses:
- Language level
- Cognitive level
- Correctness
- Link

For reactions:
- Language level
- Cognitive level
- Rating function
- Conversational function
- Link

Structuring moves rarely appeared in the data for this study. They are more prevalent in the larger classroom setting than in the dyadic setting. Therefore, they were merely noted as such, without further detailed description.

The various behaviours which are classified within each category, or detail, are represented by codes.

To summarize, the conversation is divided into turns called moves, each labeled as to its pedagogical function. These in turn are further described by categories called details. The individual behaviours within a particular detail are represented by codes. It is useful to list the various details according to the particular levels of interaction (see section 1.2 above) to which they are assigned, in
order to illustrate how the practical workings of the coding system are related to the five levels of its conceptual framework (see eq., p. 19).

At level 1, the details of language of response and language of reaction are coded. These code the language usage of the speaker in terms of the grammatical or syntactical structure of the utterance. They are assigned to this level because they can be coded without regard to surrounding behaviours or utterances.

At level 2, pausing and turntaking are coded. These details are assigned to this level because they describe the relationship between two adjoining utterances with regard to the mechanics of the communicative exchange.

At level 3, the pedagogical function of each speaker's utterance is coded. This is done primarily in consideration of the general content and language of the current move and the preceding one.

At level 4 are described the manner in which and the degree to which functions assigned at level 3 are actually carried out. Level 4 details for solicitations are: response prescribed, language solicited, and cognitive level solicited. For responses, the level 4 details are cognitive level of the response and correctness of the response. For reactions, the details are cognitive level of the reaction, and rating function of the reaction. The details coded at level 4 reflect the dependence of the move on the specific content and language of adjoining moves.

At level 5, the details describe the larger context of the conversation. They record how particular behaviours of a speaker are related to moves other than the preceding one. The level 5 details include conversational function and link. Conversational function describes the relationship of a current move to some previous move in
STRUCTURE OF THE CODING SYSTEM
ACCORDING TO LEVELS OF CONTEXTUAL DEPENDENCY

Level of Contextual Dependency

<table>
<thead>
<tr>
<th>Conversational Function of the Move</th>
<th>Link to a Previous Move</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function of the Move with respect to earlier moves</td>
<td></td>
</tr>
<tr>
<td>Response prescribed</td>
<td>Language solicited</td>
</tr>
<tr>
<td>How pedagogical function of the move is carried out</td>
<td></td>
</tr>
<tr>
<td>Solicitation</td>
<td>Response</td>
</tr>
<tr>
<td>Pedagogical function of the move with respect to an adjacent move</td>
<td></td>
</tr>
<tr>
<td>Pauses</td>
<td>Turntaking</td>
</tr>
<tr>
<td>Mechanics of two adjacent moves</td>
<td></td>
</tr>
<tr>
<td>Language of a single move</td>
<td></td>
</tr>
</tbody>
</table>

19a
terms of the current move's content and/or language. The link describes the specific move to which the current move is linked. It is at level 5 that there exists the greatest degree of dependence on the context of the conversation. Here the concern is for the more global aspects of the conversation, as opposed to the more local concerns that characterize the lower levels.

1.5 RELATIONSHIP OF THE PRESENT RESEARCH TO PREVIOUS RESEARCH

Two purposes of the present coding system were: (1) to expand upon and integrate categories of coding systems from earlier research, and (2) to incorporate categories of behaviours that have been developed as a result of recent research but have never appeared as part of a coding system for studying verbal interactions of teachers and children. In the following section, the relationships between the present coding system and that earlier research is discussed.

RELATIONSHIP TO PREVIOUS CODING SYSTEMS

Taba et al.

The work of Taba, Elzey, and Levine (1964), who developed a coding scheme to study thinking in elementary school children, had a significant influence upon the current coding system. Taba's main purpose was to apply certain theoretical concepts about cognitive development to classroom teaching. The development of the coding system she used was only a secondary aim of her study. In contrast, the development of the current system was the primary task of this
The following summarizes the main similarities and differences between the current system and that of Taba et al.:

1. The current system is much broader in its scope than Taba's system, which was designed to study specific variables related to cognitive functioning. Thus, the current system includes some categories directly related to cognitive development (similar to Taba's system, though not as detailed), but many additional categories without any direct relationship to cognitive development. While Taba's study was limited to investigating patterns of interaction related specifically to cognitive functioning, the current system places cognitive functioning as but a part of a whole series of interrelated behaviours in need of study.

2. Taba deals with certain behaviours that are coded at level 4 in the current coding system, such as cognitive level solicited and cognitive level of responses and reactions. However, there are many additional variables conceptualized as occurring at level 4 in the present system that are not included in her system; these variables nonetheless may influence cognitive tasks. (This is discussed further in chapter 3, section 3.4.)

3. A major influence of Taba's work on the current coding system was in the area of coding the function of each move within the larger context of the teacher-child interaction (level 5 considerations, according to the conceptual framework of the present research). The current system greatly expands the capacity to code these functions: the category of conversational function describes a broad range of level 5 behaviours for each different type of pedagogical move.

4. Taba's coding system does not include those behaviours assigned in this study to levels one and two. The parameters of
Taba's study did not permit her to consider such variables as language behaviour, pausing, and turntaking, although in her recommendations for further research she does acknowledge the need for considering language behaviour in relation to cognitive functioning.

(5) Taba's work had a particularly strong influence on the development in the current work of the details and codes that describe train of thought. However, she restricted her coding system to tracing relationships between solicitations only. The current system was constructed so that relationships between moves of differing pedagogical functions could be shown.

Taba's scheme and the present one share the characteristic of being multidimensional systems that are capable of charting the flow of classroom discussions while considering the sequences of transactions between teachers and children, the changes in levels of thought during discussion, and the effect of the strategies used upon the level and direction of thought (Taba, 1964, p. 124).

In summary, Taba's coding system includes categories for describing the functions of moves of teachers (although these were limited to descriptions of cognitive functions). It reflects a conception of behaviour in the classroom as an organic whole to be analysed in terms of sequences and patterns of behaviour. Thus, Taba made important contributions to the development of level 5 behaviours in the current coding system. She did not, on the other hand, deal at all with behaviours occurring at levels one and two of the present research.
The coding system of Bellack et al. (1966) was designed to permit the study of the functioning of language in the teaching process. As such, it was quite influential in the development of the current coding system. The following points highlight the similarities and differences between Bellack's system and the present one.

(1) Where Taba's work provided an approach to coding the flow of the conversation, Bellack's work provided the basis for dividing the conversation into turns, or moves. Bellack recognized that teacher and child moves can serve one of four pedagogical functions: structuring, soliciting, responding, or reacting (these are coded corresponding to level 3 of the current system). These four functions are basic in the present system, although structuring moves are only noted as such and are not described further.

(2) For Bellack, moves were considered "basic verbal maneuvers that the teacher and the pupil make in playing the [classroom] game" (Bellack, 1966, p. 238). For Bellack, then, a move is roughly equivalent to a turn. In the present research, that definition has been modified somewhat. This investigator was interested in studying various strategies that teachers and children use in conversation. Therefore, it was useful to consider a move to be generally the smallest verbal manoeuvre that has a conversational function (as defined by the various codes of detail 6 for each pedagogical function). Thus, there will be occasional single turns that would constitute a single move for Bellack but that are coded as two or more moves in the current system, as the speaker adjusts and readjusts his strategies to fit the needs of the occasion.
(3) Bellack's coding system gives the most attention to teacher solicitations. The present coding system also treats solicitations in great detail. However it also reflects this investigator's recognition of the importance of a teacher's reacting moves in the various kinds of control she exercises over the conversation. Thus, the categories and codes for reacting moves provide for coding a broad range of detailed reacting behaviours.

(4) Bellack's system reflects a recognition of the tremendous importance of the teacher's behaviours in the teaching process. However, there is an increasing acknowledgment on the part of researchers that the nature and extent of a child's participation materially affects the actions an adult takes as a result of the child's participation (Good, 1980; Barnes, Gutfreund, Satterly, and Wells, 1983). Thus, not only teacher moves but also the various child moves need to be carefully described. Consequently, the present coding system, in addition to treating teacher moves in detail, also expands greatly the range of codes for children's moves.

(5) Although Bellack recorded utterances of his speakers and the lengths of these utterances, he did not consider language of the speakers in the way this researcher has considered it, namely, the grammatical and syntactical composition and correctness of the utterances (level 1). Neither did he designate categories dealing with the mechanics of the communicative interchange, described at level 2 of the current system. Thus, for Bellack the roles of speakers are assigned as a result of pedagogical functions at level 3, without regard to level 2 factors that might be important to the development of those roles.

(6) Bellack's coding system deals primarily with behaviours coded
at levels 3 and 4 of the current coding system. His design allows various interrelationships between aspects of the two levels to be investigated. His system permits, for instance, the analysis of certain effects of a particular pedagogical move on a succeeding move (such as the degree of congruence between the expectation conveyed in a solicitation and its subsequent response). He also deals briefly, as part of his analysis, with patterns of moves that he calls teaching cycles. In doing so, he acknowledges the importance of studying relationships between various moves and patterns and combinations of moves such as those described in level 5 of the current system.

Brophy and Good

Brophy and Good (1970) developed their coding system to describe differential behaviours of teachers in order to understand the process by which high and low achievers may be influenced by expectations their teachers have for them. The main points of similarity and difference between their work and the current coding system are noted here:

(1) Most of the behaviours coded in Brophy and Good's system can be classified at levels 3, 4, and 5 of the current system. However, because of their interest in the effect of teacher expectations on children, they focused only on certain aspects of these levels. In particular, great attention was given to the teacher solicitation-child response-teacher feedback (reactions) sequence. Teacher and child reactions containing unsolicited content was not covered, nor were local or global level 5 concerns other than the particular sequence cited above. Behaviours assigned in the current system to levels 1 and 2 were not coded by Brophy and Good.
Brophy and Good's system was designed to be used in the live classroom setting. The current system, designed to be used with tape recordings and transcripts, codes a wider range of details and more specific behaviours for each pedagogical move than does their system, especially for child responses and reactions.

Brophy and Good included other categories, dealing with classroom processes, which were not a focus of the current system.

Coulthard and Sinclair

The coding systems developed by Taba et al., Bellack et al., and Brophy and Good represent attempts by educators to understand the teaching-learning process. The linguists Coulthard and Sinclair were interested in studying verbal interactions between teachers and children in order to investigate the function of grammatical structure and position in discourse. Although the objective of their research was analysis of discourse rather than the study of the teaching-learning process, the current research coincides with their work in the following ways:

1. The questions asked by Coulthard and Sinclair and the linguistic framework in which they worked reveal their interest in categories such as language, pausing, and turntaking, behaviours coded at levels 1 and 2 of the present system. These behaviours had not been incorporated into any of the coding systems discussed previously.

2. Coulthard and Sinclair studied also behaviours classified at levels 3 and 4 of the current system (1975, p. 4). In addition, they were interested in sequences of behaviours that in the current system are described at level 5. For instance they stated that the discourse value of an item depends on the linguistic items that have preceded
it, the items expected to follow it, and what actually does follow it. Like Taba and the present researcher, they also attempted to deal with the evolutionary nature of discourse. This aspect, referred to in the current coding system as the "unfolding" of the subject matter, is discussed by Coulthard and Sinclair as the "now-coding" aspect of speech.

(3) Coulthard and Sinclair were also aware of the interdependence between linguistic and social behaviour. They point out that the link between linguistic and social behaviour may become especially apparent when something goes wrong in the interaction (1975, p. 113). In fact, they refer to various studies that suggest that it would be fruitful to study situations where the rules of discourse are not shared and cannot be taken for granted (1975, p. 141). Conversational settings involving hearing-impaired children and their teachers provide that very situation, which led this investigator to choose that setting for the current research.

(4) Coulthard and Sinclair's system was designed for use with data from the classroom setting. Therefore, it codes a range of instructional behaviours not found in the dyadic setting of the current study.

(5) Coulthard and Sinclair utilize Bellack's framework of pedagogical moves in their system. This research utilizes a somewhat modified definition of a move (see above, section 1.5, Bellack et al.) that at times assigns conversational functions to smaller pieces of language than is the case in Coulthard and Sinclair.

(6) Although there are significant areas of overlap between Coulthard and Sinclair's system and the current system, the former work is a product of the field of discourse analysis. As such it is
highly technical in terminology and application. It is not, therefore, readily accessible to most researchers outside of the field of linguistics.

Wells also developed a coding scheme in order to describe the verbal interactions of adults and children. While Wells' study was conducted in the homes of pre-school children rather than in schools, it is worthwhile to review some aspects of his coding scheme in relation to the present work.

(1) Among other things, Wells was interested in pragmatic functions that individual utterances perform. He classified these functions according to their purpose--control, expressive, representational, social, tutorial, procedural--within the larger conversational sequences of which they were a part (Wells, 1976, p. 7).

The present coding scheme ascribes conversational functions to utterances (or parts of utterances). However, the functions assigned are descriptive of the relationship of the content and/or language of moves; they do not attempt to code any other, larger functions. In the initial stages of developing the present coding scheme, categories were devised to reflect these larger function. However, after much work with the data, it was decided that ascribing functions should be part of the analysis of the coded data, not of the coding process itself. Thus, a deliberate attempt was made to require as few judgments as possible at the coding stage. Codes were devised that closely describe the relationship of content and/or language of moves to other moves. A certain amount of interpretation and inferring of
meaning is unavoidable, but it was thought to be a lesser amount than would have otherwise been required.

(2) While Wells used clause types as being expressive of the global meaning of the utterances in his data, the present coding scheme did not consider doing this. The language codes in the current system might benefited from further study of Wells' language categories.

Many of the issues discussed by Wells in his research are of importance to this investigator. The present study focused on three of the features important to understanding communicative interaction. Wells' study, because of its greater breadth, focused on a much larger number of features. The investigation of the three features of this study may perhaps be more sharply focused than in Well's larger study.

Dore et al.

Dore et al. (1979) also devised a scheme for coding conversation in the educational setting. Certain similarities and differences with respect to the current work should be noted:

(1) Dore and his colleagues used conversational acts as the unit of measure in their work, much as the present investigator uses moves. Dore stipulates that conversational acts must occur in sequences, which are defined as a series of utterances across speaking turns that have a topic and an "illocutionary domain" (1979, p. 344). These are similar to the concept of segments which are discussed in relation to the current system and which are designated by conversational function and link.

(2) Dore mentions that turntaking may be influenced by the task of the interactions, the topics of conversation, and the kind of
conversational act involved. But unlike the current system, he does not code either pausing or turntaking at all in his scheme.

(3) One of the main tasks of Dore's work was to identify how children understand the illocutionary functions of utterances. As a result, the coding of child behaviours holds the greatest prominence in his system.

(4) Dore's work has proceeded at the same time as the current work. While some of Dore's considerations in formulating his coding system were similar to those of this system, this system deals with certain categories differently from Dore. This is particularly the case in his coding of responsiveness, which he defines as supplying solicited information or acknowledging remarks. While some of the categories for the coding of responsiveness are similar in the current system, the present investigator found it useful to distinguish between responding moves and reacting moves, and to expand the categories that best describe each of these pedagogical functions.

Wood and Howarth et al.

Like this investigator, Wood and Howarth et al. (1982) and Wood (in press) chose to study conversations between deaf children and their teachers. Their work and the present research have been in progress simultaneously. The development of the current coding system cannot be said to have been directly influenced by Wood's system, but his work and the current work have proceeded along the same lines in certain important ways:

(1) One of the original hypotheses of Wood's work was that the development of deaf children is affected by the quality of their interaction with others. More specifically, he is concerned with the
impact of pre-lingual deafness upon the patterns of behaviour of the non-deaf people who interact with these children (Wood, Wood, Griffiths, Howarth, and Howarth, 1982, p. 307). This investigator shares Wood's view that the presence of deafness has implications not only for the child's abnormal reception of speech, but for the abnormal nature and content of the language to which he is exposed.

(2) Wood was particularly interested in the nature of the deaf child's responses to the different linguistic demands made of him. Wood's coding of "levels of control" is similar to the category of response prescribed coded for solicitations in the current system; the functions of the teacher's turns described by Wood are also coded in the current system. For the purposes of analysis, he developed measures, such as a teacher power ratio. The current research proposes such analyses but does not carry them out. Wood is particularly interested in the effect on the next move in the conversation of the various question types coded as part of "levels of control"—that is, how the responses of children might vary depending on the level of control exercised in the preceding move. Also of special interest to Wood are the functions of teacher turns in relation to the preceding and succeeding moves in the conversation. These categories of the system used by Wood represent behaviour coded primarily at levels 4 and 5 of the current system.

(3) The coding system developed by this investigator embodies a concept of control broader than Wood's notion of levels of control. It specifies for soliciting moves not only the type of responses prescribed by the solicitation but also the language prescribed and the cognitive level prescribed. The codes for each of these has
implications for understanding the nature and the extent of the child's participation in the interaction.

(4) While Wood and his colleagues did develop categories for the responses of children, the system developed by this investigator has a greatly expanded set of categories to describe responses and reactions of children.

(5) While Wood is interested in mean length of turns, especially in relation to the kinds of questions teachers ask, he does not emphasize in his coding system the mechanics of communication in a way comparable to the way those mechanics were incorporated into the present scheme.

(6) The current system, like that of Wood, affords the opportunity of examining the patterns of teacher moves in such a way as to uncover the ways in which teachers vary the functions of their moves. Indeed, the present system attempts to address Wood's question, "How can we describe the ebb and flow of control which characterizes teachers who avoid the pitfalls of high questioning while still being fully 'in charge'?" (Wood, in press)

(7) Wood recognizes that his scheme of analysis does not measure or describe how conversations are organized over time, and that he and his colleagues have not made an attempt to describe the content of the conversation so as to discover how adults and children "home in" on topics that interest them (in press). In the current coding system, the latter of these is incorporated into a number of categories dealing with the unfolding of the content of the verbal interaction, and thus it is possible to study how topics are initiated and followed up.
RELATIONSHIP TO STUDIES OF PARTICULAR TEACHER-CHILD BEHAVIOURS

Rowe's studies of pausing

In addition to the influence of previous coding systems, there has been considerable influence on this coding system from a few studies of aspects of teacher-child behaviour that do not appear as part of coding systems.

Rowe (1974, 1974b, 1974c) found in her work that after a teacher asks a question, the student must begin to respond within an average time of one second. If a student does not respond, the teacher will begin to repeat, to rephrase, to ask a different question, or to call on someone else (1974a, p. 81). She also found that when a student makes a response, the teacher usually reacts or asks another question within an average time of 0.9 seconds. When Rowe trained teachers to wait three to five seconds instead of the one second or less than they had been waiting previously, she reported changed values on ten student variables which seem important to learning. A few of these were mentioned above (section 1.1).

From careful examination of the data of the current study, it was clear to this investigator that the use of pauses and interruptions by teachers and children played an important role in determining the nature and extent of the participation of each in the conversation. Rowe's work provided a basis for the coding of these behaviours. A category for pauses was established, which coded three aspects of pauses: placement, duration, and type (silent or verbal).

In her work, Rowe also found that when uninterrupted, students tend to talk in bursts separated by pauses often equal to or exceeding three seconds. She postulated that students often give phrases rather than fuller responses to teachers because the teacher usually
intervenes between these bursts. Intrusion between bursts by another speaker, in her view, was considered to be behaviour which might prevent the mapping of experience and thought into language, which is what the students seems to be doing in the interval between bursts collected. (Rowe, 1974a, p. 87)

Other studies

Rowe's work on wait-times produced important information concerning not only pausing, but turntaking as well. Other studies of individual aspects of behaviour which influenced the thinking of the current investigator were the work of Berninger and Garvey (1981) on questioning behaviour and turn allocation in child discourse, and the work of Mishler (1978) on utterance structure and function in interrogative sequences.

1.6 SIGNIFICANCE OF THE STUDY

The potential significance of the current study for future research applications can be seen in a number of different areas.

(1) There is an increasing awareness among researchers of the importance of context in the study of language and communication. The present system codes behaviours within a conceptual framework that permits them to be viewed singly or in various degrees of consideration of the context of the conversation.

(2) The format of the coding manual was designed to be a model for such tools. It was developed to ease the coding process and to provide enough information about each code to allow coders to use the
system with a minimum of confusion and ambiguity. Each detail and code is carefully defined. The great majority of codes are accompanied by examples and guidelines for use. Efforts have been taken to separate any judgments about the effect of the behaviours being described from the description of those behaviours. Thus, wherever possible, the behaviour itself is coded separately from the perceived function of that behaviour.

(3) While the coding system has not been used in situations other than that described in the design of the study, it is thought that its overall design and format, as well as its conceptual framework, may be applicable to other settings. The extent to which the actual behaviours of the coding system may be applicable in other settings or with other children is not known. However, it is likely that the behaviours would be applicable in certain other settings because the individual behaviours of teachers and children described here are similar to their behaviours in other settings described by other researchers. For instance, in its present form, the coding system is likely to be applicable to other populations of hearing-impaired children and their teachers in settings involving these children and their parents. It might also be applicable in the study of interactions between babies and their caregivers. A baby, whose speech may be largely unintelligible and whose patterns of communication are immature, is similar in some respects to a hearing-impaired child in that the normal rules of the communicative process cannot be taken for granted.

In addition, Coulthard and Sinclair suggest that studies of pupil-teacher interactions in the reception classes of junior schools and nursery schools could shed light on what the rules of discourse
are, as well as how they are established and learned (1975, p. 113).
The coding system presented here could facilitate such study.

Changing the population or the materials used to stimulate the
conversation would be two ways of determining to what extent coding
system may be generalizable. (See below, Limitations of the Study.)

(4) The coding system has an immediate practical application as a
way to raise the consciousness of teachers and parents concerning
their interactions with the children who are in their care. Pro-
grammes designed to train teachers and parents might use the
behaviours in the coding system as a basis for viewing their own
behaviours and improving them. Courses for parents of young children
are becoming popular and some of these do address the question of how
to talk and listen to children (Gordon, 1975). While the aim of such
courses has been to teach parents how to facilitate open communication
in families, there is no reason why similar courses could not teach
parents how to facilitate general language development in children.

(5) Barnes, Gutfreund, Satterly, and Wells (1983, p. 82) suggest
that certain features of language input are better suited than others
to facilitating language development in the learner, although they
point out that at present there is no clear account of how this
happens. The current coding system offers a means to begin to uncover
this process.

(6) In the present coding system the investigator has attempted
to build upon research done on individual aspects of conversation from
a variety of disciplines. The coding system includes a greater number
of variables than have been included in earlier coding systems. In
particular, codes describing the pedagogical function of reacting for
both teachers and children are expanded so that (a) the role of the
teacher as reactor and active listener, as well as solicitor, can be described, and (b) the child's role in the teaching-learning process can be more fully understood. Trains of thought in conversation can be described through the coding of conversational function and link. Procedures for coding unintelligible utterances and moves surrounding them have been developed. Ways of analyzing the data are proposed which might facilitate our understanding of the interrelationships of a wide variety of behaviours. Thus, the coding system has the potential to foster an interdisciplinary approach by psychologists, linguists, educators, and other social scientists to the study of language and how it serves as a vehicle for communication.

(7) A number of important issues are raised in conjunction with the use of the coding system and analysis of the coding, including: the role of language in communication; the role of language in the acquisition of certain linguistic, cognitive, and affective skills; the communicative functions of dialogue and how these functions seem to create and maintain certain kinds of relationships between speakers; the effect of deafness on those who interact with the hearing-handicapped individual; and the role of the handicap of deafness on child development.

(8) Of more general interest are the relationships between the development of language and certain aspects of cognitive and affective development (E. Hjelmquist, 1982, p. 37, points out the need to develop tools for the study of relationships between thought and language), and the ways individuals respond to the disruption in the most fundamental of human social needs, communication.

Specific ways in which this coding system might aid in such research are discussed in some detail in chapter 5.
1.7 LIMITATIONS OF THE STUDY

Although the coding system was designed in such a manner as to have as wide and general application as possible, certain limitations of the research must be noted.

(1) The tool presented here is based solely on data collected in an educational setting involving hearing-impaired children and their teachers who participated on a one-to-one basis. A particular picture poster was used to stimulate conversation, and the conversations were recorded on audio tape. The full range of behaviours of both teachers and children conversing in this one-to-one situation are described in the coding system. However, no test has been conducted to see if these behaviours might be generalized to apply in other settings or with other populations (see section 1.6).

(2) While a study was conducted that tested reliability of the most frequent categories and codes, more extensive reliability studies are necessary to ensure the reliability of every code of every detail of the coding system.

(3) The coding system would be improved by the addition of additional codes in various categories describing cognitive level. This was not done in the present version of the coding system because the data upon which the system was developed did not call for any additional codes. Furthermore, it was felt that ample categories had been developed by others (for instance Bloom, 1956) and could be added at any time if the data of other researchers required them. In fact this is the case with many of the details and codes. It was fully the intention of this investigator to formulate the coding system in such
a way that it could serve as a model to others who might want to study verbal interaction with a view to analysing the relationships between various aspects of the communicative process, and who might wish to modify the contents of the various details and codes according to the needs specified by their own data. While the investigator had this in mind from the beginning of the project, it remains as a matter for further research to determine whether the coding system can serve as such a model. In any case, the coding system as it currently stands is thought to be a useful tool for analysing verbal interactions of adults and children in certain settings such as those described above (section 1.6).

(4) The present coding system was designed to permit researchers to analyse combinations and patterns of teacher and child behaviours in order to better understand the teaching-learning process. The research presented here, however, was confined to the construction of the instrument to facilitate such analysis. The specific details and codes of the coding system evolved gradually. They were the result of a continuous process of development and refinement that ensured that the details and codes accurately represented the data, in the light of the particular focus of this research. The next step of the research, the development of categories required for analysis of the data, is best accomplished by means of this same gradual, interactive methodology. Thus, chapter 5 of this research presents some initial directions for revealing the underlying patterns of behaviour to which the coding system is sensitive. Neither numerical evidence of relationships between patterns of teacher behaviours and those of children, nor the categories of analysis required for such conclusions to be drawn are presented. However, the means of obtaining the critical data from which such categories could be developed, and from which such relationships might be established, are the essence of this coding system.
Chapter 2
DESIGN OF THE STUDY

In order to examine some functions of language in the communicative process, conversations between teachers and children occurring on a one-to-one basis in educational settings were studied. Conversation in the teaching-learning context, then, was viewed by this investigator as a specific type of communicative exchange, one particularly useful for the purposes of this research.

RATIONALE FOR THE CHOICE OF POPULATION

The data from which the coding system was developed were collected in schools for hearing-impaired children. Hearing-impaired children and their teachers were chosen for study for three important reasons:

(1) It had been suggested by other researchers in their recommendations for further research (Philips, 1972, pp. 392-393) that it would be worthwhile to study situations where rules of discourse could not be taken for granted and were not necessarily shared by the participants. This recommendation was made because it was thought that such a situation would make the rules more readily apparent. This investigator felt that a population of hearing-impaired children and their teachers would provide just this kind of situation, because both the preliminary data and the experience of the investigator as a teacher of the deaf suggested that the difficulties imposed by deafness do influence the dynamics of the communicative processes.
involved in teaching. Behaviours of deaf children and their teachers are often more pronounced and exaggerated than those of the general population, as the participants in conversation attempt to communicate without being able to take for granted many of the accepted rules of conversation.

(2) Hearing-impaired children and their teachers provide an unusual opportunity to study the development of language and communication skills. Though these skills are sometimes taught in ordinary schools, they are most often taught incidently, and most often to the youngest children in the school. Where deaf children are concerned, such skills are taught throughout their school careers and the teaching of them is more deliberate because the main handicap related to deafness is said to be in the area of language and communication. Additionally, some teachers of the deaf can be observed to emphasize language teaching whereas others concentrate on the development of communication skills in general (with language skills being one particular aspect of these), in the deaf children they teach. The fact that some teachers emphasize different aspects of the consequences of hearing impairment in their teaching enables us to look more closely at the relationship of language teaching to the development of language and communication and how these influence each other.

(3) Deafness, in addition to being a handicap associated with speech and language deficits, is often also associated with various cognitive differences (Otten, 1980) and deviant patterns of social communication (Getz, 1953). Deaf children often exhibit all of these characteristics simultaneously, thus providing a unique opportunity to study the possible interactions between certain aspects of language
and cognitive functioning on the one hand, and certain aspects of communicative competence on the other (e.g., the ability to take turns, knowing when a question is being asked, providing continuity in a conversation by responding and reacting with appropriate and relevant content to what has been said previously, etc.). Coulthard and Sinclair describe a teacher in an ordinary classroom simultaneously giving a lesson in the classification of objects as members of categories and also a lesson in the rules for making appropriate contributions to the classroom discussion. They point out that in the instance they describe, learning to speak and learning to behave are inseparable (1975, p. 13), thus, emphasizing the link between linguistic and social behaviour. Part of the value of studying hearing-impaired children is in being able to establish what features promote that link, and which ones do not.

THE POPULATION

Three pilot groups of children and their teachers were chosen from two schools for hearing-impaired children in Great Britain. Both schools were known to express an oral philosophy of deaf education. That is, they considered their main vehicle for communicating with the children to be oral language and speech, in conjunction with the use of auditory equipment. This philosophy usually has as its long-term goal the integration of the hearing-impaired child into a "hearing world."

The children

In addition to a shared philosophy of education, the reception classes (ages 4 to 5) in each school shared certain characteristics.
The receptive language of these children as measured by the Reynell Developmental Language Scales (Reynell, 1969) was quite similar. In addition, the speech of the children in the two schools was observed to be equally unintelligible.

Although these youngest children in the two schools had similar competencies, the communicative competencies attained by the older children differed greatly.

School A children at the upper end of the school (ages 8 to 16) achieved limited competency in verbal communication. Receptive and expressive language skills were assessed by the investigator and were found to be poor. Assessment was based on use of the following measures: WISC-Verbal (Wechsler, 1949, 1955, 1965), Peabody Picture Vocabulary Test (Dunn, 1959), Schonell's Silent Reading Test (Schonell, 1956), Donaldson's Linguistic Series (Montgomery, 1973), teacher ratings, and parental evaluations. In addition, the children's speech was observed to be largely lacking in intelligibility.

In school B, however, children at the upper end of the school (ages 8 to 16) showed receptive and expressive language skills markedly different from those of the children in school A. In addition, their speech was observed to be largely intelligible in contrast to that of school A children.

The differences found in the children of the two schools were the reason for choosing those schools. It was thought that an exploration of the verbal interaction between teachers and children in both schools would ensure that the coding system would reflect the widest range of behaviours of teachers and children.

The particular children who were members of the pilot groups were
selected with the help of the principals of their respective schools. This was done so that the children could be said to represent a range of communicative competencies existing in each school. Children from the two schools were paired on the basis of hearing loss, intelligence, socio-economic status, and other factors. The children's hearing losses ranged from 80 db to over 100 db (ISO) across the range. The children's ages ranged from 8 to 16 years.

Three pilot groups, each containing eight children and their teachers, were studied. The first group was made up of children who had spent their school careers in school A. In the second group were children who had spent their school careers at school B. The third group of children were ones who had transferred into school B during their school careers. Upon entry into school B, the children in this third group were reported by the principal to have communication skills that were remarkably similar to those this investigator found in the school A children, although in fact these children had come from a number of different schools. Yet, it was noted over a two-year period of observation by this investigator that the longer these "transfer" children were associated with school B, the more similar their behaviour became, however gradually, to that of the other school B children. These children were tested using the same measures as were used to test school A and school B children. The results for the transfer group children lay largely between the results for school A and school B children.

The teachers

It was not only the differences in levels of competence of the children in the two schools that seemed to set the schools apart.
There appeared also to be a difference in the range of teacher behaviours that could be observed at each school. For instance, school A teachers tended to talk using single words, simple phrases, and simple sentences, pausing only infrequently after speaking. Discussions tended to be primarily on the factual level. School B teachers, on the other hand, tended to use more elaborate phrases and sentences, to pause more often after speaking, and to use more inferences in their talk.

The teachers who participated in the study were for the most part the children's own class teachers. Some teachers taught more than one child. A few teachers declined to participate in the research; in these cases the principal of each of the upper schools served as the child's teacher for the purpose of this study. It should be noted that it was customary for the principal of each school, aside from their administrative duties, to participate directly in the education of the children. They would often take the role of "tutor" to many children, taking them out of class for special help on a one-to-one basis. This enabled them to be thoroughly familiar with all of the children included in the study. Including the principals, ten people participated in the research as teachers.

THE SETTING

The data were collected in a setting known as "individual speech" or "individual conversation," which is a typical setting for teachers and deaf children. This setting, commonplace in the two schools, typically gives an individual teacher and child several opportunities a week to work together more intensively than is possible in the classroom. The children are tutored by their own teachers either in a
separate room from the other children or in a secluded area of the main classroom. The time is usually used for talking, reading, or speech work, depending on the particular child. Sessions of this kind last anywhere from a few minutes to twenty minutes and vary from child to child and from day to day. Such a setting, which affords the opportunity for a teacher and child to interact more individually, are not unique to schools for hearing-impaired children. Michaels (1983, pp. 77-78) described teachers and children in ordinary schools involved in this kind of collaborative exchange, occurring in classroom activities such as small-group reading lessons, individual writing conferences, and oral discourse activities often known as "sharing time." She states that sharing time is a nearly universal speech event in pre-school and elementary school classrooms (p. 79).

The individual conversation setting was chosen for several reasons:

(1) It provided an opportunity to observe and record conversations while the teacher and child were engaged in a more collaborative effort than would otherwise be possible in school.

(2) The investigator could more easily control the subject matter and length of the conversation than she could in other school settings.

(3) Like Coulthard and Sinclair (1975, p. 6), this investigator felt that it was worthwhile to pursue a further understanding of conversation in a more circumscribed setting, where there is some understanding on the part of each participant of their particular roles in the teaching-learning process.

(4) In the individual setting, the teacher was free to pursue her goals for the particular child.

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The setting described here is one that was familiar to all the participants in the study. While it cannot be said that the intervention of the investigator had no effect on the interactions of teacher and child, such effects could be said to have been minimized because the setting was one to which both participants were accustomed.

DESCRIPTION OF THE SUBJECT MATTER

In order to highlight differences among teachers and children in the study, it was decided to control the range of subject matter that would be discussed in the conversational setting by all participants. Thus, differences in the verbal behaviours being described could not be said to be a function of the subject matter. Although the subject matter was to be limited, at the same time it needed to be representative of the material discussed by these teachers and children so that their usual patterns of interaction would be employed. To suit this purpose, a large picture poster was used. The poster was chosen because it presented opportunities for both teachers and children to discuss its contents on a variety of levels. (A photograph of the picture poster is found in Appendix C.)

COLLECTION OF THE DATA

Each teacher first had an opportunity to have a conversation about the picture poster with a child not participating in the study. This enabled teachers to become familiar with the picture as they would have, had they made preparations for the lesson. Each teacher was instructed to talk to the child about the picture as he would have if it had been an ordinary individual lesson with the child. The
Discussions between the teachers and children were limited to three minutes and forty seconds, which was found to be sufficient time for a teacher and a child to converse about most aspects of the picture. Once the practice sessions were complete, each of the children in the three pilot groups and his respective teacher had a discussion about the picture. The discussion was recorded on audio tape. The children used headphones for auditory amplification, their regular hearing aids, or no auditory aids at all, depending on what they were accustomed to using in such sessions. Once the audio tapes were recorded, the researcher and a second listener, both trained teachers of the deaf, listened to the recorded conversations and transcribed them according to procedures described in chapter 4.

THE CODING SYSTEM

Once the conversations were transcribed, they were divided into moves and pedagogical moves according to procedures outlined in the introduction to the coding manual. The definitions and guidelines for establishing moves, assigning pedagogical functions, and coding all the details and codes evolved as a result of multiple listenings to the tapes by this investigator and another trained teacher of the deaf. The conversations were coded and recoded and definitions and guidelines were written and revised until: (1) the coding system seemed to reflect accurately the variations found in the data, and (2) the coders sensed that there was a high degree of reliability. When the coding system was complete, a formal test of reliability was carried out, as outlined in chapter 4.

The coding system is described in detail in chapter 3.
Chapter 3
DESCRIPTION OF THE CODING SYSTEM

The theoretical framework of the coding system, introduced in chapter 1, consists of five levels. Each higher level reflects an increase in the dependence of its components on the context of the verbal interaction for an interpretation of the behaviours coded at that level. It is the purpose of this chapter to describe the coding system in a detailed fashion. This will be accomplished by discussing all categories of the coding system according to the levels to which they are assigned.

For ease of reference, the meanings of all details and codes are summarized in Appendix A. Examples will be offered wherever they might be helpful to an understanding of the concepts being presented. The symbols used in the examples are explained in Appendix B. A photograph of the picture poster that served as the subject matter for the conversations is found in Appendix C.

This discussion should not be considered to be a comprehensive presentation of all aspects of the coding system. Only those codes, definitions, and guidelines that reflect the most important theoretical and practical concerns are discussed. In particular, the codes "can't tell" and "not coded for this move" are not mentioned in this discussion, but are included as codes for virtually every detail. Exact definitions of all the categories, full lists of the codes for each category, and the precise guidelines for the application of each code, can be found in the coding manual, which is a separate volume.
The smallest component within a conversation is one utterance of a single speaker. Level 1 comprises behaviours of teachers and children that can be coded without regard to surrounding behaviours or moves. It describes behaviours in their simplest context. Thus, only one behaviour of a single speaker is considered for elements at this level. The grammatical structure of a move can be considered an example of a level 1 element. Thus, in the present coding system, the parts of speech and syntactic elements of a given speaker’s move are coded at this level as they can be coded without regard to any larger context.

**LANGUAGE BEHAVIOUR (Detail 4)**

Language behaviour as coded in level 1 is defined as "the part of speech or syntactic structure of the language of the speaker." Language behaviour is coded for both teachers and children.

**Coding intelligible utterances**

The categories of language behaviour coded for teachers and children are: yes or no, noun, noun phrase, faulty noun phrase, verb, verb phrase, faulty verb phrase, faulty sentence, simple sentence, compound or complex sentence, and other (lone adjectives, adverbs, interjections, etc. not covered by the preceding categories).

Some of these categories describe features of language that one would not expect to be associated with the language of teachers.
However, categories describing faulty usage were included not only for children but also for teachers. The frequency of the occurrence in the data of faulty usage by teachers suggested the possibility of a relationship between some of the faulty usage by teachers and certain verbal behaviours of children. The categories involving faulty usage that were selected for coding were those most commonly found in the data.

It should be noted that it was decided not to code the language behaviour of teacher solicitations. The reason for this is explained fully in section 3.4 below, Language Solicited.

**Coding unintelligible utterances**

In addition to the codes listed above for both teachers and children, there was a need to describe children's utterances also in terms of intelligibility.

There were large numbers of partially intelligible and unintelligible utterances in the data. It was important to describe them not only because of their prevalence in the data, but because they provide exactly the opportunity that interested this researcher: to study situations in conversation where the rules of discourse cannot be taken for granted. When a conversation contains a great many utterances that cannot be deciphered, the conversation is disrupted and there is a breach in the conversational flow. How teachers resolve this dilemma was a matter of great interest to this investigator because the way in which the dilemma is resolved may reveal much about the assumptions (e.g., understanding of each speaker's role) that underlie conversation between certain teachers and children.
The method for coding unintelligible utterances went through a number of changes during the development of the coding system. Initially, intelligibility was not coded together with the other language behaviour of children, but was coded as a separate detail. At that stage, intelligibility was described in terms of whether or not the teacher's next move revealed that she had understood the child's utterance or not. Thus, intelligibility of an utterance was determined by what the next speaker did and not according to whether or not the coder could understand the words of the utterance itself. A series of guidelines were developed to aid the coder in judging whether or not the teacher seemed to have understood the utterance. Eventually, this approach to describing unintelligible utterances was discarded. It was thought to be too dependent on a context that itself was often not clear. In addition, even with the guidelines that had been written, there were difficulties in establishing reliability between coders. Subsequently, the investigator decided to describe unintelligible behaviour in the same manner as the rest of language behaviour. That is, it was coded at level 1, independent of any other verbal behaviour that may have preceded or followed it.

For the purposes of coding, unintelligible utterances were divided into two kinds: (1) those utterances with no intelligible speech, and (2) those which included some intelligible speech.

Un intelligible utterances with no intelligible speech were of two different types. Utterances of only a few syllables seemed most often to be non-purposeful vocalizing. Although these short utterances seemed at times to be attempts at single-word repetitions or responses, it was most often the longer utterances that seemed to have the pattern and purpose of intelligible speech yet without
intelligible words. Thus, two categories were created: one to code utterances of three unintelligible syllables or less, and one to code utterances of more than three unintelligible syllables.

Other unintelligible utterances contained some intelligible speech along with the unintelligible speech. These usually seemed to have some general purpose or intent (as opposed to random vocalizing), much like the second type of unintelligible utterance described above, but they included more intelligible language. Therefore, the codes developed for this group did not consider differences in the number of unintelligible syllables. Rather, the utterances were coded as comprising one or more unintelligible syllables plus the part of speech or syntactic structure that was intelligible.

The language codes for child utterances including unintelligible speech are as follows: three unintelligible syllables or less, more than three unintelligible syllables, unintelligible syllable(s) plus noun, unintelligible syllable(s) plus faulty noun phrase, unintelligible syllable(s) plus noun phrase, unintelligible syllable(s) plus verb, unintelligible syllable(s) plus faulty verb phrase (incomplete sentence), unintelligible syllables plus verb phrases, unintelligible syllables plus faulty sentence, and unintelligible syllables plus complete sentence.

3.2 LEVEL 2 - BEHAVIOURS CODED IN CONSIDERATION OF ADJOINING MOVES

While language behaviour can be coded without regard to other utterances, other features of the communicative process emerge when
adjoining utterances of two participants are considered. Level 2 details describe the degree to which each speaker participates in conversation in accordance with certain of the accepted rules of discourse. Level 2, providing information about some of the mechanics of the communicative exchange with respect to two utterances, includes both pausing and turntaking.

PAUSING BEHAVIOUR (Detail 1)

Pauses are the first feature of the mechanics of the communicative exchange that is included in the coding system. A pause is defined as a wait-time in the conversation. It is a feature of communication which gives boundaries to utterances.

Rationale

It was apparent from the tape recordings of the conversations that some teachers used pauses in their verbal interchange differently from other teachers. Similarly, there were differences in how various children used pauses. Three features of pauses were seen as being important: (1) type (verbal or silent); (2) location (where teachers and children paused in relation to their own turns); and (3) duration (the length of time for which a speaker pauses).

When pauses were first identified as an important feature of the communicative exchange, much time was devoted to the problem of to whom a given pause "belongs."

While one person seems to be doing the pausing (usually the current speaker), it is the other participant in the conversation who controls whether a potential pause actually becomes a pause or not. By its very nature, then, pausing involves two people: one who starts
a pause, and one who allows the pause to happen. Thus, pausing is one of the features of the mechanics of the communicative exchange that characterize level 2.

Given the ambiguity in determining pause ownership, it was decided by convention to code the pause along with the turn of the most recent speaker. At the same time, pauses of various durations were coded so that it would be possible to obtain some indication of who was pausing and to what extent the pause was allowed to happen.

Coding

Three independent characteristics of pausing are coded for each move: type, location, and duration.

Type of pause. Two types of pauses are coded: silent and verbal. Silent pauses are empty wait-times. Verbal pauses occur when words such as "well..." or "uhm" fill the wait-time.

Location of pause. Pauses occur at the beginning, at the end, or anywhere in the middle of an utterance. Pauses associated with a teacher seemed primarily to occur at a potential completion point in the teacher's utterance. In child utterances, on the other hand, it could not always be determined whether the location of a pause was at a potential completion point. Codes were therefore developed to allow for coding of a wide range of locations of pauses.

Silent pauses at the beginning of turns were considered to be at the end of the previous turn, as discussed above. A verbal pause, on the other hand, could clearly be coded as being placed at the beginning of a turn.

Duration of pause. The duration of a pause is measured in seconds. Three durations of pauses were coded: less than one second,
one second or longer but less than three seconds, and three seconds or longer. The category of pauses of three seconds or longer was included because the work of Rowe (1974a, 1974b, 1974c) showed that children are more likely to talk when teachers wait three seconds or more after talking. The two shorter durations were also coded because the data revealed that most pauses last less than three seconds. A need existed to describe pauses of relatively longer and shorter duration within this time frame. Such small measures of time were included in the coding of pauses because some teachers of the deaf seemed reluctant to wait very long for a response from their pupils. It was as if some of them were very anxious about the likelihood that their deaf pupils could or would respond, so these teachers tended to shorten their wait-times.

**TURN TAKING BEHAVIOUR (Detail 2)**

The second feature of the mechanics of communicative exchange described in the coding system is turntaking. Turntaking is defined as the placement of an utterance in time with respect to another utterance.

**Rationale**

The ability to take turns in a conversation is part of overall communicative competence, signaling that speakers have an understanding of their social relationship and therefore their roles in any given conversation.

The collected data contained a wide range of turntaking behaviour of teachers and children. Some of the conversations were characterized mainly by the child interrupting the teacher or the
teacher interrupting the child, or by both speakers talking at the same time. Other conversations could be described as more of an alternating exchange of the kind usually associated with conversation, but also including some interrupting and simultaneous speaking as might be found in ordinary conversation.

The codes for turntaking were revised many times. Great effort was taken in devising the codes to describe adequately the behaviours of both teachers and children. In addition, the coding of turntaking is closely related to the assignment of the move boundaries in a transcript, so the development of rules for dividing utterances into moves often needed to proceed simultaneously with the development of the coding of turntaking.

It should be noted also in this context that some aspects of turntaking are closely related to pausing, the other level 2 detail. For example, an interruption can be thought of as the absence of any pause, and can indicate that pausing did not or was not allowed to happen. Thus, pausing and turntaking both have considerable impact on the division of the verbal interaction into moves. A detailed explanation of how pausing and turntaking are related to decisions about move boundaries can be found in the introduction to the coding manual, in the section "Procedure for Determining Move Boundaries."

Other difficulties concerning the coding of turntaking are also dealt with in the coding system, such as how to code a move when a speaker goes on for a few more syllables after some interjected speech by another speaker, how to code a move that is interrupted and never completed, how to code false starts, and how to code interjected speech if it occurs more than once within another speaker's turn.
Coding

Turntaking is coded for each speaker and every utterance, without any judgment regarding the appropriateness of the speaker's placement of his utterance in relation to the other speaker's utterance. Three aspects of turntaking were seen as particularly important in understanding the verbal interaction: (1) the nature of the beginning of the move; (2) the presence or absence of speech interjected by another speaker during the course of a move; and (3) the nature of the end of the move.

A number of turntaking behaviours were coded:

A move is considered to have a normal beginning if the speaker begins without having interrupted another speaker. That is, he and another speaker are not in conflict for the same "space" in the conversation. The current speaker begins his move at what seems to be a potential completion point of the previous speaker's move.

A move is considered to have a normal ending if there is no indication that the speaker terminated his move prematurely on account of a trespass or simultaneous speech. The speaker stops at a potential point of completion of his move.

A move is considered a trespass if a second speaker begins to talk while a previous speaker is still speaking. This is coded for the second speaker, who trespassed upon the move of the earlier speaker.

A move is considered to have been interrupted if a speaker prematurely ends his move on account of a trespass. This is coded for the first speaker, whose move was trespassed upon.

A trespass that does not result in premature termination of the first speaker's move is considered to be interjected speech with
regard to the first speaker's move. That is, if a speaker continues his move despite a trespass, the trespasser's speech is considered to have been interjected into the first move. Interjected speech is coded in the move of the first speaker, into whose move the speech was interjected.

A move is considered to have been discontinued if: (1) a trespasser prematurely ends his trespassing move, apparently because the first speaker continues talking or, (2) one of two simultaneous speakers ends his move prematurely, apparently because the other speaker continues talking.

Simultaneous moves are two moves which begin simultaneously.

3.3 LEVEL 3 - ASSIGNING PEDAGOGICAL FUNCTIONS TO MOVES

In describing levels 1 and 2, we have looked at certain features of the conversation but have regarded them only in isolation from any function they might serve.

However, once the verbal interaction of the participants has been divided into turns, it is then possible to describe the function each turn serves in the context of the interaction. In the case of the teaching-learning process, the functions served may be said to be pedagogical functions. Level 3 assigns pedagogical functions to the utterances of the conversational participants. Bellack et al., (1966) referred to each turn as a pedagogical move and designated four types, each serving a pedagogical function.
STRUCTURING

Structuring moves serve the pedagogical function of setting the context for subsequent behaviour by either launching or halting-excluding interaction between students and teachers. For example, teachers frequently launch a class period with a structuring move in which they focus attention on the topic or problem to be discussed during that session. (Bellack et al., 1966, p. 4)

Example:

Teacher: "Today we are going to talk about cats."

SOLICITING

Moves in this category are designed to elicit a verbal response, to encourage persons addressed to attend to something, or to elicit a physical response. All questions are solicitations, as are commands, imperatives, and requests. (Bellack et al., 1966, p. 4)

Examples:

(a) Teacher: "Look at that!"

(b) Teacher: "What is it?"

RESPONDING

These moves bear a reciprocal relationship to soliciting moves and occur only in relation to them. Their pedagogical function is to fulfill the expectation of soliciting moves; thus students' answers to teachers' questions are classified as responding moves. (Bellack et al., 1966, p. 4)

Example:

Teacher: "What is it?"
*Child: "It's a bucket of water."
These moves are occasioned by a structuring, soliciting, responding, or prior reacting move, but are not directly elicited by them. Pedagogically, these moves serve to modify (by clarifying, synthesizing, or expanding) and/or to rate (positively or negatively) what has been said previously. Reacting moves differ from responding moves: while a responding move is always directly elicited by a solicitation, preceding moves serve only as the occasion for reactions. Rating by a teacher of a student's response, for example, is designated as a reacting move. (Bellack et al., 1966, p. 4)

Example:

Teacher: "What is it?"
Child: "It's a bucket of water."
*Teacher: "Yes, and the bucket is red."

The present coding system acknowledges all four of Bellack's pedagogical move types; however, because the data did not include many structuring moves, this type of pedagogical move is only briefly included in the coding manual.

**DIFFERENTIATING BETWEEN RESPONDING AND REACTING MOVES**

In the development of the coding system considerable effort was made to distinguish adequately between responses--moves that could be said to fulfill at least minimally the expectations of solicitations--and reactions--those which could not be said to fulfill them. Consideration was given to coding a single pedagogical move at level 3, reactions. A response would then have been a level 4 code designating a particular kind of reaction. This would have been both appropriate and accurate because one of the criteria for differentiating responses and reactions is a level 4 detail (cognitive level).
However, it seemed to the investigator that it would be more useful to consider responses as having a distinct pedagogical function at level 3 because their function is different from the function of reactions. In addition, it seemed reasonable to make the distinction between responding moves and reacting moves, given that others in the field had done so (Bellack et al., 1966; J. Buckler, 1977). Therefore, the coding of response as a pedagogical function at level 3 must be viewed in each case as tentative, pending the application of the level 4 criterion.

A response is characterized by (1) its congruence with the eliciting solicitation, and (2) its appropriateness in terms of content (see Coding Manual, introduction, section 5). These characteristics establish both the definition of a response and also guidelines for distinguishing between responding moves and reacting moves.

**Congruence**

**Congruence of language.** In order to be coded as a response, the child's move must fulfill, at least in some stipulated minimal way, the language demands put forth in the soliciting move. Thus, if a teacher solicits a minimum of a noun or noun phrase (SOL det4=2), the child's move, to be coded as a response, must consist of at least a noun or noun phrase (RES det4=2 or 4).

Examples:

T sol: Who is this?  
C res: Cat. [noun]

T sol: Who is this?  
C res: The cat. [noun phrase]

It should be noted that only utterances which are largely intelligible can be coded as responses. If the utterance contains an
unintelligible part, for the move to be a response that unintelligible part must be in a position where its probable meaning can be determined so that it does not interfere with the comprehension of the utterance. If more than this minimal and decipherable unintelligible speech is present, the move is coded as a reaction. Therefore, the language codes for responses do not include any categories which include unintelligible syllables.

Examples:

a) T sol: Who will it fall on?
   *C res: - the police.

b) T sol: Who will it fall on?
   *C rea: ---- the police.

In example "a," the unintelligible syllable might represent the word "in," "on," or "to." In any event, no matter what the unintelligible word was meant to be, it is unlikely that the meaning of the child's response would be changed because it is virtually completely intelligible. Thus, the child move is coded as a response.

In contrast, in example "b," the number of unintelligible syllables and also their placement in the utterance indicate that the child's utterance might or might not be a response if the syllables were replaced by language. Thus, if the teacher solicited, "Who will it fall on?" the next utterance might be, "It will fall on the police," rendering the utterance a response. But the child's utterance could also be, "The cat will trick the police," which would be coded as a reaction inasmuch as it does not address the solicitation. Because there is no way of knowing what the child meant in his original utterance, the utterance is coded as a reaction. (The teacher's move is coded as having solicited a minimum of a noun or noun phrase, and the language of the child's reaction is coded as
unintelligible syllables plus a noun phrase, as described in section 3.1 above.)

3.4 LEVEL 4 - THE MANNER IN WHICH AND THE DEGREE TO WHICH PEDAGOGICAL FUNCTIONS ARE CARRIED OUT

In level 3, each pedagogical move was seen as serving a function in the conversation. In addition to this, each move has certain features that describe the various ways in which these functions are carried out. Level 4 details describe the manner in which and the degree to which pedagogical functions noted at level 3 are actually carried out.

The level 4 details are:

**Solicitations:**
- response prescribed
- language solicited
- cognitive level solicited

**Responses:**
- cognitive level
- correctness

**Reactions:**
- cognitive level
- rating function

**SOLICITATIONS**

Soliciting moves serve the function of eliciting a response from another participant in the conversation. Bellack found in the preliminary analysis of his data that the core of classroom discourse is "the response-expectant soliciting move followed by the expectancy fulfilling responding move." (Bellack et al., 1966, p. 87).
In the preliminary study of the data collected by this investigator, it seemed that the teachers' soliciting moves* were expectant of responses, but that there were great differences in the degree to which the responding moves were fulfilling those expectations.

In fact, many of the moves that followed solicitations could not be said to fulfill even the most basic of the expectations of a soliciting move, and therefore could not be said to be responses at all. Instead, many soliciting moves were followed by utterances that were not addressed to the solicitation, but could only be said to be "reactions" to the fact of someone else having spoken.

Thus, it became important to look at soliciting moves in terms of the three features that were the primary focus of the coding system—(1) the control exercised by teachers over the nature and extent of the child's participation, (2) the control exercised by the teacher over the unfolding of the subject matter, and (3) the actions taken by the teacher in response to the nature and extent of the child's participation.

It was thought that in the light of these features it could be better understood how each participant in the conversation gets the message from the soliciting move of what it is he is to do in the move following any soliciting move. The issues that arose regarding soliciting moves were: (1) what message is transmitted to the other person about what he, the potential respondent, should do next; and

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*In the data collected by this investigator, nearly all solicitations were made by teachers. Therefore, the word "teacher" is used in describing the solicitor unless otherwise indicated.
(2) how that message is transmitted. This response-expectant emphasis determined the features of solicitations that were coded.

The details for solicitations on level 4 describe the behavior expected or allowed in the next move as a function of the nature of the particular soliciting move. Given this viewpoint, the behavior of a solicitor can be said to prescribe in certain important ways the behavior of the responder. Each of these ways will be shown later to be components of the control exercised by the teacher over the nature and extent of the child's participation.

Response Prescribed (SOL Detail 3)

The first factor which is prescribed is the degree to which the solicitor specifies the range of correct responses. It describes the options made available to the responder for the degree of his participation in determining the content of the response (see chapter 5; section 5.1). The options are: nonverbal response; repeating; yes or no; selecting; construction of the single correct response; construction of a response from within a specific range of correct responses; construction of a response where no range of correct responses has been specified; and construction of a response where one of the previous types of construction applies but it is not possible to tell which one.

Nonverbal (SOL det3-1). The teacher specifies in her solicitation that a minimum of a nonverbal action is required by the child to fulfill her expectations for a response. Thus, the teacher might solicit by saying, "Look at the policeman's face," and the child need only look to have fulfilled the response-expectant soliciting move.
Repeating (SOL det3=2). The teacher prescribes in her solicitation, either verbally or through intonation, that the child must repeat some of the teacher's utterance: "The cat is trying to make the policeman trip over. Can you say all that?"

Selecting (SOL det3=3). The teacher solicits by offering the child the actual acceptable response choices. She thereby expects the child to select one of the choices she provides. For example: "Is he a good cat or a bad cat?"

Minimum of yes or no (SOL det3=4). The teacher specifies by the nature of her solicitation that the minimum response she expects from the child is a yes or a no. Examples are: "Is he happy?" or "Is this happening in London?" The structure of the solicitation itself gives clues about what is required in an appropriate response.

Construct the single correct response (SOL det3=5). The teacher indicates by the way she solicits that there is only a single correct response. The teacher's question gives information about the content of the response. Although in this case the response is still quite prescribed, this type of solicitation does more actively engage the child in the process of forming the response than the previously discussed options do. In these prior options, the teacher provides at least clues about the format for responding and, indeed, provides the content. However, in the categories where the response prescribed specifies construction of a response, the child increasingly takes responsibility for various aspects of the response, while the teacher prescribes it less and less. (This is discussed further in chapter five, section 5.1.)

Construct a response within a specific range of correct responses. The teacher might solicit, "What's he doing?" or "Who
are all these cats?" In each of these solicitations, the subject has been specified by the teacher in a general way, but within that framework the child is given responsibility for constructing a response of his choice from within the range specified. Any response he chooses from within this specified range will satisfactorily fulfill the expectations of the solicitation.

Construct a response where no range of responses has been specified. In effect, the teacher solicits the child to determine the topic. An example of this would be a solicitation such as: "Tell me what is happening in the picture." In this case, the child is given full responsibility for determining the direction of the conversation.

Language Solicited (SOL Detail 4)

The second type of prescription concerns the language solicited. This category addresses the question, "What parts of speech or syntactic structures of language have been solicited?"

Sometimes a specified part of speech or syntactic structure is solicited. An example of this is when a teacher solicits a minimum of a "yes" or "no" response. There are two other instances of this. One is where the teacher prescribes, through the structure of her solicitation, that the language elements of the response are to be a noun or noun phrase only. For example, the teacher may say, "The water will fall on the policeman's...." The second case is where the teacher prescribes through the structure of her solicitation that the language elements of the response are to be a verb or verb phrase only. For example, the teacher may say, "The cat will...." In both of these instances, the teacher is soliciting the child to complete a phrase or sentence that the teacher has begun.
More often, however, the teacher does not solicit a specific part of speech or syntactic structure but rather a minimum acceptable language element. For instance, the teacher might prescribe by the structure of her solicitation that the language of the response is to be a minimum of a noun or noun phrase: "What's the bucket attached to?" The child's response may be: "Rope," or "A rope," or "It's attached to a rope."

Similarly, the teacher might prescribe by the structure of her solicitation that the language of the response is to be a minimum of a verb or verb phrase or that it must be a sentence. Thus, she may solicit, "What's this one doing here?" and the child may respond: "Pulling," or "Pulling the rope," or "He's pulling the rope."

Lastly, a teacher may solicit the child to respond with a full sentence. "Tell me about the picture", and "What's happening here?" are solicitations that cannot be satisfied with a response of less than a sentence.

The investigator's interest in the ways in which teachers exercise control over the nature and extent of the child's participation led to this approach to coding the language for solicitations: namely, coding the language elements solicited rather than the language of the solicitation itself. The emphasis is on what the solicitation prescribes linguistically for the next move. This approach was very arduously arrived at, considering that many other studies had put a heavy emphasis on describing the question forms of solicitations. (Robinson and Rackstraw, 1972, and Buckler, 1977, described "wh-", "why" questions, and "how" questions.) Nevertheless, when this investigator studied her data, time and again it was seen that the form of a solicitation itself often seemed to
have little to do with the language (or the cognitive level) prescribed for responding. For instance, a teacher could ask, "What is he?" or "What is he doing?" Both solicitations use the question form "What...?" Yet, the question form does not tell us anything about the nature and extent of the participation required of the child to make his response acceptable. Coding these two "what" questions according to the present coding system allows the researcher to see that the solicitation, "What is he?" requires a minimum of a noun or noun phrase from the child, while the solicitation "What is he doing?" requires a minimum of a verb or verb phrase or sentence from the child. Although both solicitations are "what" questions, in the first, the expectation of the teacher is for a response involving a noun, in the second, the expectation is for verbal language elements. The way in which this coding system deals with this phenomenon of questions that have the same apparent structure but that nonetheless place different demands upon the next person's move is one of this system's distinguishing features. This is one of the aspects of the coding system that gives us the potential to explore the ways in which teachers exercise control over the nature and extent of the child's participation. (See chapter 5, section 5.1, for a further elaboration on this.)

It should be noted that the way in which language is treated for soliciting moves is quite different from the way in which language is described for the other pedagogical moves. (See chapter 3, section 3.1.) The language details for responses and reactions describe the language of the utterance itself, and thus were considered as level 1 details. That is, the language of these utterances could be coded without regard to surrounding moves. However, the language detail for
solicitations--language solicited--can only be coded in relation to a succeeding pedagogical move, and thus is considered as part of level 4. (It may be of interest that a level 1 detail for the language of solicitations--language of the solicitation--was originally included in the coding system, but was eventually eliminated because it seemed not to further any understanding of the three features that served as the focus of the coding system.)

Cognitive Level Solicited (SOL Detail 5)

The third type of prescription concerns the cognitive level solicited, that is, the thought processes required of the child in order for him to respond in an acceptable way to the solicitation. Originally, the investigator considered a large number of cognitive categories to be necessary to describe the cognitive level solicited by teachers. Benjamin Bloom's categories (1956), Taba's categories (1964), and those of many others were carefully considered. However, when these various categories were used on a trial basis with the data, they were considered to be too detailed for the purposes of this study. As a result of such trials, it was determined that the teachers of hearing-impaired children who participated in the study solicited responses mainly at three cognitive levels.

At the first cognitive level, the teacher directs the child's response to be a unit of information. When this level is solicited, the major psychological processes required by the child are observing, locating, seeing, recognizing, identifying, and remembering or recalling. No judgment or opinion is involved here. The teacher seeks knowledge that can be isolated and discussed as an individual element. The element solicited is usually observable in the picture.
Solicitations such as "What has he got?"; "Have you seen this picture before?"; and "What is this?" all seek units of information from the child.

The second cognitive level that a teacher might solicit is an inference based on one or more units of information. In such a case, the teacher is soliciting the child to observe, locate, recognize, identify, or remember some unit(s) of information, and then to do one of the following: relate at least two units of information, determine cause and effect, make a value judgment or state an opinion, or predict or discuss the future. It should be noted that the term "inference" is used here very loosely, to cover a wide range of cognitive activities above the level of the unit of information. Solicitations such as "Where will the water fall?" and "Is this like the fish that you caught?" seek an inference based on one or more units of information.

At the third cognitive level, the teacher solicits the child to respond using a minimum of an inference based on another inference. The teacher is soliciting the child to: (a) observe, locate, recognize, identify, or remember a unit of information; then (b) infer something about it; and then (c) draw a further inference based on that inference.

Thus, when the teacher asks, "Who's going to make the water go on his head?" the teacher solicits the child to: (a) locate and identify the water (unit of information); then (b) infer that pulling the string will make the water fall (inference based on unit of information), and then (c) infer that the cat is going to pull the string (inference about the preceding inference).

Often the teacher's solicitation does not specify the particular
cognitive level of the response, but rather solicits a range of acceptable cognitive levels of the response. For example, when the teacher solicits, "What's he doing?" the child may respond, "He's holding the catapult" (unit of information), or "He's going to fire the catapult" (inference based on one or more units of information).

Further, a teacher may solicit an inference without specifying whether it is to be based on units of information or on another inference. For example, when the teacher solicits, "What's he going to do?" the child may give an acceptable response by saying "He's going to fire the catapult" (inference based on unit of information), or "He's going to shoot the policeman" (inference based on an earlier inference).

Lastly, the teacher may solicit without specifying the cognitive level of the response expected at all. In this case, the child may respond on any level he wishes. Thus, to the teacher's solicitation, "What's this one doing here?" the child might respond (1) "He's holding the rope" (unit of information); (2) "He's pulling the rope" (inference based on unit of information); or (3) "He's going to make the water fall on the policeman" (inference based on an inference).

The categories included in the coding system for cognitive level were not meant to be an exhaustive list of cognitive skills solicited by teachers. Rather, they were developed (a) as a response to what was found in the data, and (b) as a means of addressing one of the more long-range questions raised in chapter 5, namely: To what degree does deafness itself impose a concretization of the world, and to what degree are the so-called concrete thinking patterns of the deaf encouraged by non-deaf people as part of an overall response to what is thought to be a part of deafness? Thus, the codes for cognitive
level solicited address the particular level of concreteness or abstraction that the teacher requires of the child in his response, or at least the range of concreteness or abstraction that the teacher specifies for the child's response.

In research about hearing children, various researchers have identified a relationship between the cognitive level solicited by teachers and the cognitive levels of the children's response (Bellack et al., 1966; Taba et al., 1964; Taba, 1966). Thus, this coding system's codes for cognitive level solicited reflect the investigator's desire to address the question of congruence of solicitations and responses in a way that facilitates the study of the possible cumulative effect of cognitive levels solicited on the cognitive competencies of children.

RESPONSES

Responding moves bear a reciprocal relationship to soliciting moves, and their pedagogical function is to fulfill the expectation of soliciting moves (Bellack et al., 1966, p. 18). The criteria for determining that a move is a response are discussed above (section 3.3, Differentiating between Responding and Reacting Moves).

Two level 4 details are coded for responding moves: cognitive level and correctness.

Cognitive level of response (RES Detail 5)

In order to be coded as a response, the child's move must fulfill, at least in some stipulated minimal way, the cognitive demands put forth in the soliciting move. That is, there must be congruence between the cognitive level solicited and the cognitive
level of the child's next move. For example, if a teacher solicits an
inference based on one or more units of information (SOL det5=2), the
child's move must then consist of at least an inference based on a
unit of information (RES det5=2) in order to be coded as a response.

Example:

T sol: Which country do you think it might be from?
*C res: Probably America.

As described previously (section 3.3, Differentiating between
Responding and Reacting Moves), congruence of cognitive level is
required for a move to be considered a response. Consequently, any
tentative coding of a response at level 3 must await confirmation of
congruence of cognitive level, coded at level 4.

The codes for cognitive level solicited (SOL det4) have been
described earlier, along with some of the considerations for the
coding of cognitive level. The reciprocal codes for the cognitive
level of the child's response (RES det5) are: unit of information,
inference based on one or more units of information, and inference
based on an inference. There are fewer codes for responses than for
solicitations because while the cognitive level solicited may be
either specified, specified as a range, or unspecified, the cognitive
level of the response itself can be determined exactly.

**Correctness of response (SOL Detail 6)**

Unlike cognitive level of response, correctness of response is
not a criterion for a move to be considered a response. In this
detail the content of the response, which has already been judged
appropriate, is now rated as to its correctness. The codes for
correctness are: correct, partially correct, and incorrect.
REATIONS

Reacting moves are occasioned by structuring, soliciting, responding, or prior reacting moves, although they are not directly elicited by them (Bellack et al., 1966, p. 4). Reacting moves serve two types of pedagogical functions:

(1) Rating what has previously been said (e.g., positively or negatively). Such behaviours are almost always associated with only the immediately preceding move and are therefore coded at level 4.

(2) Repeating or modifying content (e.g., by clarifying, synthesizing, or expanding). Such behaviours are coded at level 5 because they generally require a context broader than adjoining moves, which is the domain of level 4. These functions of reacting moves are therefore discussed in section 3.5.

Rating function of reactions (TREA/CREA Detail 3)

Some reactions serve the function of rating the preceding move. A preceding move may be rated positively, negatively, or in some other way. Although it is most often the case that the teacher rates the child, at times the child rates the teacher, and sometimes the teacher rates herself. For this reason, both teachers and children can be coded as having rated either speaker. The codes for rating functions are described below:

No-rating function (TREA/CREA det3=0). There is no explicit rating component in the speaker's reaction; rather, the reaction relates only to the repeating and/or modifying of a previous move.

Example:

T sol: What is he wearing?
C res: A hat.
*T rea: and the hat is red. [det3=0]
Positive (TREA/CREA det3=1). The teacher or child gives a distinctly affirmative rating to a preceding move.

Example:

T sol: What will the water do?
C res: It is about to fall.
*T rea: Yes, you are right. [det3=1]

Qualifying (TREA/CREA det3=2). The speaker indicates some reservation regarding the preceding move. It is as if the teacher or the child is saying through words or intonation, "I'm not satisfied." In this case, the reacting move is coded as "qualifying."

Example:

T sol: And what sort of houses are they?
C res: Um, a flat.
T rea: Yes.
*T rea: But in America they're not just flats are they? [det3=2]

Negative (TREA/CREA det3=3). The teacher or the child gives a distinctly negative rating to the preceding move.

Example:

T sol: What is it?
C res: A bottle.
*T rea: No. [det3=3]

The use of the word no, or yes does not necessarily indicate the rating of the move as negative or positive. It is necessary in coding rating to consider the intonation of the speaker in addition to his words.

Acknowledging (TREA/CREA det3=4). The teacher or the child does not rate a previous move either positively or negatively but only acknowledges that the previous speaker said something.

Example:

C res: I like that cat.
*T rea: Mm. [det3=4]
Cognitive level of reactions (TREA/CREA Detail 5)

The cognitive level of reactions that modify the content of a preceding move is coded at level 4. The cognitive levels coded for teacher reactions and child reactions are: unit of information, inference, and inference based on an inference. These codes are the same as for responses, and are discussed in section 3.4, Cognitive Level Solicited and Cognitive Level of Response.

3.5 LEVEL 5 - ESTABLISHING RELATIONSHIPS AMONG MOVES

From observation in schools and from a study of the preliminary data collected, it was clear that in order to achieve its purpose, the tool being constructed needed to describe more than some of the discreet behaviours of teachers and children (level 1), some of the mechanics of verbal interaction (level 2), and the functional relationships between any move and a succeeding one (levels 3 and 4). Over and above these, there was a need to describe how particular behaviours of a speaker are related to moves other than the preceding or succeeding one, and to be able to track and record the overall evolution of the conversation and its train of thought. The codes conceptualized at level 5 of the coding system describe these relationships. They acknowledge not only that moves in a conversation have a relationship to each other, but that groups of moves (known hereafter as segments) have a relationship to each other.

Level 5, then, is concerned with: (1) the conversational function and link for each pedagogical move (coded in details 6 and 7 for solicitations and reactions), addressing the issue of the relationship
of a move to previous moves within the same segment, and (2) the relationship between segments of the conversation (coded in detail 7 for all pedagogical moves). These details were included so that the way in which teachers organize conversation and the way in which trains of thought are developed could be described.

As discussed in chapter 2, the coding of conversational function and links is a major advance over previous coding systems. It is in the coding of these details and their interrelationships with other details that the control exercised by the teacher over the unfolding of the subject matter, and the actions taken by the teacher in response to the nature and extent of the child's participation can be studied.

The former is reflected mainly in the codes for conversational functions and links for solicitations, while the latter is reflected mainly in the codes for conversational function and links for reactions.

**SOLICITATIONS - CONVERSATIONAL FUNCTION (SOL Detail 6)**

Solicitations have been shown by many researchers (Taba et al., 1964, Taba, 1966; Barnes, 1971; Rowe, 1974a; Mishler, 1975, 1978; Fox, 1980; Garvey and Berninger, 1981) to play an important role in conversations between teachers and children. Soliciting moves often direct the course of the conversation. One of the ways teachers use solicitations to direct the conversation is by controlling the subject matter of the conversation. Detail 6 (conversational function) and detail 7 (link) for soliciting moves were designed in part to describe the control exercised by the teacher over the unfolding of the subject matter during the course of conversation. For example, when a teacher
solicits and a child responds correctly to the solicitation, the teacher can control the unfolding of the subject matter, for example, by (a) soliciting further based on her own move, or (b) soliciting further on the basis of the child's move, or (c) changing the subject entirely in her next solicitation. If a teacher solicits and the child responds in some inappropriate way (the child's move is therefore coded as a reaction), the teacher can exercise control over the unfolding of subject matter, for instance, by (a) soliciting the same information again, (b) responding to her own solicitation or (c) soliciting less information than she did previously.

In studying the preliminary data, the investigator observed much variation amongst teachers in their handling of the subject matter—both in the direction they took the subject matter and the degree of influence a child could have on that direction. It seems that teachers showed (a) varying degrees of flexibility concerning their "lesson plan," and (b) different responses to the particular types of participation offered by children in response to that plan.

Thus, detail 6 (conversational function) is concerned both with the control exercised by the teacher over the content itself and the way in which the content evolves or unfolds in relation to the moves made by other participants in the conversation. The codes for conversational function of solicitations were developed with these issues in mind. A description of each code follows here.

**Content solicitations**

**Focusing solicitation (SOL det6=0).** The focusing solicitation sets the stage for a segment to begin. While no specific piece of content has yet been solicited in a focusing solicitation, it
establishes the context within which the discussion of the content will emerge. A focusing solicitation is a conscious effort to change the direction of the conversation. This is accomplished by:

1) focusing or directing attention (in which case the teacher solicits a nonverbal response [SOL det3=1])

Examples:

a) T sol: Look at that. (response prescribed is nonverbal [det3=1]; conversational function is focusing [det6=0])

b) T sol: Look at the cat up at the window. (response prescribed is nonverbal [det3=1]; conversational function is focusing [det6=0])

2) soliciting the child to focus (in which case no range of responses was prescribed [det3=7])

Example:

T sol: Look at the picture. (response prescribed is nonverbal [det3=1]; conversational function is focusing [det6=0])

C res: Mm.
*T sol: All right, tell me what's happening in the picture. [det3=7, det6=0]

Initial content solicitation (SOL det6=1). The initial content solicitation of the segment is the first solicitation in a segment that is not a focusing solicitation. It reflects the establishment of a new focus or a shift in the focus of the conversation. It solicits some specific content or language (so that the type of response is prescribed [det3=2-6]). For instance, where the teacher asks a child, "What's that one doing up there?" the child's response is prescribed by the teacher's solicitation because the child is instructed to tell what that cat is doing, which is some form of pulling the string or shooting the policeman.
Examples:

*T sol: Look at that.  [focusing SOL]
*C sol: What is it?  [initial SOL]
*C res: Water.

**Solicitation of same content without new elements (SOL det6=2).**

In this case the teacher solicits the same content as that of a previous solicitation in the segment. She does so without introducing any new elements in her solicitation. The teacher can do this in one of two ways.

1) She solicits again using the same or nearly same words.

Example:

T sol: What's the name of it?
* T sol: Do you know the name of it?

2) Or, she solicits again, this time using a pronoun in place of a referent that was explicit in the earlier solicitation.

Example:

1) T sol: What's the man called?
   C res: -
   * T sol: What is he?

2) T sol: What's coming out of the dustbin?
   * T sol: What do you think it is?

**Solicitation of same content, but introducing new element(s) (SOL det6=3).** The teacher solicits the same response as was sought by an earlier solicitation but in a restated form with a new element or elements. The teacher offers additional information—in essence, more clues—while still seeking the same element or elements as were previously solicited from the child.

Example:

T sol: How many are in his gang?
* T sol: How many cats are in his gang?
Solicitation of more limited content (SOL det6-4). The teacher solicits only a part of the response she sought in a previous solicitation.

Example:

T sol: Look at that.
T sol: What is it?
C res: Water.
T sol: Where's the water?
C res: ----
T res: Yes. The water's in the bucket.
C res: Yeah.
T sol: What's going to happen?
C res: --
*T sol: Where will it fall?

In the example above, the teacher solicits, "What's going to happen?" seeking the response, "The water will fall on the policeman." When the teacher doesn't get that response, she solicits more limited content by asking "Where will it fall?" The response solicited now is, "on the policeman," which is only a part of the response that the teacher solicited in her earlier solicitation. It should be noted that usually a solicitation that seeks more limited content, contains part of the response ("fall") to the earlier solicitation.

Solicitation of additional element(s) of content (SOL det6-5). When this category is coded, it means that the teacher solicits an element or elements of content that have not previously been solicited.

Examples:

(1) T sol: What's the policeman doing?
   C res: Shouting.
   *T sol: Why is he shouting?

(2) T sol: What will happen?
   C res: The cat will pull the rope.
   *T sol: And when he pulls the rope what will happen?
Solicitation of correction, clarification, or confirmation (SOL det6=6). When this category is coded, the teacher seeks a correction, clarification, or confirmation of the content or language of the child's utterance.

An example of the teacher soliciting a clarification is:

T sol: How are they going to make the water come on his head?
C res: Cut it.
*T sol: Cut what?

An example of the teacher soliciting a correction is:

T sol: But who's got the end of the string from that bucket?
C res: Uh, the teddy bear in the dustbin.
T rea: Yes.
*T sol: Are they teddy bears?

An example of the teacher soliciting a confirmation is:

T sol: Have you seen this picture before?
C rea: Before.
T sol: When?
C res: On the television.
*T sol: On the television?

Unclear conversational function (SOL det6=7). This category is coded when the precise code cannot be designated because the function of the move cannot be determined. This most often applies when a move is interrupted and the solicitation is not completed.

Example:

T sol: Are they his friends or not?
*T sol: Are they [T] (child interrupts the teacher)
C res: No.

Language solicitations

What has been described above are the codes for conversational function of solicitations that solicit content. In addition to these are codes describing the conversational function of solicitations that solicit language. The investigator felt it was important to
differentiate between language and content in conversational function in some respects since it seemed from the preliminary data that these two types of solicitations could serve distinct functions or similar functions, depending on the situation. Also, the investigator felt it was important to be able to describe fully moves dealing with language because of the prevalence of language solicitations in the data.

**Initial language solicitation (SOL det6-1).** While separate codes were developed to describe the conversational function of certain language moves, the category of initial solicitation was designated to be used for both content and language solicitations. For even though a solicitation may be clearly identified as an initial solicitation, often it is difficult to determine prospectively whether a move is an initial solicitation of content or of language. If a second soliciting move ensues, that soliciting move is likely to have a clear direction—that is, either soliciting content or language—and thus establishing the current segment as a content segment or a language segment.

**Solicitation of same language without new elements (SOL det6-A).** The teacher solicits the same response as in a previous language solicitation. No additional hints or clues are added to the previous solicitation that might provide more information about what the response should be.

Example:

T sol: Say: "The cat's got a rope."
C rea: --- rope.
*T sol: Tell me that again.

**Solicitation of same language, but introducing new element(s) (SOL det6-B).** The teacher solicits the same response as was sought by an earlier language solicitation in the segment. This time, however,
the solicitation is restated so that it introduces an element or elements of language not previously given. The teacher offers new information—often, more clues—in her solicitation, but is still seeking the same element(s) previously solicited.

Example:

T sol: What's this cat in?
C res: The dustbin.
*T sol: In America they call it a ...
C res: Garbage can.

Solicitation of more limited language (SOL det6=C). Sometimes when a teacher wants a certain response and doesn't get it, she solicits again, this time seeking only a part of the response that she was seeking in an earlier solicitation. She therefore solicits more limited language than in a previous solicitation.

Example:

T rea: So the American cat is in the garbage can outside the apartment building.
T sol: Can you say all that?
C rea: [S] The
*T sol: [S] The American cat... [det6=C]

Solicitation of additional language element(s) (SOL det6=D). The teacher solicits an element or elements of language that has not previously been solicited.

Example:

T sol: You say: "He's shooting."
C res: He's shooting.
*T sol: Say: "He's shooting the catapult."

SOLICITATIONS - LINK (Detail 7)

While conversational function describes the relationship between the content or language of the current move and some previous move, the link records the speaker and the relative location of that
previous move. Coding of the link complements the coding of the conversational function. Together with conversational function, it permits the tracing back of trains of thought, of the unfolding of subject matter, of teacher strategies, and of the various controls the teacher exercises over the verbal interaction. The following information is coded regarding the earlier move to which the current move is linked: (1) the speaker (teacher or child); (2) pedagogical function of the move (solicitation, teacher reaction, or child move); and (3) location of the move relative to the current move (the preceding move, or a preceding move other than the immediately preceding one).

Relationships among moves within a segment

In the course of coding a conversation, every several moves a new initial solicitation appears. Thus, the conversation is divided into groups of moves, each beginning with an initial solicitation and ending before the next initial solicitation. Moves within each group can be seen as being closely related to each other in terms of focus. Groups of moves that are related in this way are called segments. Moves within a segment are related to one another; the relationships between them are coded as the conversational function and the link.

Example:

\[
\begin{align*}
\rightarrow T \text{ sol:} & \quad \text{What's the name of that cat?} \\
& \quad [\text{det6}=1, \text{det7}=9 \text{ - not linked}] \\
C \text{ rea:} & \quad - \\
\rightarrow T \text{ sol:} & \quad \text{What's his name?} \\
& \quad [\text{det6}=2, \text{det7}=0 \text{ - linked to previous T sol}] 
\end{align*}
\]

Careful coding of conversational function and links makes it possible to discern, for example, who introduced an element of...
content, how long it was pursued, and what teacher strategies were
used to pursue it.

Example:

\[ T \text{ sol: } \text{What's that cat got?} \]
\[ C \text{ rea: } \text{String.} \]
\[ T \text{ sol: } \text{What's he going to do with it?} \]

In this example, the second solicitation is linked to the first.
The child was the first to say the word "string." Nonetheless, the
teacher is considered to have introduced that element because the word
"string" was prescribed by her first solicitation.

Example:

\[ T \text{ sol: } \text{T tell me about the picture.} \]
\[ C \text{ rea: } \text{Pu string.} \]
\[ T \text{ rea: } \text{He's put some string.} \]
\[ T \text{ sol: } \text{Why has he put the string there?} \]

In the above example, the second solicitation by the teacher is
linked to the child's response. The child is considered to have
introduced the element "string," because "string" was elicited by a
solicitation that did not prescribe "string" for its response.

Relationships across segments

In addition to coding the relationships among moves within a
segment, a further purpose of coding links was to record relationships
across segments of the conversation. A segment is said to begin when
an utterance is coded as an initial solicitation [det6=1]; thus, each
initial solicitation can be thought of as representing a segment.
Segments can be linked to each other by linking an initial
solicitation to a previous initial solicitation to which it is
related. In this way the links of these initial solicitations can reflect a train of thought in the conversation.

Example:

\[\text{T sol: } \text{What's going to happen with that stone? [det6=1]} \]
\[\text{T res: } \text{Hit the policeman.} \]
\[\text{T sol: } \text{The stone's going to hit the policeman.} \]
\[\text{T sol: } \text{Will he be angry? [det6=5, det7=0]} \]
\[\text{T res: } \text{Yes he will.} \]
\[\text{T sol: } \text{What else is happening? [det6=1, det7=1]} \]
\[\text{T res: } \text{He's going to trip the policeman up.} \]
\[\text{T sol: } \text{What's happening over here? [det6=1, det7=0]} \]
\[\text{T res: } \text{He's going to shoot the policeman with his catapult.} \]

A segment is not always related to an entire previous segment.

Sometimes a particular preceding move gives rise to a following segment.

Example:

\[\text{T sol: } \text{What's that cat up there got? [det6=1]} \]
\[\text{T res: } \text{--- fish.} \]
\[\text{T sol: } \text{Yes, there's a fish.} \]
\[\text{T sol: } \text{How do you think that fish got there? [det6=1, 7=4]} \]
\[\text{(dialogue continues...)} \]

Sometimes a solicitation is not linked to any preceding move. An initial solicitation that is not linked to any preceding move describes the move being coded as the first move in a train of thought.

Example:

\[\text{T sol: } \text{Where did the fish come from?} \]
\[\text{T res: } \text{---.} \]
\[\text{T res: } \text{I think it's come out of [T]} \]
\[\text{T res: } \text{Food.} \]
\[\text{T res: } \text{Food, I know it's food.} \]
\[\text{T res: } \text{But I think it's come out of the dustbin.} \]
\[\text{**T sol: } \text{What do you think happened to the cat's hat? [det6=1, det7=9]} \]
\[\text{T res: } \text{--- the police.} \]
\[\text{T res: } \text{He's talking to the police, yes.} \]
\[\text{T sol: } \text{What's happened to his hat? [det6=2, det7=0]} \]
\[\text{(dialogue continues...)} \]
Reacting moves, as discussed above in section 3.3, are occasioned by any type of pedagogical move (structuring, soliciting, responding, or reacting). Such moves serve to modify and/or rate in some fashion what has been stated in the occasioning move (Bellack et al., 1966, p. 172). The relationship of the content of a reacting move to that of a previous move is coded as the conversational function (detail 6), while the specific speaker and relative location of that preceding move is coded as its link (detail 7).

It is in the coding of these two details and the analysis of their interrelationships with other details that the actions taken by the teacher in response to the nature and extent of the child's participation can be studied. Through the analysis of these details, it is also possible to study additional ways in which the teacher exercises control over the nature and extent of a child's participation and over the unfolding of the subject matter.

For example, if a child fails to respond to a teacher's solicitation, the teacher has several options, such as responding to the solicitation herself, giving some clues to the child about the response she wants, soliciting on the same subject more specifically, or changing the subject. Similarly, after a teacher move a child has options such as repeating what the teacher has said, talking about something else entirely, or responding to some specific part of what the teacher said.

Two characteristics of the conversational function of reactions were coded: (1) whether the speaker introduced new elements into the conversation or repeated elements that appeared in a related previous move; and (2) whether the elements of the reaction had been solicited
previously. These behaviours occurred in a number of combinations, which are discussed in the following section. The codes for teacher reactions and child reactions differ only slightly and are discussed here together.

Reactions that do not include repeating

**Teacher introduces all solicited elements (TREA det6=1).** The first code describes the case where the teacher in effect answers her own question.

This code is most often used when the teacher solicits, and then (a) the child says something unintelligible,

Example:

T sol: What's been left there?
T sol: What are they?
C rea: --
*T rea: I think that's their bones.

or (b) the teacher doesn't pause to wait for a child response, but goes ahead and gives one herself.

Example:

T sol: What's his name? [no pause]
*T rea: It's Boss Cat I think.

This code applies exclusively to teacher moves. If a child were to introduce all the solicited elements, the pedagogical function of the child move would be coded as a response, not as a reaction.

**Speaker introduces some—but not all—of the solicited element(s) (TREA/CREA det6=2).** Often the solicited elements are contributed by both speakers over a series of moves, as in the following example:
T sol: How do you think they got him there?
C res: Because they made a mess.
T rea: Oh, I see. They made a mess.
T rea: They made a mess deliberately.
*T rea: And he came to see what the mess was all about. [det6=2]

In this example, the child introduced some of the solicited elements, enough to constitute a minimal response, while the teacher introduced what could be considered the rest of the solicited elements.

Example:

T sol: What's going to happen to the stone?
*C rea: ---- policeman. [det6=2]
T rea: It's going to hit the policeman.

In this example, the child contributes the solicited element "policeman," but the child's move is too minimal to be considered a response. The teacher puts the child's element into a context which completes the response to her solicitation.

In the course of developing the coding system, many different attempts were made to accurately differentiate between moves that should be coded as responses that are partially correct and those that should be coded as reactions in which the speaker only introduces some solicited elements. As discussed above (section 3.3, Differentiating between Responding and Reacting Moves), such a move is coded as a reaction if the language of the move is not congruent with the language solicited. It is coded as a partially correct response if the language of the child's move is congruent with the solicited language. Although this issue is relevant to level 3, not level 5, it is mentioned here because it may clarify some characteristics of reactions and conversational function.
Examples:

(a) T sol: What's that cat going to do?
*C rea: -- policeman. [lang. not congruent, det6=2]
T rea: He's going to make the water fall on the policeman.

(b) T sol: Tell me what's happening in the picture.
*C rea: There's a teddy bear mucking about in the dustbin.
[lang. congruent, partially correct res]

Speaker introduces unsolicited elements (TREA/CREA det6=3).

Example:

(a) T sol: And why is the policeman cross with the other cat?
C rea: I don't know really.
T sol: Well, look at the state of the place.
C res: It's a mess.
T rea: Mm.
*C rea: The street's a terrible mess.
*T rea: Mm, so I think he's come to reprimand them. [det6=3]

(b) T sol: Have a look at the cat right at the top of the picture.
C rea: The top.
*C rea: -- window. [det6=3]
*T rea: He's looking out of the window. [det6=3]

In earlier versions of the coding system the coder was required, at the time of coding, to make judgments about the appropriateness and relevance of elements that were introduced. In the end, it was decided to code these elements only on the basis of whether they had been solicited or not, thus minimizing judgments made at the coding stage about the appropriateness and/or relevance of the particular move. Such judgments were seen as part of what might be revealed in the analysis of the data. For instance, by analysing whether an element is solicited or unsolicited in conjunction with the coding of the link, an investigator can begin to determine the relevance or irrelevance, appropriateness or inappropriateness of a move or some aspects of a move.
Speaker ties together elements already introduced (TREA/CREA det6=4). When the speaker ties together elements of content or language already introduced, he does not introduce any new elements but summarizes what has already been said.

Examples:

(a) T sol: Where have you seen these cats?
C res: They come from cartoons.
T sol: Well, which country do you think they might be from?
C res: Probably America.
*T rea: Mm, I think it's probably an American cartoon picture. [det6=4]

(b) C rea: Here is a cat with a catapult.
T rea: Here's another cat with a catapult.
*C rea: There are two cats with catapults in the picture. [det6=4]

Speaker corrects or clarifies content of a previous move (TREA/CREA det6=5).

Example:

(a) T sol: What's happening in the picture?
C res: The teddy bear's mucking about in the dustbin.
*T rea: They aren't teddy bears, they're cats. [det6=5]

(b) C rea: ---
T sol: Pardon?
*C rea: The fish is on the floor. [det6=5]

Reactions that include repeating

Speaker gives essentially the same element(s) as in a previous move (det6=A). The speaker essentially repeats a previous move without adding any new element.

Example:

(a) T sol: Who's that?
C rea: He pulled string.
*T rea: He pulled the string. [det6=A]
(b) T sol: What's this one doing?
C rea: Pulling -- -- .
*T rea: Pulling. [det6=A]
*C rea: Pulling. [det6=A]
T rea: A sling.
*C rea: A sling. [det6=A]

Speaker gives some--but not all--of the elements of a previous move (TREA/CREA det6=C). The speaker repeats only part of a previous move, without adding any new elements.

Example:
(a) T sol: You think it will knock his hat off?
C rea: -- .
*T rea: Knock his hat off. [det6=C]

(b) T rea: It's hiding.
*C rea: Hiding. [det6=C]

(c) T rea: It's going to hit the policeman.
*C rea: Policeman. [det6=C]

Speaker gives some or all of the elements of a previous move and introduces solicited elements (TREA/CREA det6=D).

Example:
T sol: What's that cat going to do?
C rea: Catapult.
*T rea: He's going to shoot the catapult. [det6=D]

Speaker gives some or all of the elements of a previous move and introduces unsolicited elements (TREA/CREA det6=E).

Example:
T sol: What's the cat in the dustbin doing?
C rea: Window.
*T rea: There's a cat up in that window. [det6=E]

REATIONS - LINK (Detail 7)

The link complements the conversational function (detail 6) in reacting moves in much the same way as it does for soliciting moves.

(The link for soliciting moves is discussed above in section 3.5,
Solicitations - Link). The link indicates the occasioning move for the current reaction. It can be thought of as answering the question, "Which move precedes this one in the current train of thought?" While the conversational function records how the content of the current move is related to that of a previous move, the link records the speaker and relative location of that preceding move.

The coding of link for teacher reactions is particularly important. In conjunction with the coding of conversational function, the link facilitates the description of patterns of behaviour used by the teacher in response to the nature and extent of the child's participation. Such patterns might provide information on questions such as: With whom did elements of content originate, and how was it carried forward by each speaker? What strategies are used by teachers in the face of incorrect or unintelligible child moves? How do trains of thought develop in these conversations? Suggestions for analysis along these lines is discussed at length in chapter 5, section 5.3.

Reactions - coding conversational function and link for a move after an unintelligible moves

A particular problem arose in the coding of conversational function and link for moves that succeeded unintelligible utterances.

The guidelines that were developed for coding in such situations are given below. The labeling of the speakers in these guidelines is only illustrative; the same guidelines apply when speakers are reversed.
1. The current teacher move is linked to the preceding child move if there is strong evidence that the teacher is following up on something the child said. Strong evidence is indicated if:

   a. The child's preceding move was partially intelligible [CREA det4=C-K,M] and the teacher used at least some words that the child introduced.

   Examples:
   (1) T sol: What's he going to do?
      C rea: - - pull - - [det6=2, det7=2]
      *T rea: He's going to pull on his catapult. [det6=E, det7=2]
   (2) T sol: Pardon?
      C rea: - - (P) - floor.
      *T rea: The, the floor yes. [det6=A, det7=2]
   (3) T sol: What's going to happen to the stone?
      C rea: - - - policeman. [det6=2, det7=2]
      *T rea: It's going to hit the policeman. [det6=2, det7=2]

   b. The child's preceding move was unintelligible [CREA det4=A or B] and the succeeding teacher move was not related to any preceding teacher move.

   Examples:
   (1) T sol: What are the other cats doing?
      C rea: - - -
      *T rea: Mm, that's called a catapult. [det6=3, det7=2]
   (2) T sol: Where, what do you think's happened to that other cat there's hat?
      C rea: - - - the police.
      *T rea: He's talking to the police, yes. [det6=E det7=2]

   c. The child's preceding move was unintelligible to the coder but the teacher gives strong evidence of having understood what the child said.

   Example:
   T sol: What has he got?
   C rea: - - -
   *T rea: You think it's a red hat. [det6=1, det7=2]
2. The current teacher move is coded as related to a preceding teacher move if there is strong evidence that the teacher was following up on something she previously said (e.g., answering her own question [det6=1], repeating [det6=A-E], elaborating [det6=3]).

Examples:

(a) T sol: What's happened to it?
C rea: --
*T rea: It's all been eaten up. [det6=1, det7=4]

(b) T rea: He's going to hit the policeman.
C rea: --
*T rea: He'll hit the policeman. [det6=A, det7=4]

If the teacher said "yes" or "oh," thereby seeming to acknowledge that the child has said something, this was not considered strong evidence of a link to the child. Therefore the teacher's move is linked to the preceding teacher move.

Example:

T sol: Why has he put the string there?
C rea: --
*T rea: Oh, the policeman doesn't know it's there and he'll fall. [det3=4, det6=1, det7=5]

3. If there is no strong evidence for a link to a child move or a teacher move, the current move is coded as not linked [det7=9].

RESPONSES - LINK (Detail 7)

There is no conversational function detail for responses. Responding moves bear a reciprocal relationship to soliciting moves, and therefore their function is always to fulfill, at least in certain minimal ways, the prescriptions set forth in the solicitation. Thus, the conversational function for a responding move is implicit in its definition as a responding move.

Even though conversational function is not coded for responses,
the link for responses is nonetheless coded to cover two special cases:

(1) Most responses follow the soliciting move to which they respond. On occasion, however, responses sometimes come two or more moves after the solicitation which elicited it.

(2) Occasionally a single response extends over several moves of a single speaker (for instance, where there are multiple interruptions). The several parts of the response are linked together so that the response may be considered as a whole as well as in its parts.
Chapter 4
RELIABILITY OF THE CODING SYSTEM

One important aspect of the development of the current coding system was establishing the reliability of the system. An extensive and comprehensive reliability test was beyond the scope of this study. However, a limited test of reliability was conducted that tested the most frequently used codes of each detail. The results of that test are reported in this chapter.

The coding system was designed with the expectation that other researchers would use the system after adding categories or codes to serve the purposes of their research. Such modified versions of the coding system would themselves need reliability testing. Therefore, emphasis was placed also on developing suitable procedures for establishing reliability.

The procedures for establishing reliability were developed as a result of preliminary tests of reliability, which were conducted on individual details and codes during the development of the coding system. These preliminary tests also led to many revisions in the coding system itself. In some cases, revisions were minor ones, but in several cases revisions were reflective of major issues and problems that the data presented.

For instance, originally, intelligibility of an utterance was coded as a separate detail in the coding system, and criteria were established for how to code unintelligible utterances and succeeding utterances. When a test of reliability was done, it became clear
that, even with guidelines, coders regularly disagreed, not so much upon the coding of the unintelligible utterance itself, but upon the coding for a move or moves following the unintelligible one.

These early tests of reliability were conducted in order for the coders to see to what extent they agreed that the codes were accurately describing the behaviours. Together with extensive experience with transcripts and with other aspects of the coding system, these tests were influential in the evolutionary process which characterized the development of the details and codes.

The various codes were thus developed to reflect the data that had been collected. Once the investigator and the other coders were satisfied that the codes reflected the data and once the coders agreed upon the criteria for coding the various details and codes, a final test of reliability was carried out using the procedures described below. The definitions of codes that were developed by the coders were recorded in the coding manual under the heading "Description of Code." The criteria developed by the coders that further define the code in relation to the context in which it is to be used were recorded in the coding manual, under the heading "Guidelines for Coding," for each detail and code.

A major difficulty in the development of a coding system designed to look at interrelationships between moves and their details is that certain codes have an effect on subsequent codes. For example, if one coder coded a particular move as a response and another coded it as a reaction, then the codes for all the remaining details of both coders' moves would constitute disagreements between the coders. These disagreements were, however, all the result of the single disagreement on pedagogical function and could therefore be considered "dependent
disagreements." It was thus necessary to conduct the reliability study in phases. After calculating reliability of a particular phase, the coding for the components of that phase were standardized and then the components of the next phase were coded. The procedure eliminated from the reliability calculations the distortion resulting from dependent disagreements that might have resulted from a disagreement of coders on one particular category.

4.1 RELIABILITY OF LISTENING

In the first phase of the reliability study, procedures for testing reliability of listening were established. For this purpose, audio tape recordings of three out of twenty-one conversations were transcribed. The three tapes were selected so that a range of intelligibility—from largely intelligible to largely unintelligible—was represented. Each tape was three minutes and forty seconds in duration. In transcribing the tapes, it was permissible to listen to the tape as many times as necessary for a coder to feel that a maximum of what had been said was recorded. Where utterances were considered unintelligible, a dash was recorded for each syllable. It was permissible to fill in parts or all of utterances originally considered unintelligible if they became clearer as a result of some succeeding utterance of the child or the teacher. Symbols were inserted in the transcript to indicate the location of pauses [P], trespasses [T], and simultaneous speech [S]. A sample transcript with all its markings can be found in Appendix D. It should be noted that the transcribers were both trained teachers of the deaf and were
accustomed to listening to the speech and language of hearing-impaired children in the classroom and on tape. Each transcriber independently transcribed the conversation of each of the three selected children. Then the transcripts were compared and differences were tallied in order to determine the extent of agreement on (1) the total number of syllables in the corpus, and (2) the actual words heard by each transcriber.

The number of syllables as well as the actual words heard were calculated for two reasons: (1) The conversations contained a large amount of unintelligible speech and language. Therefore, it seemed appropriate to develop a means of including the unintelligible syllables in a test of reliability. (2) It was expected that there would be some disagreement over what constitutes an actual word—rather than unintelligible syllables—for a deaf child, given that the unintelligible speech included a considerable amount of speech that could be said to approximate words. It was therefore considered important to have a second measure of listening reliability.

SYLLABLE COUNT

The following procedure was used for calculating the number of agreements on syllable count:

1. Intelligible syllables and unintelligible syllables were both counted as syllables.

2. For each utterance, if the coders differed in their syllable count, the counts for that utterance were determined as follows:

   a) The higher of the two syllable counts was considered to be the total number of syllables for that utterance.
b) The lower count was considered to be the number of agreements for that utterance.

This procedure was chosen, rather than simply totaling each transcriber's syllable counts. The latter procedure would have resulted in a deceptively high reliability, because high and low counts for a particular transcriber on different utterances might tend to cancel each other out and thereby mask the true number of disagreements found in an utterance-by-utterance comparison.

3. The number of agreements for each utterance and the total number of syllables were totaled and the percentage of agreements on syllable count was calculated.

The results of the reliability testing for syllable count can be found in Table A.

<table>
<thead>
<tr>
<th>Child</th>
<th>DJI</th>
<th>EMD</th>
<th>CDC</th>
<th>Total for 3 Children</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agreements</td>
<td>535</td>
<td>455</td>
<td>470</td>
<td>1460</td>
</tr>
<tr>
<td>Total</td>
<td>574</td>
<td>488</td>
<td>494</td>
<td>1556</td>
</tr>
<tr>
<td>% of agreement</td>
<td>93.2%</td>
<td>93.2%</td>
<td>95.1%</td>
<td>93.8%</td>
</tr>
</tbody>
</table>

WORDS

The following procedure was used for calculating the agreement on words:

1. For each utterance, the transcripts of the two transcribers were compared on a word-by-word basis.
a) If a word in one transcript corresponded to the identical word in the second transcript, it was counted as an agreement.
b) If a word in one transcript corresponded to a word in the second transcript that was not identical, it was counted as a disagreement.
c) If a word in one transcript corresponded to unintelligible syllables in the second transcript, or to nothing at all in the second transcript, it was counted as a disagreement.

The sum of the agreements and disagreements for each utterance was considered the total number of words in that utterance. Thus, the total number of words can be thought of as the total number of word positions in the two transcriptions of the utterances.

Example 1:

Transcriber 1: The cat.
Transcriber 2: A cat.

Agreements (a) = 1
Disagreements (d) = 1
Number of words = 2

Example 2:

(1) (2) (3) (4) (5)

Transcriber 1: Always of the same
Transcriber 2: All of them the (d) (d) (d) (a) (d)

Number of agreements (a) = 1
Number of disagreements (d) = 4
Number of words = 5

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2. If both transcribers had unintelligible syllables in a word position, the word position was not counted at all.

3. Contractions were treated as two words.

Example:

Transcriber 1: There'll
Transcriber 2: There's

Number of agreements = 1
Number of disagreements = 1
Total number of words = 2

4. The number of agreements and number of words for all the utterances in the conversation were each totaled and the percentage of agreement on words was calculated. A requirement that an agreement be counted only in the case of an exact match might be considered unnecessarily strict. It discounts such potential matches as "polman" and "policeman," "daba" and "dustbin," "or" and "cork." These differences represent distortions often associated with the speech of deaf children and could easily have been considered matches. It was decided nonetheless to insist upon the exact match in order to permit more objective testing of listening reliability.

The results of the reliability testing for words can be found in Table B.
Once reliability of listening was established, the transcripts of the conversations were standardized. The next task was to determine the percentage of agreement between coders on the division of the conversations into moves. Turntaking behaviour was determined to be influential in establishing move boundaries, and therefore three transcripts that offered a wide range of turntaking behaviours were chosen for this test. Thus, conversations where trespassing was prevalent and ones where trespassing rarely occurred were both included in this test of reliability.

Once the conversations were selected, each coder determined move boundaries and assigned move numbers to each group of words and/or syllables that seemed to constitute a logical unit of talk. Detailed guidelines for determining move boundaries can be found in the introduction to the coding manual, in the section "Procedure for Determining Move Boundaries."

Once the two coders had independently assigned move boundaries to each utterance, agreements and disagreements between coders were counted according to the following procedure:

### Table B

**RELIABILITY OF LISTENING TO TAPES**

<table>
<thead>
<tr>
<th>Child</th>
<th>DJI</th>
<th>EMD</th>
<th>CDC</th>
<th>Total for 3 Children</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agreements</td>
<td>381</td>
<td>321</td>
<td>384</td>
<td>1086</td>
</tr>
<tr>
<td>Total</td>
<td>417</td>
<td>363</td>
<td>431</td>
<td>1211</td>
</tr>
<tr>
<td>% of agreement</td>
<td>91.4%</td>
<td>88.4%</td>
<td>89.1%</td>
<td>89.7%</td>
</tr>
</tbody>
</table>
1. Move boundaries were determined with the aid of the tape recording of the conversations as well as the transcripts.

2. Matching moves were counted as agreements.

3. Where move boundaries differed, the following guidelines were applied:

   a) If the difference resulted in a difference in the number of moves, then the lower count was considered to be the total number of agreement, while the higher count was considered to be the total number of moves.

   Example:
   Coder 1: Face, oh! (1 move)
   Coder 2: Face
             Oh! (2 moves)

   (2 moves, 1 agreement)

   b) If the difference did not result in a difference in the number of moves, then, the number of agreements is considered to be one less than the number of moves. Even though two moves may not match, it is as a result of only one disagreement in move boundaries.

   Example:
   Coder 1: The cat, yes.
             The cat is pulling the rope. (1 move)
   Coder 2: The cat.
             Yes, the cat is pulling the rope. (1 move)

   (2 moves, 1 agreement)

4. The number of agreements and the number of moves were each totaled, and the percentage of agreement was calculated.

The results of the reliability testing for move boundaries can be found in Table C.
4.3 RELIABILITY OF PEDAGOGICAL FUNCTION

Once reliability had been established for the number of moves, the three transcripts, including move boundaries, were standardized. These standardized transcripts were then used by the two coders to test reliability of the procedures for assigning a pedagogical function to each move. Detailed guidelines for this procedure can be found in the introduction to the coding manual, in the section "Procedure for Assigning Pedagogical Functions".

After the two coders had independently assigned pedagogical functions to each move, the agreements were counted and the percentages of agreements were calculated. The results of the reliability test for assigning pedagogical functions can be found in Table D.

Table D

RELIABILITY OF DETERMINING PEDAGOGICAL FUNCTION

<table>
<thead>
<tr>
<th>Child</th>
<th>EMD</th>
<th>CDC</th>
<th>DHP</th>
<th>Total for 3 Children</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agreements</td>
<td>129</td>
<td>104</td>
<td>81</td>
<td>314</td>
</tr>
<tr>
<td>Total moves</td>
<td>134</td>
<td>106</td>
<td>84</td>
<td>324</td>
</tr>
<tr>
<td>% of agreement</td>
<td>96.3%</td>
<td>98.1%</td>
<td>96.4%</td>
<td>96.9%</td>
</tr>
</tbody>
</table>
With reliability established for listening, for move boundaries, and for assigning pedagogical functions, it remained to test the reliability of the details of the coding system. In order to do so, tape recordings of the conversations of three children and their teachers were selected so that a range of intelligibility—from largely intelligible to largely unintelligible—was represented.

Before proceeding with the coding of these transcripts, the coders coded a few other conversations and compared their results. They did this in order to become thoroughly familiar with the procedures and guidelines for coding each of the details. When the coders were satisfied that the procedures and guidelines were understood, they then proceeded with the coding of the three transcripts that had been standardized for move boundaries and pedagogical functions.

For each conversation the procedure was the following:

1. Each coder listened to the tape recording of the conversation in order to become familiar with the pace and patterns of speaking used by the participants in that conversation.

2. Next the coders proceeded to code pausing characteristics (detail 1) and turntaking behaviours (detail 2) for all moves.

3. Then the coders proceeded to complete the coding of the other details of each move until the entire transcript had been coded.
4. Agreements and totals were then tabulated for each detail of each pedagogical function. The totals were then tabulated for each detail of each pedagogical function. The results can be found in Table E.

4.5 CONCLUSIONS

The reliability study conducted was a modest one, designed to test the general reliability of the system with regard to listening, determining move boundaries, assigning pedagogical functions, and coding the details. The results are reported in Tables A-E.

Although reliability of each detail was tested, no attempt was made to test reliability of each individual code. To do so would require coding either a very large number of conversations or else a number of contrived conversations, designed to test coding of all behaviours enough times to establish reliability.

As a result of using the coding system, however, at least one possibility for improvement in the system was discovered:

While the act of coding link (detail 7) was not difficult for the coders, and was accomplished with a high degree of reliability, both coders felt that the coding of link might be facilitated by changing the method of recording the codes for link to one that could be memorized more easily. In rechecking their codes before the reliability calculations were made, the coders found that while they had correctly noted the move number to which the current move was linked, sometimes the actual code recorded for link did not reflect that move number. This indicated that there was some difficulty in
Table E
RELIABILITY OF CODING THE DETAILS

Totals for 3 Children

<table>
<thead>
<tr>
<th>Detail</th>
<th>Description</th>
<th>Agreement</th>
<th>Total Moves</th>
<th>% of Agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>det1</td>
<td>All moves</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pausing - 1st digit</td>
<td>343</td>
<td>343</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>- 2nd digit</td>
<td>343</td>
<td>343</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>- 3rd digit</td>
<td>335</td>
<td>343</td>
<td>97.7%</td>
</tr>
<tr>
<td>det2</td>
<td>Turntaking - 1st digit</td>
<td>338 (339)</td>
<td>343</td>
<td>98.5% (98.8%)</td>
</tr>
<tr>
<td></td>
<td>- 2nd digit</td>
<td>341</td>
<td>343</td>
<td>99.4%</td>
</tr>
<tr>
<td></td>
<td>- 3rd digit</td>
<td>335</td>
<td>343</td>
<td>97.7%</td>
</tr>
<tr>
<td>SOL</td>
<td>Solicitations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>det3</td>
<td>Response prescribed</td>
<td>94 (95)</td>
<td>101</td>
<td>93.1%</td>
</tr>
<tr>
<td>det4</td>
<td>Language solicited</td>
<td>100</td>
<td>101</td>
<td>99.0%</td>
</tr>
<tr>
<td>det5</td>
<td>Cognitive level solic.</td>
<td>92 (96)</td>
<td>101</td>
<td>91.1% (95.0%)</td>
</tr>
<tr>
<td>det6</td>
<td>Conversational function</td>
<td>91</td>
<td>101</td>
<td>90.1%</td>
</tr>
<tr>
<td>det7</td>
<td>Link</td>
<td>96</td>
<td>101</td>
<td>95.0%</td>
</tr>
<tr>
<td>RES</td>
<td>Responses</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>det3</td>
<td>(Not coded)</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>det4</td>
<td>Language</td>
<td>22</td>
<td>22</td>
<td>100%</td>
</tr>
<tr>
<td>det5</td>
<td>Cognitive level</td>
<td>22</td>
<td>22</td>
<td>100%</td>
</tr>
<tr>
<td>det6</td>
<td>Correctness</td>
<td>21</td>
<td>22</td>
<td>95.4%</td>
</tr>
<tr>
<td>det7</td>
<td>Link</td>
<td>22</td>
<td>22</td>
<td>100%</td>
</tr>
<tr>
<td>TREA</td>
<td>Teacher reactions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>det3</td>
<td>Rating function</td>
<td>96</td>
<td>99</td>
<td>97.0%</td>
</tr>
<tr>
<td>det4</td>
<td>Language</td>
<td>96</td>
<td>99</td>
<td>97.0%</td>
</tr>
<tr>
<td>det5</td>
<td>Cognitive level</td>
<td>95 (96)</td>
<td>99</td>
<td>96.0% (97.0%)</td>
</tr>
<tr>
<td>det6</td>
<td>Conversational function</td>
<td>89 (93)</td>
<td>99</td>
<td>89.9% (93.9%)</td>
</tr>
<tr>
<td>det7</td>
<td>Link</td>
<td>94 (95)</td>
<td>99</td>
<td>94.9% (96.0%)</td>
</tr>
<tr>
<td>CREA</td>
<td>Child reactions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>det3</td>
<td>Rating function</td>
<td>121</td>
<td>121</td>
<td>100%</td>
</tr>
<tr>
<td>det4</td>
<td>Language</td>
<td>121</td>
<td>121</td>
<td>100%</td>
</tr>
<tr>
<td>det5</td>
<td>Cognitive level</td>
<td>118 (119)</td>
<td>121</td>
<td>97.5% (98.3%)</td>
</tr>
<tr>
<td>det6</td>
<td>Conversational function</td>
<td>116 (118)</td>
<td>121</td>
<td>95.9% (97.5%)</td>
</tr>
<tr>
<td>det7</td>
<td>Link</td>
<td>115 (116)</td>
<td>121</td>
<td>95.0% (95.9%)</td>
</tr>
</tbody>
</table>

( ) indicates figures corrected to eliminate the effect of dependent disagreements

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remembering the actual code numbers for the various types of link, which are different for each pedagogical function.

Perhaps a three-digit number would be more suitable for the coding of links. The first digit might reflect the speaker of the move to which the current one is linked, and the second digit might designate that the link is to the preceding move or one other than the preceding move. The third digit might serve the occasional need to link a move to more than one preceding move at the same time. For instance, in the transcript below where the conversational function of the last move in the sequence is coded as "teacher gives some or all of the elements of a previous move and introduces solicited elements." It would be informative to be able to code that move as being linked to the move which furnished the elements previously introduced (move 2) as well as to the move that solicited the elements (move 1) introduced in the current move.

Example:

Move 1 - T sol: What's this one doing?
2 - C rea: Pulling — —
3 - T rea: Pulling
g 4 - C rea: Pulling

5 - T rea: He's pulling a sling. [det6=D; current link is only to preceding C rea]
Chapter 5

POSSIBLE DIRECTIONS FOR ANALYSIS

The purpose of the present research has been to design a multidimensional coding system that would describe teacher and child behaviours in a conversational setting. A detailed analysis of the body of coded data is beyond the scope of this work. Nonetheless, it is important to suggest some possible directions that researchers using this coding system might pursue, in order that its full potential as a research tool can be realized.

In developing the coding system, an attempt was made to focus, in particular, on three closely related features of the teaching-learning process that were seen by this investigator as having significant implications for our understanding of conversation. The three features are: The control exercised by the teacher over the nature and extent of child’s participation, the control exercised by the teacher over the unfolding of the subject matter, and the actions taken by the teacher in response to the nature and extent of the child’s participation.

The coding system allows for a large number of variables in teacher and child behaviour to be explored both individually and in combination with other variables. While frequencies of occurrences of various isolated behaviours can be calculated on the basis of data coded using this system, this kind of analysis is not the primary mode of analysis proposed here. Rather, the possible directions for analysis that are suggested here reflect this investigator’s belief...
that analysis of the interaction of several behaviours at a single level, and of combinations and patterns of behaviours at two or more levels, would best facilitate a further understanding of the teaching-learning process and the functioning of language in that process.

The variables of teacher and child behaviour included in the coding system were conceptualized as being divided into five levels. At each higher level there is a relative increase in the degree of dependence of the behaviours at that level upon other aspects of the conversational context. Viewed in this way, the various aspects of conversation are characterized as being more dependent or less dependent on context.

5.1 FEATURE 1 - CONTROL OVER THE NATURE AND EXTENT OF THE CHILD'S PARTICIPATION

One of the features selected as a primary focus of the coding system was the control exercised by the teacher over the nature and extent of the child’s participation. Much of this control is expressed through the questioning behaviour of teachers. Therefore, the various controlling aspects of teacher solicitations will be discussed, as well as teacher pausing and turntaking behaviours, which also can be shown to control child participation.

CONTROL EXERCISED THROUGH SOLICITATIONS

The details for solicitations, which describe the control exercised by teachers over the nature and extent of the child’s participation, are primarily the level 4 details: response prescribed,
language solicited, and cognitive level solicited. Each of these behaviours individually plays an important role in controlling various aspects of the child's participation in the conversational setting; the interaction of the various behaviours has an even greater impact.

Controlling the child's role

The detail of response prescribed codes the control exercised by the teacher over the child's role as a participant in the conversation. It describes behaviours that determine whether or not the child will have the opportunity to take the initiative in the conversation, whether or not he will be dependent on the teacher for his next move, or whether or not he will have some independence in determining it. In essence, this detail describes the extent to which the teacher prescribes an active or a passive role for the child.

For example, when the teacher solicits repeating, yes or no answers, or selecting from two or more alternatives that she presents, she exercises the greatest degree of control over the nature and extent of the child's participation: she has given all the elements necessary for the child's response, leaving the child only to reformulate or repeat what has already been given.

When the teacher solicits the child to construct the single correct response, she still exercises much control over the child's participation because she has determined that the child has but one option in responding. But in response to a solicitation of this type, the child has an active role: he must construct that single correct response, instead of merely repeating elements that have already been given by the teacher.

On the other hand, at times the teacher solicits the child to
construct a response within a range of responses, or solicits the child to construct a response where no range has been specified. In these cases, the teacher still controls the child's participation to some degree, but does so by letting the child choose among various options for responding. The child shares to some extent the responsibility for the conversation; a balance is established between the role of the teacher and that of the child.

Thus, a teacher's soliciting behaviour has a powerful impact on an affective component of the conversation, namely, whether the child plays an active or a passive role in the conversation.

Controlling the language participation of the child

Aside from controlling certain aspects of the child's general role in conversation, the teacher also exercises control over the nature and extent of the child's linguistic participation. Both the detail of response prescribed and the detail of language solicited describe the ways in which teachers, by means of their solicitations, exercise control over the expressive language that the child contributes in conversation.

For example, if a teacher solicits repeating or selecting, the child's linguistic contribution is minimal because the teacher has provided the child with all the language necessary for the child's response. If the teacher solicits a yes or a no, even though she has not provided the actual language of the response, she has given the child important clues about what language would be appropriate as a response.

When the teacher solicits construction of the single correct response, the teacher exercises control over the child's linguistic
participation by requiring the child himself to provide the language of the response (although the range of acceptable responses is limited by the teacher to a single one).

Further, when the teacher asks the child to construct a response within a range of responses or with no range specified, the teacher gives the child the greatest opportunity to participate from the point of view of language. The child not only provides the language of the response, but determines exactly what words to use to express that response.

When the teacher solicits, she not only lets the child know who is to provide the language of the response, but also lets the child know how much and what kind of language is minimally acceptable. That minimally acceptable language is coded as the language solicited. Thus, the teacher can solicit a yes or a no only, or a noun or noun phrase only, or a verb or a verb phrase only, or she can solicit a minimum of a yes or a no only, a minimum of a noun or a noun phrase, a verb or a verb phrase, or a sentence. A child's overall linguistic participation will be very different if a teacher most often solicits a noun or a noun phrase, instead of soliciting a minimum of a verb or a verb phrase. It will also be different if the teacher varies the nature and extent of the language she solicits, as opposed to soliciting similar language all the time.

Controlling the child's cognitive participation

In addition to controlling certain affective and linguistic aspects of the child's participation, the teacher exercises control over the nature and extent of the child's cognitive participation. The details of response prescribed and cognitive level solicited
describe the ways in which the teacher's solicitation controls the
cognitive level of the child's response.

When the teacher prescribes a response in her solicitation, she
can communicate the extent of cognitive participation she requires.
Thus, the teacher can control the child's cognitive participation by
specifically soliciting the child to respond with for example, an
inference.

On the other hand, the teacher may choose to solicit without
specifying or by only partially specifying the cognitive level of the
response, thereby communicating to the child that the child is to
determine the cognitive level of the response. An increasingly active
role is played by the child who is given the opportunity to specify
the cognitive level of his response either partially or completely.
This seems an important point, given that prior research has shown
that children generally respond at the cognitive level that was
solicited. (See Dunkin and Biddle, 1974, pp. 268-269, for a review of
such studies, and see Bellack et al., 1966, pp. 125-126.)

As in the case for the child's language participation, the nature
and extent of the child's cognitive participation will be very
different if a teacher most often solicits units of information
instead of soliciting inferences or instead of soliciting the child to
specify the cognitive level. It will be different again if the
teacher varies the nature and extent of the cognitive participation
she solicits, rather than using solicitations with similar cognitive
expectations most of the time.
Application

It can be seen that the coding system facilitates the study of how the teacher's soliciting behaviour controls certain aspects of the child's affective, linguistic, and cognitive participation and enables us to study these aspects both individually and in relation to each other. For instance, the behaviour of teachers could be studied over time to see if various styles or models of teaching are characterized by particular constellations of soliciting behaviours. These styles or models could then be analysed as to whether they should be considered generally more prescriptive or less prescriptive.

Taba et al. (1964, pp. 54-55) has noted in her work that some teachers vary the types of questions they ask, and that this variation might be advantageous. It would thus be worthwhile to analyse the frequency of occurrence of the individual codes of the detail of response prescribed, to study how often each code is associated with particular codes of the details of language and cognitive level, and to look at the patterns teachers display in their soliciting behaviour. Based on this researcher's preliminary data, it is hypothesized that over time the nature and extent of the child's linguistic and cognitive participation will be very much influenced by the teacher's patterns of soliciting. It is further hypothesized that the choices teachers make in soliciting have a significant impact on certain affective aspects of the child's development: whether he sees himself in a more passive, dependent role in the conversation, or in a more active, independent role. The teacher can exert control by the way she uses each of these details individually, and even more control when the three details are considered in relation to each other.
CONTROL EXERCISED THROUGH PAUSING AND TURNTAKING

Two additional vehicles for teacher control over the child's participation can be found in the teacher's pausing and turntaking behaviour (level 2). A teacher can control a child's participation merely by pausing, by interrupting, or by continuing to speak when interrupted. The coding system records these behaviours as independent variables, enabling investigators to study how these function in relation to each other and in relation to other details of teacher and child behaviour. There is undoubtedly much to be learned from looking at these two details together.

Two ways in which they may function together are suggested here as models for further investigation.

A first possible way in which the pauses and turntaking behaviour of a teacher may control the nature and extent of the child's participation can be seen in the following example:

DST
Move 23  T sol: What's the man called? [no pause]
24  C rea: [S] -
25  T sol: [S] What is he?

Here a teacher solicitation is followed immediately by teacher and child moves occurring simultaneously--there is no pause between the two teacher moves. Thus, even if the child wanted to respond or react to what the teacher said, the teacher, by leaving no space for the child to respond or react, has limited the nature and extent of the child's participation in the conversation.

Preliminary data suggests that pauses or lack of them might be used to encourage or discourage child participation, not only in moves that follow teacher solicitations but also in moves following teacher reactions, as in the following example:
A teacher who leaves a wait-time after her reaction to a previous move may facilitate elaboration of previous moves by the child. A teacher who wishes to discourage elaboration by the child (for instance, if a child tends to ramble unintelligibly or doesn't stay on the topic) may deliberately use pauses only infrequently.

It would be useful to study the pausing and turntaking behaviours teachers use that serve the function of limiting or extending the child's participation, and to study when teachers use these behaviours in relation to their own moves and those of the child. It should be emphasized that these behaviours cannot be judged to have intrinsic positive or negative effects, for each may serve different functions in different circumstances. It is the context that determines the effect of any given behaviour. Further research might reveal under what circumstances the various behaviours may by used to advantage.

A second possible way in which the pausing and turntaking behaviour of a teacher may control the nature and extent of the child's participation can be seen when there are pauses during utterances of children. Rowe (1974b, p. 87) has shown that often children talk in bursts. If a teacher reacts too quickly, the teacher will not hear all that the child has to say. The preliminary data of this investigator suggests that this also happens frequently between the deaf children and the teachers being studied here. In the following example, the teacher's two trespassing moves (15 and 16) prevent the child from completing his utterance normally:
It is possible that a teacher's pausing and turntaking behaviour is at times expressive of a willingness or unwillingness to listen to—and thereby value—the utterances of the child. The inclusion of pausing and turntaking details so prominently in the coding system is reflective of this investigator's belief that listening on the part of a language facilitator is an important aspect of the development of communication in children. In this regard, it might be fruitful to define a pause not as a wait-time but as a listening time.

In addition to the two ways illustrated here, there are many other ways in which teachers use pausing and turntaking behaviour to control a child's participation; these warrant investigation. Such investigations could help answer questions such as: When do teachers permit a child's trespass to end their turn and when do they not? How does a speaker's allowing his turn to be interrupted affect the future turntaking behaviour of the two speakers in a conversation, and what is the impact of such behaviour over time on the communicative roles the two speakers learn to play? What variables in a child's behaviour influence the pausing and turntaking behaviour of teachers?

A few ways in which the nature and extent of children's participation is controlled by the pausing and turntaking behaviour of teachers has been demonstrated. It may be that even greater degrees of variability of control may be exercised by teachers when their
pausing and turntaking strategies interact with other behaviours, such as the response prescribed, language prescribed, and cognitive level prescribed by their solicitations.

5.2 FEATURE 2 - CONTROL OVER THE UNFOLDING OF THE SUBJECT MATTER

A second feature of teacher control selected as a primary focus of the coding system was the control exercised by the teacher over the unfolding of the subject matter, during the course of the conversation. This feature of teacher behaviour reveals some important aspects of the teacher's plan for the way in which the subject matter is to be conveyed to the child.

The behaviours that describe this feature are conceptualized as being at level 5 of the theoretical framework. That is to say, a full understanding of these behaviours can only be achieved by considering them as part of a sequence of moves. The smallest such sequence that can be considered is one made up of two solicitations. However, the preliminary data show that the control exercised by the teacher is usually revealed by a larger group of related moves, referred to as a segment (see chapter 3, section 3.5 for a definition and further discussion of segments).

UNFOLDING OF SUBJECT MATTER WITHIN A SEGMENT

Different sequences of solicitations reflect different kinds of control used by teachers. Two common strategies for the unfolding of
the subject matter appeared in the preliminary data: (1) the unfolding of subject matter proceeded from general to specific, and (2) the unfolding of subject matter proceeded from specific to general. In some cases, a single strategy is used throughout the conversation, and in others, a teacher uses one strategy or another as the situation requires. In still other cases, no such strategy of unfolding subject matter is discernible.

The following is an example of a sequence of solicitations taken from a segment where the unfolding of the subject matter proceeds from specific to general and then to specific again:

Example 1 - Child DST (specific to general to specific)

Move 5  T sol (1): Look at that! [specific]
9  T sol (3): Where's the water? [specific]
13  T sol (4): What's going to happen? [general]
16  T sol (5): Where will it fall? [specific]
21  T sol (6): Who will be wet? [specific]

In the following example, neither of these patterns can be perceived. The pattern of unfolding subject matter seems more random.

Example 2 - Child EBK (no pattern)

Move 18  T sol: (1) Who is he?
23  T sol: (2) What has he got?
32  T sol: (3) Tell me about this?
33  T sol: (4) What's that?
35  T sol: (5) Tell me about him. [not same "him" as 18]
37  T sol: (6) Have a look at him.
39  T sol: (7) Who is he?

The subject matter within a segment can be better understood by formulating a "topic sentence" for each segment. A topic sentence summarizes the elements of content of a segment that have been introduced by either the teacher or the child. This topic sentence can only be formulated once the boundaries of the segment have been designated and the whole segment studied. It is possible to say, for
instance, that the topic sentence of the segment in example 1 is:
"There's a bucket of water and something is going to happen to it."
In example 2, the first two solicitations form a segment. Its topic
sentence is: "There's someone in the picture and he's got something."
By observing how various elements of the topic sentences are
introduced, the teacher's plan for the segment becomes clearer.

UNFOLDING OF SUBJECT MATTER ACROSS SEGMENTS
To understand the teacher's plan for the subject matter, it is
necessary to look not only at how the subject matter unfolds within a
segment, but also how it unfolds across segments. The larger context
of how segments fit together must be considered. The coding system
facilitates this kind of investigation. In the following example, the
topic sentences for a series of segments from transcripts of two
children and their teachers have been formulated. The example
illustrates the different kinds of control teachers exercise over the
unfolding of the subject matter and over the way trains of thought are
organized. The full transcripts of the conversations of these
children, the division of the conversations into segments, and the
corresponding topic sentences can be found in Appendix D.

Child 1 - DST:
Segment 1 - We're going to talk about the picture so have a look at
it. [moves 1-4]
2 - There's a bucket of water which will fall on the
policeman and he'll be wet. [moves 5-27]
3 - The policeman is talking to the cats, and he's very
angry. [moves 28-37]
4 - The cat will pull the rope and the policeman will fall
over. [moves 38-53]
5 - The cat with the catapult is going to hit the
policeman's bottom and it will be sore. [moves 54-66]
Segment 1 - We're going to talk about the picture, so have a good look at it. [moves 4-12]

2 - There's something you can tell me about the picture; there is someone in the picture and he's got something. [moves 13-31]

3 - You can tell me about this other thing. It is something and it will fall. [moves 32-35]

4 - You can tell me who this person is. He is someone. [moves 36-40]

5 - There is another thing you can tell me about; it is something. [moves 41-45]

The teacher who controls the unfolding of the subject matter for Child 1 has chosen in her topics to discuss the action in the picture and to focus in each succeeding segment on what each cat is doing to the policeman. The teacher who controls the unfolding of the subject matter for Child 2 has chosen to focus on naming objects and people in the picture. The messages conveyed to each child in these segments about what is important in the picture appear to be very different. For Child 1, the action in the picture and the cause and effect relationships between the characters is the focus of the conversation. For Child 2, on the other hand, emphasis is placed on being able to identify names of objects. These two children, under the direction of their teachers, are being taught to focus their energies and attentions on quite different aspects of the world. It is hypothesized that, over time, children who are consistently exposed to these differing approaches would come to perceive situations differently.

Because the transcripts from which these topic sentences are taken are brief, conclusions about the different emphasis used by each teacher cannot be drawn. However, by studying a variety of teachers and children, preferably ones in varying educational settings with teachers using differing strategies, it might be feasible to explore the possibility that at least one characteristic typical of some deaf
children—their attention to unimportant details and to concrete aspect of situations—is related to some of the strategies used in teaching them.

Several alternatives are available to teachers for organizing segments of conversations. A teacher may connect each segment to the preceding one, or she might present segments that appear to be separate, tying them together only at the end of her conversation, in her final segment. A third pattern for organizing subject matter would be to relate each subsequent segment to the first segment in the conversation.

This discussion of how teachers control the unfolding of the subject matter indicates that the teacher must have two cognitive maps, as suggested by Taba (Taba et al., 1964, pp. 62-64). One of the maps must be of the logic of the content, and the other of the psychology of the cognitive processes involved in learning the content.

On the basis of a single conversation, it is not possible to draw conclusions about the desirability of particular types of control exercised by teachers over the subject matter. However, it is thought by this investigator that when these sequences are studied in many conversations with a variety of teachers and children, it is possible that a picture might emerge of the messages that are conveyed to children about the relationship between the process and the product in teaching and learning, as expressed in the teacher's view of the nature of conversation, the roles the child and the teacher play in conversation, and the functions that language serves in conversation.

Suppose, for instance, that over the course of many conversations between a particular teacher and child, the subject matter unfolds
either from general to specific or from specific to general, or a
combination of the two. Over time, the child may get the message that
the function of language is to get one from the beginning point of a
conversation to the end point. If, however, there is on a continual
basis no specific progression in the unfolding of subject matter, then
the message the child gets over time may be that conversation serves
only as an opportunity for social contact between two people. For
that purpose alone, the use of language may not, in the child's view,
be a necessity.

INTERACTION WITH OTHER BEHAVIOURS

The teacher controls the unfolding of the subject matter by the
solicitations she uses. Each solicitation, of course, expresses a
language and cognitive expectation for the child. It would be of
interest to analyse the relationships of the details of language and
cognitive level solicited and response prescribed to alternate ways of
organizing subject matter within and across segments. For instance,
it may be that one particular pattern of unfolding subject matter is
associated with a preponderance of certain language and/or cognitive
behaviours. Only by further investigation can we learn what patterns
of unfolding subject matter promote or inhibit cognitive or language
behaviours in children or how various other behaviours influence the
way the teacher organizes segments that foster or interfere with how
the subject matter unfolds.

To give an example, suppose a teacher exercises much control over
the unfolding of the subject matter, and because of solicitations that
are very prescribed, rarely gives the child an opportunity to affect
the subject matter. It may be that such a teacher fosters in the
child a lack of interest in attending to the topic at hand. Deaf children are sometimes characterized as being unable to attend to an activity for very long and as being easily distractible. The way in which subject matter unfolds could be analysed together with the way in which and the extent to which the child participates in that unfolding, to yield some information on how various styles influence the learning behaviour of children in the short term. Over time, these behaviours may become characteristics of the children. This would tend to support the hypothesis that the interactive experiences of deaf children—more than the presence of deafness per se—are responsible for certain skills and characteristics they do or do not acquire.

As a further example, preliminary data show that at times the child receives contradictory messages from the teacher regarding the child's role in the conversation. Thus, a teacher may solicit the child to construct a response where no range of response has been specified—apparently giving the child responsibility for the unfolding of the subject matter. Then, without pausing, she may proceed immediately to solicit again, this time asking the child to select from alternatives the teacher presents. The child in this case gets a mixed message from the teacher about the nature and extent of the participation she really wants from him with regard to determining the subject matter. It is hypothesized that, over the long term, the child evaluates the messages he gets from the teacher as a result of the combination of behaviours she uses, and determines what action is appropriate for him to take in the conversation. It would be worthwhile to analyse the various combinations of behaviours teachers
use over time and to rate them according to the degrees and types of control they represent while looking also at the combinations of behaviours they elicit in children.

5.3 FEATURE 3 - ACTIONS TAKEN BY THE TEACHER IN RESPONSE TO THE CHILD'S PARTICIPATION

A third feature selected as a primary focus of the coding system was the actions taken by the teacher in response to the nature and extent of the child's participation. These actions taken by the teacher can serve two functions. First, they can provide feedback to the child, which he can use to evaluate the appropriateness and correctness of his participation, and second, they allow the teacher to continue or to alter the type and degree of control she previously used.

TEACHER REACTIONS

One of the main functions served by teacher reactions is providing feedback. Feedback about the child's participation can be provided by (1) correcting or clarifying the child's move; (2) elaborating on aspects of the child's participation; (3) rating the child positively or negatively, acknowledging the child, or qualifying or repeating some aspect of the child's participation. The teacher provides feedback about a child trespass by continuing or discontinuing her trespassed move. She can provide feedback about the unfolding of the subject matter by introducing all the solicited elements or by introducing unsolicited elements. A teacher can also
provide feedback about the language of the child's participation by the language she uses in her reaction and by what aspects of the child's move, if any, she repeats. She can provide feedback about the cognitive aspects of the child's participation by the cognitive level of her own reaction. Thus, a teacher reacting move provides the child with information about the subject matter, while at the same time conveying linguistic, cognitive, and affective information about the nature and extent of the child's participation.

Some of the feedback described above provides direct information to the child about the general appropriateness or correctness of the child's move. Thus, if a teacher reacts by saying yes or no, or "that's good," or by giving the answer to her own solicitation, the child knows whether the teacher approved or disapproved of his move and whether it fulfilled the general expectations that she had for the degree and type of his participation. Most of this feedback, however, is only indirect. If the teacher repeats, elaborates, or gives other unsolicited information, the child can determine only by inference whether his participation was acceptable, or whether, perhaps, the teacher's reaction was intended to serve as a model for the child of a more correct or appropriate move.

In addition, whether direct or indirect, the feedback provided by the teacher in these reactions usually gives the child at best only a general evaluation of his performance. It does not give him specific information about, say, what cognitive or linguistic aspects of his contribution the teacher approved or disapproved of. While a teacher's reaction does provide various types of general information to the child, it does not require the child to do more than passively receive the information. It is the teacher who is the active
participant, the initiator, the director, and the one who has the responsibility for "carrying" the conversation. One effect on the child of this type of feedback, then, is to convey to him that his role is a passive one. This message is especially clear if the teacher reacts and then immediately continues the conversation herself by reacting further. In such a case, she leaves no alternative for the child but to be a "silent partner"--the child passively "takes in" what the teacher has said.

This expectation of child passivity associated with teacher reactions can be altered if the teacher pauses after her reaction. Such a pause provides the child with an opportunity to take control himself by providing information to the teacher, either about what he has understood of her move or about something additional of his own. The preliminary data indicate that teachers do often pause for various lengths of time after their reacting moves. It would be valuable to know more about how these pauses function in relation to the child's participation. It is hypothesized that such pauses probably have the same potential effect as pauses that occur after soliciting moves. If so, then pauses of longer duration encourage the child to participate actively in the interaction (see chapter 1, section 1.5, Rowe).

It has been shown that most solicitations--even solicitations followed by pauses--prescribe to a great degree the nature and extent of the child's responses (see section 5.1). In contrast, pauses that follow reactions may well provide opportunities for the child to state his own opinions or to elaborate in some other way on what has been said, because reactions are not prescriptive. Pauses after teacher reactions may also allow the child to seek clarification of something that was said previously. These actions of the child in turn provide
valuable information to the teacher about the nature and extent of the child's understanding of the subject matter and about other objectives of the teacher.

The importance of such child reactions to the teaching-learning process cannot be overstated. Coulthard and Sinclair indicate that correct responses do not necessarily reflect understanding on the part of the students. Rather, "there are techniques, almost always used unconsciously by the teacher which provide the children with strong clues to the answer required" (1975, p. 113), independent of their grasp of the material taught. If that is the case, then offering the children opportunities for self-initiated reactions may be a more dependable means of evaluating learning in the children.

(It must be emphasized in this context, as in all others, that pausing or lack of pausing—or any other action taken by the teacher—cannot be viewed as an inherently positive or negative teacher behaviour. For one child, a pause after a teacher reaction may provide him the opportunity to elaborate on the subject matter or to pose a question. The teacher of this child may want to increase greatly the number of such pauses. That same pause might allow a child with different communicative competencies to ramble unintelligibly or to be distracted from the subject. The teacher of this child may well choose to minimize her pauses in an effort to encourage the child's attention to a single topic.)

TEACHER SOLICITATIONS

While teacher reactions may provide feedback, and pauses may offer the opportunity for a child to take a more active role in the conversation, neither is directive. Neither provides the child with a
clear understanding of the participation the teacher would like from him. At the most, a relatively longer pause tells the child that doing something is desirable, a relatively shorter one that his participation is less desired.

Certain kinds of teacher solicitations, on the other hand, can provide at the same time both indirect feedback to the child about the acceptability of his participation and clear direction as to the degree and type of child participation the teacher wants next. For instance, the teacher might solicit the child to elaborate upon or focus more specifically upon something the child did previously, thereby implying that the preceding child move was in whole or in part acceptable. Or, the teacher might instead ask the child to imitate a model that the teacher provides, thereby implying that the child's previous move was not acceptable.

By careful construction of a solicitation, the teacher can indicate to the child whether this indirect feedback applies (1) to the subject matter of the child's move, (2) to what the child did linguistically, (3) to what the child did cognitively, (4) to the role the child took as a participant in the conversation, or (5) to several of these. Thus, if she wants to focus on subject matter, she might solicit the same content again. If she wants to focus on language, she might ask the child to model her language. Or, she might do the latter followed by the former if she wishes to convey to the child that both are important in the situation at hand.

These soliciting moves, which perform reacting functions then, differ significantly from actual reacting moves. First, they require the child to participate actively in the conversation. Second, they communicate more explicitly to the child what aspects of his
reaction moves, solicitations are not concerned with providing direct feedback to the child about the general acceptability of the child's participation.

Thus, there are a variety of actions the teacher can take in response to the child's participation. The teacher can, for example, proceed with a reacting move, with a soliciting move, with a reacting move followed by a soliciting move, or with a reacting move followed by a pause followed by a soliciting move. The actions she takes may offer feedback either directly or indirectly, and may require the child to participate actively or passively in the conversation.

It was shown above (Feature 1) that a major function of soliciting moves is to establish the type and degree of the teacher's control with regard to the nature and extent of the child's participation. In the light of the current discussion, certain solicitations, which serve as a type of reaction to the child's participation, can be seen also as opportunities for the teacher to evaluate the way she is exercising control and to consider, on the basis of the child's participation, whether she wants to maintain to or change it. Such actions by the teacher are described at level 5 of the coding system, because a minimum sequence of three moves—a teacher's solicitation, a child's action that follows it, and the subsequent teacher action—are necessary to understand what the teacher might be doing. If the teacher's subsequent action is a soliciting move, the teacher has the opportunity to change or maintain the kind of control she has been exercising over the general role of the child in the conversation, as well as over aspects of his linguistic and cognitive contribution to it. She also has the
opportunity to maintain or change the way in which the subject matter unfolds. An example will illustrate the point:

Move 5  T sol:  Look at that!
6  T sol:  What is it?
7  C rea:  Water.
8  T rea:  Water.
9  T sol:  Where's the water?
10  C rea:  -------
11  T rea:  Yes, the water's in the bucket.
12  C rea:  Yes.
13  T sol:  What's going to happen?
14  C rea:  ---
15  T rea:  They'll go round.
16  T sol:  Where will it fall?
17  C rea:  ---- fall ----
18  T sol:  Where?
19  C rea:  Where.
20  T sol:  Who'll be wet?
21  C rea:  Who'll be wet?
22  T sol:  What's the man called?
23  C rea:  --
24  T sol:  What is he?
25  C rea:  Policeman.
26  T rea:  A policeman, yes.

In moves 5 and 6, the teacher exercises a great deal of control over all aspects of the child's participation. She asks that the child's participation consist of looking (5) and then constructing the single correct response (6)---a minimum of a noun or a noun phrase, and a unit of information. When the child responds correctly, the teacher is less prescriptive in her next solicitation (9), giving the child a specific range of responses within which to respond ("in the bucket," "up in the air," "attached to the string," "over the policeman's head"). She also seeks more language from the child: the child this time must give a minimum of a noun phrase, whereas in move 7 he needed only to give a minimum of a noun. In addition, she widens the options for the child cognitively. To the solicitation, "Where's the water?" the child can respond by giving a unit of information ("in the bucket") or an inference ("swinging above the policeman").
As it happens, the child's move (10), is unintelligible. The teacher, in turn (in 11), responds to her own solicitation. Next, she again solicits (13) a response within a range of correct responses, this time requiring a minimum of an inference and a full sentence. When the child does not respond in any acceptable way, the teacher tightens her control (16) by asking the child to construct the single correct response, using a minimum of a noun phrase, but at the cognitive level of inference. When the child again fails to respond in any acceptable way (17), the teacher solicits (18) the same information a second time. When the child continues to respond inappropriately (19), the teacher makes the same solicitation again, this time in a different way (20). The child once again responds inappropriately (21), and the teacher solicits (22) the same information again but this time at the cognitive level of a unit of information instead of an inference. A repetition of the solicitation (24) follows the child's unintelligible reaction (23), and at this level the teacher is finally successful in eliciting the desired response to at least the most prescribed of her solicitations.

This example illustrates that a teacher can alter or maintain her levels of control over various aspects of the child's participation. Each aspect of control can be varied independently of the others in order to finely tune the degree of child participation and the unfolding of the subject matter to meet the needs of the situation. While this example comprises the moves of only a single segment, the preliminary data show that teachers have similar opportunities to alter or maintain their levels of control across segments, throughout a conversation.
5.4 RESEARCH QUESTIONS DERIVING FROM PRELIMINARY ANALYSIS OF THE DATA

EFFECT OF TEACHER BEHAVIOUR ON CHILD PARTICIPATION

In the previous example, the teacher takes a variety of actions in response to the participation of the child. Sometimes she reacts, sometimes she reacts and then solicits, sometimes she only solicits. Through her actions, she provides various kinds of feedback to the child about the acceptability of the different aspects of his participation. At the same time, the teacher directs the child's next moves by soliciting in such a way as to require the child to construct a response. On the basis of the preliminary data, it is suggested that this pattern of teacher behaviour repeatedly gives the child a strong message: the child is expected to function as an active participant in the conversation in whatever way he is able. This message is supported, confirmed, and reinforced because the teacher continues to enlist the child's active participation in the unfolding of the subject matter, throughout the course of the segment.

The teacher requires this child to construct responses. She does this by soliciting responses at a variety of cognitive levels and using a variety of linguistic forms. She thus varies the actions she takes in response to the child's participation. It is hypothesized that (1) such a teacher transmits a particular set of messages to the child, and (2) if these behaviours are used consistently over the long term, these messages have an effect on the child's participation in the conversation. The messages transmitted by such a teacher will be very different from those conveyed by a teacher who most frequently
solicits yes or no responses or who asks a child to select from alternatives she provides, who solicits nouns and units of information most of the time, and who reacts to the child's participation in a more or less static way. Wood et al have demonstrated in two separate investigations that teachers who intersperse questions with comments received both more spontaneous contributions and more elaborated answers from their children (Wood, Wood, Griffiths, Howarth, and Howarth, 1982, p. 305; Wood and Wood, in press). While these studies did not address the cause and effect relationship between the teacher behaviours and the child participation, Wood's own coding system is being used to look at such issues. The coding system of this investigator is also intended to be used for such purposes.

EFFECT OF TEACHER BEHAVIOUR ON CHILD'S FLEXIBILITY

It is further hypothesized that such variety in the teacher's actions leads, over time, to a certain flexibility and adaptibility in the children. It is often claimed that hearing-impaired children are rigid in their behaviour and in their thinking (Levine, 1976). Perhaps such characteristics reflect a rigidity in the way the children are cared for and spoken to. As Taba et al. (1964, p. 55) has stated:

The impact of teaching lies not alone in its single acts, but in the manner in which these acts are combined into a pattern; the particular combination of focusing, extending, and lifting; the length of time spent on a particular operation in preparation for another level; how the functions of "giving" and "seeking" are distributed; and the way in which the intake of information is alternated with processing, transforming, and synthesizing the information.

In the education of deaf children, the impact of teaching may lie in the lack of variations of combinations of teaching acts that are presented to the children.
EFFECT OF TEACHER BEHAVIOUR ON CHILD'S PERCEPTION OF SELF

It is further hypothesized that the effects of a child's experiences in the teaching-learning situation are cumulative and are influential in the development and maintenance of the child's perceptions of his own role in conversation. The child may come to see himself as an active participant, whose regular participation on a variety of levels is both expected and valued, or he may come to see himself in a more passive role, where his participation in the conversation is neither expected nor valued. The child's view of the functions of language and communication may grow from his perceptions of his role: In the one instance, he is part of the communicative process, with his own contributions functioning to help maintain or change the overall outcome of the exchange; in the other instance, he is outside the process, functioning largely like a spectator whose only role is to reinforce, by his mere presence, an already expected performance.

EFFECT OF TEACHER'S EXPECTATIONS ON CHILD PARTICIPATION

Various studies have reported the influence of teacher expectations on child behaviour. One such expectation is associated with a teacher's perception of children as being potentially higher or lower achievers. The case has been made that teachers use differential behaviours with these two groups of students (Brophy and Good, 1970). These behaviours, in turn, serve to reinforce the teacher's expectations of these students. Thus, for instance, when teachers think students will be low achievers, it has been shown that teachers (a) wait less time for them to answer questions; (b) persist less in helping (by providing clues or asking follow-up questions) when the
children fail to do what the teacher wants; (c) provide them with less accurate and less detailed feedback than they provide to students believed to be high achievers; and (d) interrupt the performance of low achievers more frequently (Good, 1981, p. 416).

Such expectations about the potential of children is found also among teachers of deaf children. Both the experience of the investigator as a teacher of the deaf and data collected from other teachers in the course of this research suggest that some teachers associate deafness with a low achievement potential, while others do not. Phrases such as "he does well for a deaf child" were commonly heard in school A during the course of this research. Similar expressions were totally absent from school B. When school A and school B teachers were asked to rate the performances of their children compared to other hearing children and compared to other deaf children, school A teachers expressed that it was impossible to compare the children to those with normal hearing, whereas school B teachers would only rate the performance of their children as compared with those of other children in general without distinguishing between hearing and deaf children. It is significant to note that most school B teachers had previously been teachers of hearing children, and that the principal of the school preferred to hire such teachers. In contrast, school A teachers tended to have spent most of their careers teaching deaf children, often with little experience with hearing children. The higher achievement levels of school B children are described in relation to those of school A children in chapter 2, The Population.

The statement above made by school A teachers seemed expressive of an attitude among them that the most important aspect of the
children in their care was their deafness. Thus, their special role as teachers of these children was to emphasize the teaching of skills related to the particular deficits known to be associated with deafness, especially skills of language development. For school B teachers, on the other hand, the most important aspect of the children in their care seemed to be that they were children. They seemed to view their individual and collective role to be facilitators of the general growth and development of the children, of which language development was but one part.

For school A teachers, their beliefs about the children and about their own roles in relation to the children seemed to create an underlying tension in their relationship with the children. The teachers were ever striving toward the language goals they had set: namely, to get the children to produce individual spoken words and speech sounds in the hope that correctly produced words would eventually enable the children to produce sentences. School B teachers taught differently; they placed more emphasis on the process of communication. Thus, children were considered to be active participants even if they demonstrated only receptive language skills or if the expressive skills of the children consisted of patterns of babbling. In their teaching, school A teachers seemed to need more continuous feedback of an expressive kind to reassure them that the children were capable of understanding them at all.

The beliefs of school B teachers, in contrast, seemed to create a more relaxed teaching-learning setting, perhaps because of an assumption that in the course of facilitating the overall growth and development of the children, language as the primary means of communication would come. School B teachers placed greater emphasis
on the process of development, with more attention to the relationship between short-term gains and long-term development. Among these teachers, there seemed to be a confidence that the children would succeed. This confidence seemed to enable school B teachers to remain relatively relaxed. This was the case even in the uncertain situation that resulted from communication hampered by large amounts of unintelligible speech and language and the frequent breaking of turntaking rules.

These general attitudes and expectations for the children pervaded the schools and may have led school A teachers and school B teachers to handle their interactions with the children differently.

In school A, the children were exposed to many kinds of experiences, but the initiative for the experiences as well as the organization of the experiences were usually determined only by the teacher. A teaching experience was a vehicle for the teacher to illustrate a particular point or to expose the child to a particular situation. The child in such a setting became a recipient, a passive person whose role was to respond appropriately to requests made of him. These requests generally required only simple memorization or repetition of words. Thus, the child was rarely exposed to patterns of language or to content that might have been of sufficient interest to command more than his fleeting attention. The individual setting in school A was used to concretize the child's experiences, simplifying them to meet the limitations of the child's language.

On the other hand, school B children were exposed to rich and varied experiences, often made so because they were initiated by the child and followed through by the teacher. The experiences, whether initiated by the teacher or by the child, were used to stimulate the
child's curiosity about his environment and to encourage him to enlarge his world by assimilating the new experiences into it. The teacher seemed to be helping the child to view himself as an important contributor and participant in the communicative process. At the same time, the child seemed to learn that this involved not only bringing to the situation interesting things to say, but also showing interest in what others had to say by listening attentively. The teacher seemed to foster an increasing attention span in the child by emphasizing patterns of language both receptively and expressively. Conversation in school B was used to enhance the child's experiences and to organize them by stretching the child's language to meet the needs of the increasing complexity of his world.

These descriptions provide an overview of some of the different ways of thinking about and interacting with deaf children. The coding system presented here is designed to provide a description of the specific behaviours that are characteristic of such interactions and may be manifestations of particular expectations arising from underlying beliefs. Furthermore, it can be used to study how a child's fulfilling or not fulfilling the teacher's expectations affects teacher behaviour in subsequent interactions with that child or other children.

Good (1980, pp. 101-105) provides evidence that students have a significant influence on whether roles are maintained or changed. Barnes, Gutfreund, Satterly, and Wells (1983, p. 82) argue "If the conversation that the child experiences is facilitative of his or her further development, it is so as a result of interaction to which both child and adult contribute."

To illustrate, if a teacher thinks a deaf child is impaired in
his ability to answer a question, the teacher may not give the child enough time to answer before providing the answer herself. The child, in turn, may learn that his attention to what is going on is not valued, so he focuses elsewhere. In time, given enough exposures of this kind, the teacher's expectation about the child's inability to respond is reinforced, and the child is characterized as being distractible, with only a short attention span.

In contrast, a teacher who expects a child to answer will, on a continuing basis, allow appropriate time for a child to respond and react. Over time, such a teacher teaches a child that not only is his participation expected and valued, but also that attentive listening is an appropriate behaviour in conversation. A child who then learns to participate both by listening and by speaking will reinforce the teacher's original expectations. It may be shown that an important aspect of language development is not only the quality of the linguistic input to the child, but also the quality of the listening on the part of the teacher, and in fact that it is not so much language development that needs to be taught as communication. The recent statement by Wells et al. (1983) that children are important contributors to the conversational process underscores that the process is a communicative process. From the preliminary analysis of the data from the current study, it would seem clear that it is upon this communicative process that language development depends. That process must include not only consideration of what the speaker does, but what the listener is doing. In order to allow such questions to be researched, the current coding system has greatly expanded the coding of reacting moves and the soliciting moves that serve as reactions. For it is these aspects of the conversation that reveal
the extent to which the teacher balances her complementary roles of facilitator of expressive language and attentive listener to the child's abilities to communicate and to be attentive to communication.

**BROADER IMPLICATIONS**

Behaviours of children and teachers over time can be seen as occurring in sequences and as having patterns. An analysis of these behaviours, sequences, and patterns, using the conceptual framework of the five levels of the coding system, may provide us with the means of understanding what messages are conveyed by certain patterns of behaviour, and how these messages are conveyed. Such analysis should enable us to understand better how the behaviour of one individual affects another both in the short term and in the long term, so that we can provide appropriate skills to both teachers and children.

Regarding deaf children in particular there is an especially critical need for such study: (1) as a means of lifting the level of functioning of these children, and (2) as a means of learning about the relationship between the development of deaf children under different conditions and the role of verbal interaction in development in general. Several investigators over the years have pointed to the influence of interpersonal interaction as being at least partly responsible for the cognitive, linguistic and social deficiencies associated with hearing-impaired persons (Getz, 1953, pp. 164-65; Levine, 1960, pp. 51-52).

Recently, several researchers have come forward to say that perhaps deafness in and of itself does not impose such a handicapping condition, but that environmental influences—in particular, interpersonal influences—play a role (Liben, 1978; Ottem, 1980; Wood...
and Wood, in press). Yet, there are but a few studies (Wood and Wood, in press) that have included a serious examination of the quality of interaction between the deaf child and his teachers, who are amongst the most significant influences on the deaf child and on his family. Additional studies need to be undertaken. One such study might begin by asking; "Are there some hearing-impaired youngsters with similar hearing losses who are developing differently from others? If so, what factors are responsible for the differences?

The school A and school B children in this study do represent such different groups. The present coding system, based on data collected in those two schools as well as on teaching and observation in many additional schools, was designed in order to facilitate the study of the above question and the following related hypotheses:

(1) The various speech and language deficits, cognitive differences, and deviant patterns of social communication exhibited by deaf children develop at least partly as a result of the altered patterns of behaviour of their caregivers towards them once the handicapping condition is known. Thus, the primary handicapping condition of deafness is not the deafness itself, but the impaired interaction that is caused by the changes in the way others view and treat the handicapped person.

(2) Teacher behaviours emerge from the teachers' attitudes and beliefs about deaf children, and affect the cognitive, linguistic, and affective behaviours in these children.

(3) These attitudes, beliefs, and behaviours of caregivers are transmitted verbally and through behaviour among caregivers who work together, so that there comes to be a generally "shared view" of the potential of the children throughout a given institution. (Such a
shared view was expressed by teachers and residential personnel in questionnaires administered by this researcher.) This shared view may come to influence those who may not initially hold a similar view.

(4) Certain similarities in aspects of the teacher behaviour become apparent throughout a school. Though teachers may have much that is individual about their teaching styles or techniques, there are also commonalities (e.g., talking in phrases and sentences, or talking using simple words; soliciting children to construct responses or to answer yes or no). Over time, teaching strategies become teaching style. Thus, although children move from class to class and from teacher to teacher, there is a consistency in the behaviours to which the children are exposed.

(5) In the short term, teacher behaviour elicits child behaviour. Over the longer term, consistent teacher behaviours convey a consistent message of expectations and beliefs about the child. If reinforced continuously, these messages and the behaviours they elicit in the child may come to define the competencies the child develops.

(6) The process described here in relation to hearing-impaired children has significance for the general population.

The long-term communicative competencies developed by children begin with individual interactions of children and their caregivers. The research proposed here must therefore begin with a study of those interactions. The present coding system was developed to facilitate describing and analysing those interactions at least in the teaching-learning situation. Analysis of the interactions might generate indices of linguistic, cognitive, and affective competencies in the child and indices of teacher behaviours based on the three features of
teacher behaviour described at the beginning of this chapter. Such studies might further our understanding of the relationship between beliefs, attitudes, behaviours, and expectations, and more specifically of teacher behaviours and their effect on child performance. A greater understanding of the impact of human interaction in the development of children is essential. The coding system presented here endeavours to provide a means of bringing us closer to that understanding.

5.5 SUMMARY AND CONCLUSIONS

The present research is a system for coding the verbal interactions of teachers and children. It was developed on the basis of data collected in conversations in a dyadic setting between hearing-impaired children and their teachers in Great Britain. It is also based on previously developed coding systems and other research studies on various aspects of conversation. Hearing-impaired children were selected for study for three reasons: (1) The communication difficulties arising from the handicap of deafness cause some teachers to focus deliberately on the teaching of language and communication. Thus, certain teacher behaviours may be exaggerated and are consequently easier to study than those of teachers in schools serving the general population. (2) A wide range of linguistic, cognitive, and affective competencies can be found amongst these children. The coding system attempts to describe that wide range. Also, the great variances in competencies suggested the investigation of a possible relationship between language and cognitive functioning and the
development of communicative competence. (3) The communicative difficulties associated with deafness create situations where the normally accepted rules of communication cannot be assumed. It has been suggested by other researchers that there is much to be learned about verbal interaction from an examination of such situations.

By combining in a single coding system various individual aspects of conversation which have been studied previously, the coding system enables researchers to investigate the interrelationships among these aspects that may not have previously been studied in relation to each other, that may have escaped notice, or that have been difficult to study. In addition, certain features of conversation which have not been coded previously in multidimensional coding systems are coded in the present system. The coding system is presented here in the context of previous studies of the teaching-learning process, with special emphasis on reviewing the work of other researchers who developed coding schemes in order to study that process.

In addition to serving as a useful research tool, the coding system is intended also to provide a model for the development of additional tools to study verbal interaction. Thus, the present research includes the results of the reliability testing and also a description of the procedures for establishing reliability for a multidimensional coding system such as this. Also included are procedures for dividing the conversation into units called moves, and for assigning pedagogical functions to each move. The pedagogical functions are soliciting, responding, reacting, and structuring.

In addition to being assigned a pedagogical function, each move is coded with respect to seven categories, called details. The details for solicitations are response prescribed, language solicited,
cognitive level solicited, conversational function, and link. The
details for responses are language of the response, cognitive level of
the response and correctness of the response. The details for
teacher and child reactions, greatly expanded in scope over those
found in earlier systems, are rating function of the reaction,
language of the reaction, cognitive level of the reaction, conversa-
tional function, and link. For all pedagogical moves the details of
pausing and turntaking are coded. In addition, procedures for coding
unintelligible utterances and surrounding moves have been developed.

The various aspects of teacher and child behaviour have been
divided into five levels, to form the conceptual framework of the
coding system. At each higher level there is a relative increase in
the degree of dependence of the behaviours assigned to that level on
other aspects of the conversational context. Viewed in this way, the
various aspects of conversation are characterized as being more
dependent or less dependent on context.

Three closely interrelated features of the conversational setting
were selected as the primary focus of the coding system because
related research by this investigator suggested that these three
features might well have an effect on the linguistic, cognitive, and
affective competencies of children. The three features were: the
control exercised by the teacher over the nature and extent of the
child's participation, the control exercised by the teacher over the
unfolding of the subject matter, and the actions taken by the teacher
in response to the nature and extent of the child's participation.

The various components of the coding system were described in
terms of these three features, and the coded interactions were dis-
cussed from their perspective. A preliminary analysis of some of the
coded data suggests that teachers exercise control over the nature and extent of a child's participation by the responses they prescribe, and the language and cognitive levels they solicit, as well as through their pausing and turntaking behaviour. The control exercised by teachers over the unfolding of the subject matter was reflected in sequences of moves within segments of the interaction, as well as in sequences of segments. Thus, the functions of utterances in conversation and trains of thought can be described. The actions taken by teachers in response to the nature and extent of the child's participation provided feedback that the child could use to evaluate the appropriateness and correctness of his participation, and allowed teachers to continue or alter the type and degree of control they previously used.

It was suggested that by studying the interactions of the various details and their codes, that it might be possible to determine some relationships between teacher behaviours and patterns of behaviours and certain aspects of children's competencies.

The potential effects of the combination of teacher behaviours suggested in this research are not to be seen as the result of a single conversation, but as the cumulative effects of the child's long-term exposure to those teacher behaviours. It has been suggested that by studying many conversations and a variety of teachers, a picture might emerge of the messages conveyed to children about teachers' views of the nature of conversation, the functions that language serves in conversation, and the role of the child in the communicative process (of which the teaching-learning setting is an example).

It is hypothesized that over the long term the child evaluates the messages he gets from the combinations of behaviours teachers use,
and determines what role is appropriate for him to play in the conversation. He, in turn, conveys his understanding of his role to the teacher through his participation in the conversation. Over time, these messages sent by teacher and child are internalized by the other participant in the conversation, eventually creating in each of them a set of beliefs and expectations about their roles in relation to each other, about the nature of conversation, and about the functions of language in it. Each participant then brings these beliefs and expectations to subsequent conversations and interactions. The cumulative effect of this process is the development of a set of fixed behaviours and combinations of behaviours which define for the teacher her competencies as a teacher, and which define for the child the competencies he can attain as he matures.

It was suggested that the coding system might facilitate our increased understanding of the teaching-learning process that takes place between hearing-impaired children and their teachers, and in the general population as well. In addition, the coding system might be used in other situations where caregiver-child interaction is studied, because young children have immature patterns of communication—including unintelligible speech—similar to those of deaf children.

Aside from its use as a research tool, it was suggested that the coding system might be used with new teachers, with experienced teachers at all levels, and also with parents as a concrete means to evaluate the strengths and weakness of their communicative behaviour with children. The current research is also discussed in view of its potential for advancing our theoretical understanding of the interdependence of the linguistic, cognitive and affective components in the teaching-learning process.
REFERENCES


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Appendix A

ABBREVIATIONS, SYMBOLS, AND CONVENTIONS

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOL</td>
<td>Pertains to teacher solicitations</td>
</tr>
<tr>
<td>CRES</td>
<td>Pertains to child responses</td>
</tr>
<tr>
<td>TREA</td>
<td>Pertains to teacher reactions</td>
</tr>
<tr>
<td>CREA</td>
<td>Pertains to child reactions</td>
</tr>
<tr>
<td>T sol</td>
<td>A move that is a teacher solicitation</td>
</tr>
<tr>
<td>C res</td>
<td>A move that is a child response</td>
</tr>
<tr>
<td>T rea</td>
<td>A move that is a teacher reaction</td>
</tr>
<tr>
<td>C rea</td>
<td>A move that is a child reaction</td>
</tr>
<tr>
<td>T str</td>
<td>A move that structures</td>
</tr>
<tr>
<td>Pedmx</td>
<td>A move which has an ambiguous pedagogical function</td>
</tr>
<tr>
<td>det</td>
<td>Detail</td>
</tr>
<tr>
<td>[T]</td>
<td>Location of a trespass</td>
</tr>
<tr>
<td>[P]</td>
<td>Location of a pause</td>
</tr>
<tr>
<td>[S]</td>
<td>Beginning of simultaneous speech</td>
</tr>
<tr>
<td>- - -</td>
<td>Unintelligible syllables</td>
</tr>
<tr>
<td></td>
<td>(each dash represents one syllable)</td>
</tr>
<tr>
<td>*</td>
<td>The particular move in an example that is illustrative of the current discussion</td>
</tr>
<tr>
<td>□</td>
<td>This move is linked to the indicated earlier move</td>
</tr>
</tbody>
</table>

SOL det6=1 and similar expressions are to be read according to this pattern: "Detail 6 for a solicitation is coded as a 1."

DHP and similar combinations of three upper case letters each represent the name of a child in the study.

Because the majority of teachers participating in this research were women, the term "she" is used to refer to all teachers. In order to avoid ambiguity of pronoun referents each child is referred to using the pronoun "he," although both girls and boys participated in the research.
Appendix B

SUMMARY OF THE CODING SYSTEM

(A detailed description of the coding system, including definitions, procedures, guidelines for coding, and examples, can be found in Volume 2: The Coding Manual.)

ALL MOVES

DETAIL 1: PAUSES

The coding for pauses is a three-digit number. Each digit is coded separately and describes one pausing characteristic of the current move. The meaning of each code for each digit is as follows:

Detail 1.1 (1st digit) - VERBAL PAUSE AT THE BEGINNING OF THE MOVE

0 = No verbal pause present.
1 = Verbal pause present.
X = Can't tell.

Detail 1.2 (2nd digit) - PAUSE(S) WITHIN THE MOVE

0 = No pause occurs within the move.
1 = One or more silent pauses occur within the move.
2 = One or more verbal pauses occur within the move.
3 = Silent and verbal pauses occur within the move.
X = Can't tell.

Detail 1.3 (3rd digit) - PAUSE(S) AT THE END OF THE MOVE

0 = No pause occurs at the end of the move.
1 = A pause of less than 1 second occurs at the end of the move.
   (count at least "one one-thou--" but less than "one one-thousand")
2 = A pause of at least 1 second but less than 3 seconds occurs at the end of the move.
   (count at least "one one-thousand" but less than "three one-thousand")
3 = A pause of 3 seconds or more occurs at the end of the move.
   (count at least "three one-thousand")
4 = A verbal pause occurs at the end of the move.
X = Can't tell.
ALL MOVES
Detail 2: TURNTAKING

The coding for turntaking is a three-digit number. Each digit is coded separately and describes one turntaking characteristic of the current move. The meaning of each code for each digit is as follows:

Detail 2.1 (1st digit) - BEGINNING OF THE MOVE

0= Normal. (The current move is neither a trespass nor one of two simultaneous moves.)
1= Trespass. (The current move trespasses upon the preceding move.)
2= First simultaneous move. (The current move is the first of two moves which begin simultaneously.)
3= Second simultaneous move. (The current move is the second of two moves which begin simultaneously.)
X= Can't tell.

Detail 2.2 (2nd digit) - INTERJECTED SPEECH

0= No. (No speech from a second speaker is interjected during this move.)
1= Yes. (Speech from a second speaker is interjected during this move.)
X= Can't tell.

Detail 2.3 (3rd digit) - ENDING OF THE MOVE

0= Normal. (No trespass or discontinuation of simultaneous speech associated with the ending of the current move.)
1= Interrupted. (The current move is trespassed upon, causing the current speaker to terminate his move prematurely.)
2= Discontinued. (A trespasser prematurely ends his trespassing move, or one of two simultaneous speakers ends his move prematurely, apparently because the other speaker continues.)
X= Can't tell.
TEACHER SOLICITATIONS

DETAIL 1: PAUSES (see ALL MOVES)

DETAIL 2: TURNTAKING (see ALL MOVES)

SOL

DETAIL 3: RESPONSE PRESCRIBED

0= Not coded for this move.
1= Nonverbal response.
2= Repeating.
3= Minimum of yes or no.
4= Selecting.
5= Construction of the single correct response.
6= Construction of a response from within a specific range of correct responses.
7= Construction of a response where no range of responses has been specified.
8= Construction of a response--either det3=5, det3=6, or det3=7, (but can't tell which one).
9= Other.
X= Can't tell.

SOL

DETAIL 4: LANGUAGE ELEMENTS SOLICITED

0= Not coded for this move.
1= Minimum of yes or no.
2= Noun or noun phrase only.
3= Verb or verb phrase only.
4= Minimum of noun or noun phrase.
5= Minimum of verb or verb phrase.
6= Minimum of a sentence.
7= Other.
X= Can't tell.

SOL

DETAIL 5: COGNITIVE LEVEL SOLICITED

0= Not coded for this move.
1= Unit of information.
2= Inference based on one or more units of information.
3= Minimum of an inference based on an inference.
4= Unit of information or inference based on one or more units of information.
5= Inference based on one or more units of information or inference based on an inference.
6= Cognitive level not prescribed.
7= Can't tell.
SOL
DETAIL 6: CONVERSATIONAL FUNCTION

0= Focusing solicitation.
1= Initial solicitation of (content or language) element(s)
2= Solicitation of same content as a previous solicitation,
   without introducing any new element(s).
3= Solicitation of same content as a previous solicitation, but
   introducing new element(s).
4= Solicitation of more limited content than a previous
   solicitation.
5= Solicitation of additional (new) element(s) of content.
6= Solicitation of correction, clarification, or confirmation of
   a previous move.
7= Other.
A= Solicitation of the same language as a previous solicitation
   without introducing any new element(s).
B= Solicitation of the same language as a previous
   solicitation, but introducing new element(s).
C= Solicitation of more limited language than a previous
   solicitation.
D= Solicitation of additional (new) language element(s).
X= Unclear conversational function.

SOL
DETAIL 7: LINK

0= Solicitation linked to the preceding solicitation of the
   same speaker.
1= Solicitation linked to a previous solicitation of the same
   speaker, that is not the immediately preceding solicitation.
2= Solicitation linked to a teacher reaction that is the
   preceding move.
3= Solicitation linked to a teacher reaction that is
   not the preceding move.
4= Solicitation linked to a child move that is the
   preceding move.
5= Solicitation linked to a child move that is
   not the preceding move.
6= Solicitation linked to a preceding structuring move.
9= Not linked to any preceding move.
X= Can't tell.
CHILD RESPONSES

DETAIL 1: PAUSES (see ALL MOVES)

DETAIL 2: TURNTAKING (see ALL MOVES)

DETAIL 3: NOT CODED FOR CHILD RESPONSES

CRES

DETAIL 4: LANGUAGE

0= Not coded for this move.
1= Only yes or no.
2= Noun.
3= Faulty noun phrase.
4= Noun phrase.
5= Verb.
6= Faulty verb phrase.
7= Verb phrase.
8= Faulty sentence.
9= Simple sentence (excluding sentence with compound predicate).
S= Compound or complex sentence, or sentence with compound predicate.
L= Other

CRES

DETAIL 5: COGNITIVE LEVEL

0= Not coded for this move.
1= Unit of information.
2= Inference based on one or more units of information.
3= Minimum of an inference based on an inference.

CRES

DETAIL 6: CORRECTNESS OF RESPONSE

0= Not Coded for this move.
1= Correct.
2= Partially correct.
3= Incorrect.
X= Coder unable to determine.
0= Response linked to the preceding solicitation, which is the preceding move.
1= Response linked to the preceding solicitation, which is not the preceding move.
2= Response linked to a solicitation other than the preceding solicitation.
3= Response linked to a previous response--continuation of a previously initiated response.
4= Response linked to a previous response--conclusion of a previously initiated response.
X= Can't tell.
TEACHER REACTIONS

DETAIL 1: PAUSES (see ALL MOVES)

DETAIL 2: TURNTAKING (see ALL MOVES)

TREA
DETAIL 3: RATING FUNCTION

0 = Not coded for this move.
1 = Positive.
2 = Qualifying.
3 = Negative.
4 = Acknowledging.
5 = Instructional.
6 = Other.
X = Can't tell.

TREA
DETAIL 4: LANGUAGE

0 = Not coded for this move.
1 = Only yes or no.
2 = Noun.
3 = Faulty noun phrase.
4 = Noun phrase.
5 = Verb.
6 = Faulty verb phrase.
7 = Verb phrase.
8 = Faulty sentence.
9 = Simple sentence (excluding sentence with compound predicate).
S = Compound or complex sentence, or sentence with a compound predicate.
L = Other.
X = Can't tell.

TREA
DETAIL 5: COGNITIVE LEVEL

0 = Not coded for this move.
1 = Unit of information.
2 = Inference based on one or more units of information.
3 = Minimum of an inference based on an inference.
X = Can't tell.

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TREA
DETAIL 6: CONVERSATIONAL FUNCTION

0= Not coded for this move.
1= Teacher introduces all the solicited elements.
2= Teacher introduces some--but not all--of the solicited elements.
3= Teacher introduces unsolicited element(s).
4= Teacher ties together elements of content or language already introduced.
5= Teacher corrects or clarifies the content of a previous move.
6= Other
A= Teacher gives essentially the same element(s) as a previous move.
C= Teacher gives some--but not all--of the elements of a previous move.
D= Teacher gives some or all of the elements of a previous move and introduces solicited element(s).
E= Teacher gives some or all of the elements of a previous move and introduces unsolicited element(s).
X= Can't tell.

TREA
DETAIL 7: LINK

2= Teacher reaction linked to a child move that is the preceding move.
3= Teacher reaction linked to a child move that is not the preceding move.
4= Teacher reaction linked to a teacher move that is the preceding move.
5= Teacher reaction linked to a teacher move that is not the preceding move.
9= Not linked to any preceding move.
X= Can't tell.
CHILD REACTIONS

DETAIL 1: PAUSES (see ALL MOVES)

DETAIL 2: TURNTAKING (see ALL MOVES)

CREA
DETAIL 3: RATING FUNCTION

0= Not coded for this move.
1= Positive.
2= Qualifying.
3= Negative.
4= Acknowledging.
5= Instructional.
X= Can't tell.

CREA
DETAIL 4: LANGUAGE

0= Not coded for this move.
1= Only yes or no.
2= Noun.
3= Faulty noun phrase.
4= Noun phrase.
5= Verb.
6= Faulty verb phrase.
7= Verb phrase.
8= Faulty sentence.
9= Simple sentence (excluding sentence with compound predicate).
S= Compound or complex sentence, or sentence with a compound predicate.
A= Three unintelligible syllables or less.
B= More than three unintelligible syllables.
C= Unintelligible syllable(s) + noun.
D= Unintelligible syllable(s) + faulty noun phrase.
E= Unintelligible syllable(s) + noun phrase.
F= Unintelligible syllable(s) + verb.
G= Unintelligible syllable(s) + faulty verb phrase.
H= Unintelligible syllable(s) + verb phrase.
J= Unintelligible syllable(s) + faulty sentence.
K= Unintelligible syllable(s) + complete sentence.
L= Other.
M= Unintelligible syllable(s) + other.
X= Can't tell.

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CREA
DETAIL 5: COGNITIVE LEVEL

0= Not coded for this move.
1= Unit of information.
2= Inference based on one or more units of information.
3= Minimum of an inference based on an inference.
X= Can't tell.

CREA
DETAIL 6: CONVERSATIONAL FUNCTION

0= Not coded for this move.
2= Child introduces some, but not all, the solicited elements.
3= Child ties together elements of content or language already introduced.
4= Child corrects or clarifies the content of a previous move.
5= Child introduces unsolicited element(s).
6= Other
A= Child gives essentially the same element(s) as a previous move.
C= Child gives some, but not all, of the elements of a previous move.
D= Child gives some or all of the elements of a previous move and introduces solicited element(s).
E= Child gives some or all of the elements of a previous move and introduces unsolicited element(s).
X= Can't tell.

CREA
DETAIL 7: LINK

2= Child reaction linked to a teacher move that is the preceding move.
3= Child reaction linked to a teacher move that is not the preceding move.
4= Child reaction linked to a child move that is the preceding move.
5= Child reaction linked to a child move that is not the preceding move.
9= Not linked to any preceding move.
X= Can't tell.
Appendix C

THE PICTURE POSTER

Used as Subject Matter in the Conversations between Teachers and Children

Picture Poster: Top Cat
(c) Athena Reproductions Ltd., London, 1973
Hanna-Barbera Productions, Inc. and Columbia Pictures Industries, Inc.
Appendix D

SAMPLES OF TRANSCRIPTS, SEGMENT DIVISIONS,
AND TOPIC SENTENCES

CHILD DST - Transcript

Move
1  T sol: Look at it carefully.
2  C rea: Yes.
3  T rea: Because I'm going to talk to you about that in a minute.
4  T sol: Have a look at the picture.
5  T sol: Look at that.
6  T sol: What is it?
7  C rea: Water.
8  T rea: Water.
9  T sol: Where's the water?
10 C rea: ----
11 T rea: Yes, the water's in the bucket.
12 C rea: [S] Yes.
13 T sol: [S] What's going to happen?
14 C rea: --
15 T rea: They'll go round.
16 T sol: Where will it fall?
17 C rea: -- fall [P] --
18 T sol: Where?
19 T sol: Where.
20 Pedmx: Who.
21 T sol: Who'll be wet?
22 T sol: Who'll be wet, wet.
23 T sol: What's the man called?
24 C rea: -
25 T sol: What is he?
26 C rea: Police man.
27 T rea: A policeman, yes.
28 T sol: Look at his mouth.
29 T rea: He looks like me, when I'm angry doesn't he?
30 T sol: What, what's he [T]
31 C rea: --
32 T sol: What's he doing?
33 T sol: Look at the man.
34 C rea: -- [P] -- [P] -- -- --
35 T rea: Yes, he's talking to the cat.
36 C rea: Yes.
37 T rea: - he's very angry with the cat.
38 T rea: And look at this!
39 C rea: - fall.
40 T sol: Who will?
Pol man [P] -- fall.
Fall, he's going to pull.
Yes.
He's going to pull the rope.
He's going pull to pull the rope.
Pull.
You say that.
Pull the rope.
Pull the rope.
That's better, yes.
He's going to pull he rope and he'll fall over.
--
Look at that!
What's he got?
- [T] - [T] -
Yes.
It's a, it's a catapult.
[S] Cat pult.
[S] What's he going to do with the catapult?
-
What's he going to do?
-
[laugh] - on his bottom?
[S] Yes.
He's going to have a sore bottom, yes.
Look at that!
What's going to happen?
What will he do?
-- [P] fall.
- [T] fall.
It'll hit him [T] on the head, but he's going to fall [T] isn't he?

Where?
Where will the water fall?
-
Where will it fall?
- - - fall [P] - - [P] - - - [P] - - - [P] - - -
It'll fall on his head...
It'll fall [T] and then he'll be very wet [T], [P] won't he? Yes.

Fall.
Yes.
And look at this one?
What's this?
-
What's this called?
You've, I bet you've got one at home.

Yes.

What's it called?

- [P] -

Look!

A dustbin [P] isn't it?

[S]-

[S] You look at me.

A dustbin.

Da bin.

Yeah.

And look!

The cat.

The cat's inside the dustbin.

Yeah

You say that, the cat's inside the dustbin.

Cat, dus bin [P] [T] -

That.

Inside the dustbin.

In side -.

Good.

Peeping, isn't he?

- -

And what's that cat doing?

- - - -

He's not got any wa[T]

-

He's not got any water.

Look.

-

What's he got there?

-

What's that?

- - - -

But what's he going to do with that?

-

What is it?

That

- - - [T]

Yes, but

You tell me,

What is it called?

- [P] - [P] -
<table>
<thead>
<tr>
<th>Segment</th>
<th>Moves</th>
<th>Topic Sentence</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1-4</td>
<td>We're going to talk about the picture so have a good look at it.</td>
</tr>
<tr>
<td>2</td>
<td>5-27</td>
<td>There's a bucket of water which will fall on the policeman and he'll be wet.</td>
</tr>
<tr>
<td>3</td>
<td>28-37</td>
<td>The policeman is talking to the cats, and he's very angry.</td>
</tr>
<tr>
<td>4</td>
<td>38-53</td>
<td>The cat will pull the rope and the policeman will fall over.</td>
</tr>
<tr>
<td>5</td>
<td>54-66</td>
<td>The cat with the catapult is going to hit the policeman's bottom and it will be sore.</td>
</tr>
<tr>
<td>6</td>
<td>67-76</td>
<td>Someone's going to do something and someone's going to get hit on the head and/or fall.</td>
</tr>
<tr>
<td>7</td>
<td>77-88</td>
<td>There's water that will fall on his head and he'll be wet.</td>
</tr>
<tr>
<td>8</td>
<td>89-120</td>
<td>There's something called a dustbin and the cat is inside it, peeping.</td>
</tr>
<tr>
<td>9</td>
<td>120-140</td>
<td>The cat's got something, that you can tell me the name of, and he's going to do something with it.</td>
</tr>
</tbody>
</table>
CTSTRRANSCRIPT

Move
1 T rea: Hello Karen.
2 C rea: Hello Miss [name].
3 T sol: Can you hear me all right?
4 T sol: I want you to look at the picture.
5 C rea: Look.
6 T sol: Take a good look at it [T], [P]
7 C rea: Look.
8 T str: And then then we'll talk about it.
9 C rea: Yes.
10 T sol: Look at the picture.
11 C rea: --
12 T rea: Right.
13 T sol: Tell me about the picture.
14 T sol: What [T]
     -- [P] --
16 T sol: What, who is he?
17 T rea: Yes.
18 T sol: Who is he?
19 C rea: --
20 T rea: Oh, he's going to fire that [P].
21 T sol: What [T]
22 C rea: Yes.
23 T sol: What has he got?
24 C rea: --
25 T rea: You think it will knock the hat o[T]ff?
26 C rea: Hat off.
27 T rea: Knock his hat off.
28 C rea: --
29 T rea: And I think [T]
30 C rea: --
31 T rea: Yes.
32 T sol: Tell me about this.
33 T sol: What's that?
34 C rea: --
35 T rea: It's going to fall, good.
36 T sol: Tell me about him.
37 C rea: --
38 T sol: Have a look at him.
39 C rea: --
40 T sol: Who is he?
41 C rea: --
42 T sol: What is it?
43 T sol: Karen, what is that?
44 C rea: News pa per.
45 T rea: A newspaper, very good [P] yes.
46 C rea: --
47 T sol: What's this here?
48 C rea: -- a ba ba ba ba.
49 T rea: Yes, somebody's eaten the fish.
50 C rea: --
51 T sol: What's left?
52 T sol: What's that?
53 T sol: What's been left there?
54 T sol: What are [T] they?
55 C real: --
56 T real: I think that's their bones.
57 C real: Bones.
58 T real: Yes.
59 T sol: What's this Karen?
60 C rest: da ba.
61 T real: A dustbin.
62 T sol: Who's in the dustbin?
63 C rest: The cat.
64 T real: The cat.
65 T sol: What's coming out of the dustbin?
66 T sol: What's coming out of the dustbin?
67 C real: --
68 T sol: What's that?
69 C real: --
70 T real: Papers, yes.
71 T sol: Tell me about this here.
72 T sol: What's that there?
73 C rest: ba.
74 T real: Bottles.
75 T sol: How many bottles?
76 C real: --
77 C rest: Two.
78 T sol: What's coming out of this bottle?
79 C real: --
80 T sol: A straw, yes.
81 T sol: What [T]
82 C real: -- [P] --
83 T sol: What do you do with a st[T]raw?
84 C real: --
85 T sol: What would you do with a straw?
86 C real: -- [P] [T] --
87 C real: --
88 T sol: What's this down here?
89 C real: --
90 T real: A brick.
91 T sol: What colour is the brick?
92 C real: --
93 T real: Mm?
94 T sol: What colour is the brick?
95 C real: The wall.
96 T real: That's right from the wall.
97 T sol: Do you think it came out of the wall?
98 C real: the wall.
99 T real: He's very good.
100 T sol: What about over here.
101 T sol: What's hanging there?
102 C real: -- [P] --
103 T sol: What about this here?
104 T sol: What [T]
105 C real: ona [T] ona
That's clothes, yes.
That's their clothes.
What are they?
What are they [T] called?
Socks.
What colour are they?
Red white [P] [T] red white [P] [T] red white.
What colour?
Red and white [P], go[T]od.
What is, what is he going to do?
What is he going to do?
Fire.
What [T]
What do you call that?
Will I tell you?
Tell you.
A catapult.
That's very good, a catapult, yes.
He has one, too, hasn't he? [P]
What's this down here?
da ba [P] -
What's that?
ba.
Not a box, a tin.
A tin.
What do you think [T]
What have been in it?
Right.
That's water, yes very good.
<table>
<thead>
<tr>
<th>Segment</th>
<th>Moves</th>
<th>Topic Sentence</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1-12</td>
<td>We're going to talk about the picture, so have a good look at it.</td>
</tr>
<tr>
<td>2</td>
<td>13-31</td>
<td>There's something you can tell me about the picture. There is someone in the picture and he's got something.</td>
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<tr>
<td>3</td>
<td>32-35</td>
<td>You can tell me about this other thing. It is something and it will fall.</td>
</tr>
<tr>
<td>4</td>
<td>36-41</td>
<td>You can tell me who this person is. He is someone.</td>
</tr>
<tr>
<td>5</td>
<td>42-46</td>
<td>There is another thing you can tell me about. It is something.</td>
</tr>
<tr>
<td>6</td>
<td>47-58</td>
<td>Another thing has been left here. You can tell me what it is.</td>
</tr>
<tr>
<td>7</td>
<td>59-70</td>
<td>There's a cat in the dustbin, and something's coming out of the dustbin.</td>
</tr>
<tr>
<td>8</td>
<td>71-87</td>
<td>There is a bottle and a straw is coming out of it.</td>
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<tr>
<td>9</td>
<td>88-99</td>
<td>There is a brick that might have come out of the wall.</td>
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<tr>
<td>10</td>
<td>100-124</td>
<td>There are some clothes hanging over there, including some red and white socks.</td>
</tr>
<tr>
<td>11</td>
<td>125-137</td>
<td>He's going to fire something called a catapult, and another one has one too.</td>
</tr>
<tr>
<td>12</td>
<td>138-150</td>
<td>There's a tin and it's had something in it.</td>
</tr>
</tbody>
</table>