TEACHER VERBAL INTERACTIONS WITH DEVELOPMENTALLY DISABLED AND NONDISABLED PRESCHOOL CHILDREN

BY

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The process of language acquisition in children has been the focus of a significant amount of research, particularly in recent years. We have seen several transitions in research interest from normative studies to experimental, laboratory-controlled investigations to the more recent descriptive and naturalistic studies. Much of the current emphasis has focused on the role of speech directed to children in their environment and its consequent influence on language development. The importance of the total environment in the language-learning process has been increasingly acknowledged through these various stages of language acquisition research.

After the normative studies of the 1950's, much of the research of the 1960's was devoted to the study of development of syntactical structures (the sentence-construction process). This work usually emphasized the development and documentation of child "grammars" - the rules and regularities found in early child language (Berko, 1958; Brain, 1963; Brown & Bellugi, 1964; Miller & Ervin, 1964). The majority of these early studies were limited to what the children were producing. Few attempted to study the language directed to them, even though Carroll (1961, p. 340) had concluded several years earlier that "...the quality of a child's early linguistic environment is the most important external factor affecting the rate of language development."

The next trend in the area of child language emphasized the semantic basis of early language development, rather than the grammatical rules for word order and morphological forms. Bloom (1970, 1973) incorporated this semantic component in her data on developing language skills in children by recording non-linguistic information from the situational context (for example, what the children were saying and doing as well as the adult speech). Schlesinger (1971, 1974) also supported a semantic approach to early child language. He proposed a semantically aware grammar, similar to that of Bloom (1970) and Fillmore (1968). All three authors provided a rich interpretation of child grammars, which had advantages over the lean interpretations (telegraphic speech and pivot grammars) of the early 1960's. Brown (1973) proposed that the earliest stage of language development is best described in semantic terms rather than in terms of grammatical structure.

During the early 1970's there emerged an increasing interest in the causal relationship between the semantic and syntactic features of the child's language-learning environment. Investigators began to provide descriptions of the context surrounding child utterances, and how this was reflected in the content of the child's speech, as well as the structures of the utterances themselves. Data analysis concentrated on the formal, structural aspects of language (syntax) in conjunction with an underlying component of the

child's intent or function (semantics).

Investigators then began to recognize the necessity of evaluating the total milieu in regard to speech and language development. This acknowledgement of environmental influences sparked the latest trend in language acquisition studies - analysis of the linguistic input provided by adult models to young children acquiring language.

Essentially repeating Carroll's conclusion almost twenty years earlier, Guralnick and Paul-Brown (1977, p. 254) stated "...the significance of the linguistic environment in determining the linguistic competence of the language-learning child is a generally acknowledged fact." Studies of adult speech to children have focused primarily on aspects of mother-to-child language. Research has shown that mother-to-child language is different from adult-to-adult language. As a result of this maternal-child research, it has been proposed that a young child hears speech that seems tailored to his language learning needs (Baldwin & Baldwin, 1973; Broen, 1972; Nelson, 1973; Snow, 1972).

Numerous investigators have recorded characteristics prevalent in mothers' speech addressed to young children. Brown and Bellugi (1964) found mothers' speech to be simple and grammatical with imitations and expansions of their children's utterances. Snow (1972, p. 561) noted that the "...set of utterances (addressed to the child by the mother)...seems quite well designed as a set of language lessons." Broen (1972) reported that mothers used a slower rate, fewer

disfluencies, smaller type-token ratios (more redundant vocabulary) and repeated utterances more frequently in their speech to younger children as compared to older children. She suggested that the kinds of sentences a mother uses with a young child may be the most interesting aspect of mothers' speech, as this represents the main corpus of speech from which the child learns his language. That mothers do use a variant speech style has been so systematically documented that it is commonly referred to in the literature as "motherese" (Bohannon & Marquis, 1977; Cross, 1975; Newport, Gleitman, & Gleitman, 1977).

Cazden (1972) expressed the belief that these mother-to-child studies show a kind of maternal accommodation to the child's growing language knowledge and ability. The syntactic complexity of mothers' speech reflected in such measures as mean length of utterance (MLU) and incidence of subordinate clauses was found to be low in their speech to young children (Longhurst & Stepanich, 1975; Phillips, 1973; Snow, 1972).

Phillips (1973) found that mothers' speech to eight-month old children differed from that of children aged 1-6 or 2-4. Speech to the younger children showed greater diversity in utterance length, number of verbs, type-token ratio (TTR), and ratio of function words to content words. She interpreted these findings as further support for the view that mothers do adjust their speech to the child's linguistic level, and thus no adjustment is necessary before the child has any

language.

To account for the changes in maternal speech patterns, Snow (1976) discussed a "Conversational Model Hypothesis". This model rests on two assumptions: (1) that the mothers were trying to communicate specific information to their young babies, and (2) that they were receiving (or trying to receive) specific information from them. The basis for this model is the reciprocal communication between the partners - where information appears to be exchanged in both directions. Snow (p. 12) noted that "...whereas getting one's turn is a major goal in adult conversations, getting the child to take her turn seemed to be the primary goal of the mothers studied." Reportedly, the mothers' attempts to maintain a conversation, despite the inadequacies of their conversational partner, accounted for the most salient characteristics of the maternal speech type--its repetitiveness, high frequency of questions, and frequency of sequences in which the mother takes both parts.

The parameters of mothers' speech investigated in these studies have ranged from indexes of length, complexity, rate, and amount of verbalizations, to descriptions of imitation, expansion, repetition, and other interaction strategies. In the longitudinal study of Brown and Bellugi (1964), these authors classified several interaction strategies observed in the speech of mothers and their children which appeared to have facilitative affects for a young child acquiring language.

These reoccurring patterns were classified as "imitation with reduction" by the child, "imitation with expansion" and a form of "expatiation" or "modeling" by the parent. The authors found that much of the time this interaction between mother and child is a cycle of reductions and expansions. Expansions accounted for 30% of the utterances in the adults' speech.

Bloom, Rocissano, and Hood (Note 1) investigated the development of discourse between adults and children in terms of the content of their utterances and the linguistic and contextual relations between their messages. Their classifications of "contingent discourse" revealed that expansions, alternatives (addition of information by opposing an aspect of the topic in the prior utterance), and expatiations were the most important categories developmentally. It was proposed that these patterns were the result of mutual influences - an "input cue" is provided to the adult by the kind of response provided by the child, and the changes in the child's discourse patterns influences the adult's response patterns. Moerk (1974) concluded that the most specific influences on language acquisition of the child comes from the verbal behavior of the adult.

These studies have focused on the interactive nature of language acquisition. They highlight the extent to which language development is a result of complex interactions between the child - his capacities and communication strategies, and his mothers' sensitivity to his current linguistic level.

In spite of the reported adjustments in mothers' speech,

attempts to demonstrate the facilitative effects of specific features of "motherese" on children's language development have been inconclusive. Cazden (1965) studied the effectiveness of imitation with expansion vs. modeling in an experimental setting with 12 culturally deprived children as subjects. This investigation attempted to separate the effects of mere exposure to language in the environment and contingent responses directed to the child. Results were inconclusive. Neither group appeared statistically superior to a control group (no treatment). There was no evidence to support that expansions aid the acquisition of grammar. In fact, the results appeared to indicate that modeling was perhaps the more effective treatment. One explanation was that the childrens' utterances may have been misinterpreted, and were thus expanded incorrectly. So Feldman and Rodgon (Note 2) repeated Cazden's experiment but added a condition in which only those utterances which were unambiguous were expanded. Again there was no difference apparent between groups on post-test measures.

Cross (1975, p. 117) in reviewing earlier maternal-child research suggested that the, "...inconclusive nature of these results may be explained by a failure to take account of the mother's ability to tailor her speech styles to quite small increments in her child's linguistic and communicative capacities throughout the early course of development." Cross reported that the child's volubility may directly influence his mother's verbal output.

Other investigators (Buium, Rynders, & Turnure, 1974; Goldfarb, Goldfarb, & Scholl, 1966; Marshall, Hegrenes, & Goldstein, 1973) demonstrated that mothers of handicapped children provide a generally less complex linguistic environment than mothers of nonhandicapped children.

In light of the above research, the present investigation was an attempt to further explore speech styles to which young children are exposed, in an environment which has received little attention - an integrated preschool for disabled and nondisabled children. It is the current trend in our society for children to attend preschool from two- to five-years of age. Thus the school environment may constitute a significant portion of a young child's early developmental years. More recently, the process of integration of handicapped youngsters has been emphasized at the preschool level, which is an extension of the mainstreaming efforts in elementary and secondary schools.

Relatively little is known about teacher speech to children in general. Even less is known about how teachers talk to handicapped children, whether they be mild-to-severely retarded, developmentally delayed, emotionally disturbed, or exhibit other handicapping conditions. There have been some studies demonstrating how adults typically restrict the range and diversity of their utterances when talking to retarded children, and others suggesting that the more retarded a child is perceived to be, the less people talk to him (Siegel, 1963a,

1963b; Siegel & Harkins, 1963).

In his investigation Siegel (1963a), examined the verbal behavior of adults interacting with a homogenous group of severely language impaired institutionalized retardates, randomly labeled "high" or "low" in verbal ability. Results of this investigation were compared to those of a previous investigation (Siegel & Harkins, 1963). Procedures were comparable, except that in the earlier study the designation of high and low levels referred to actual differences in verbal skills. The analysis was to determine if adults respond to children labeled as high or low in a similar way as they do to children who are in reality high or low in verbal ability. The author found considerable similarity between adult responses in each investigation, suggesting that, "...the actual verbal level of the children in the current study may have been the crucial determinant of adult verbal behavior" (p. 424). The author further reported that in both studies adults made more responses, asked fewer questions, used more words, and had lower type-token ratios in a Structured (teaching) than in an Unstructured (conversation) situation.

Mittler (1973) expressed that the child is in some form of language environment the moment he enters the classroom. Conn and Richardson (1976) investigated various aspects of teacher behavior and tried to identify some of the crucial skills involved in language teaching. There is evidence that teacher expectancies can affect a child's achievement in the

classroom (Rosenthal & Jacobson, 1968). Further data has demonstrated that teachers make consistent and reliable judgements about the performance level of children in their class (Bryan & McGrady, 1972). But there is little or no data reporting the criteria on which these judgements are based, nor the "behavioral translations" of the teachers' attitudes towards the child. In other words, if one child is percieved as "normal" and another as "abnormal" along some dimension (for example, language development) does the teacher interact with these two children differently?

There have been relatively few "naturalistic" studies of classroom behaviors of teachers interacting with their students. One study by Evans and Wragg (1971) found that the teacher directed more language to the poorer speaker of two children. Other studies involving exceptional populations (Bryan, 1974; Cooper & Ingleby, 1974) have focused more on the child's classroom behavior, rather than on the teachers'.

The conceptual framework for the present study was influenced by these previous investigators who have demonstrated the need to consider all environmental variables when assessing a child's development, more specifically, his language development. There is a need to determine the influence of the environment upon the child, and the reciprocal effect of the child upon his environment. Thus the influences present in the preschool setting are of considerable importance during this critical period for language acquisition, particularly

for handicapped children. The data are observational in nature, obtained by observing and recording the naturalistic interaction behaviors in teacher-child dyads, in their usual classroom environment. It was an attempt to systematically and objectively record and analyze the ongoing verbal interactions between two teachers and the children in an integrated preschool setting. Its purpose was to investigate possible differences in the speech strategies utilized by teachers to children known to represent two distinct linguistic levels, and further, to determine the influences of the children's speech on teacher verbal behavior.

Specifically, this study sought to answer the following questions: (1) what are the extent and kinds of verbal modifications employed by teachers when interacting with preschool children; (2) what qualitative differences (if any) exist between the interaction strategies to children of different linguistic levels; and (3) how does the child's communicative skills influence the teachers' verbal behavior?

The speech behaviors were coded to permit comparison between the variables applicable to both linguistic levels, and also to describe those variables whose occurence was restricted to either group.

METHOD

SUBJECTS

Eight children, four developmentally disabled and four nondisabled, and their two teachers served as subjects for

this investigation. All subjects were native american speakers. No attempt was made to control for sex of the subjects, nor age of siblings or other family-related variables.

One female and three males ranging in age from 2 years to 4 years 7 months ($\bar{x}$ age = 3 yrs.) comprised the developmentally disabled group. Commensurate with the child's chronological age, developmental language level was determined by performance on the Receptive-Expressive Emergent Language Inventory (Bzoch & League, 1971), or the Verbal Language Development Scale (Mecham, 1959). The developmentally disabled group scored language age equivalents ranging from nine months to one year six months. Mean length of utterance scores (MLU) for the group did not exceed 1.5 morphemes.

The nondisabled group of subjects, two males and two females, ranged in age from 2 years to 5 years 8 months ($\bar{x}$ age = 3-3). Their language development, as determined by performance on the Peabody Picture Vocabulary Test (Dunn, 1959) was judged to be normal or slightly advanced. Mean length of utterance scores (MLU) ranged from 2.9 to 4.3 morphemes ($\bar{x}$ = 3.6).

The adult subjects consisted of two female teachers in a preschool for the developmentally disabled. Both were full-time instructors at the facility, with educational backgrounds in early education.

EXPERIMENTAL FACILITY

All observations and recording of data were conducted at

the childrens' preschool. The facility consisted of an entrance vestibule, a small therapy room, restroom, kitchen, and an open classroom - play area. Within the classroom area were tables reserved for preacademic instructional activities. There was also an outside playground.

PROCEDURE

Throughout the period of time during which the data were collected, the preschool was conducted according to its regular routine. Alterations to this environment were kept as minimal as possible. The four developmentally disabled children, and one child of the nondisabled group were in regular attendance at the preschool prior to this investigation. To complete the nondisabled group, three additional children were recruited to attend the preschool for a period of 5 weeks during which the study was conducted. Four weeks of documented observations and tape recordings followed the initial week, allowing the children time to become acquainted with each other, the teachers, and the school setting. The specific details and purposes of the study were not disclosed to the teachers in order that they might perform as naturally as possible. They were informed only that the examiner was interested in observing and recording the verbal interactions occurring between teacher and child. Each of the two teachers were alternately recorded 1 hour each day, 4 days a week, for a total of 4 weeks. All data were recorded during the first 2 hours of each 3 hour morning session.

The order in which the teachers were recorded was reversed each day. An FM telemetry system was used to monitor and record teacher speech. A dual channel cassette tape recorder (Wollensak, Model 2516 AV) was connected to two receivers (Vega, Model 58). The teacher under observation and the experimenter wore specially designed vests equipped with concealed condenser microphones (Sony, ECM-16) and transmitters (Vega, Model 77). Teacher speech was recorded on channel one, supplemented with verbal descriptions of relevant contextual information by the experimenter on the second channel. The information on this second channel was used to decrease contextual ambiguity and facilitate later transcription (for example, to whom the teacher was speaking, any nonverbal cues by the teacher, and any evidence of nonverbal compliance by the child). In addition to recording the teacher speech, all child verbalizations were simultaneously recorded on channel one of the recorder.

Regardless of the activity in which the teacher was engaged, the recording went uninterrupted for the entire designated hour. Routine activities included the morning greeting of each student, free-play with intermittent teacher supervision, instruction in preacademic skills ("tablework"), a group discussion/activity period ("circle") during which a variety of topics and learning activities were explored and all children were present, and a mid-morning "snack-time".

PROTOCOL PREPARATION AND SEGMENTATION

A trained typist prepared a verbatim, typewritten transcription of both the teachers' and childrens' speech from channel one of the tape recordings. Segmentation of the transcription followed slightly modified procedures as outlined by Siegel (1963c). The transcripts were then segmented into sentences according to procedures described by Miner (1969). The protocol was segmented according to "thought unit sentences" rather than traditional "per breath utterances" as the interaction behaviors under investigation frequently were not self-contained within "per breath unit" segments.

Contextual information from channel two of the recordings was added to the protocol. This information included which teacher was speaking (designated T1 or T2), and to whom the speech was directed. Child speech was coded according to the linguistic level represented, the nondisabled group designated "high-level" 1 through 4 (H1 - H4), and the developmentally disabled group designated "low-level" 1 through 4 (L1 - L4). All additional contextual cues provided were also noted.

From this, a final transcription was derived which constituted the primary data of this study. This final protocol was segmented by the experimenter according to each teacher-child pair (T1-H1, T2-H1, T1-L1, etc.). The result was a complete set of transcripts for each teacher interacting with each of the eight child subjects.

Reliability for transcript preparation and segmentation

was established by having a second experienced typist retype and resegment four of the hour long tapes.

PERFORMANCE MEASURES

After protocol preparation and segmentation were completed, the experimenter categorized the teacher speech according to 19 categories. Examples of these categories are presented in Table 1. A miscellaneous category was used for sentences that could not be categorized, and was not subjected to any analysis. Several of the categories (expatiation, imitation with expansion, and sequential repetition) were based on modified definitions provided in previous investigations by Muma (1971), Brown and Bellugi (1964) and Snow (1976). An individual category for direct imitation was included since many language intervention programs advocate the use of imitation as a language teaching strategy (Baer, Peterson, & Sherman, 1967; Blank & Solomon, 1968; Guess, Sailor, & Baer, 1974). The remaining categories were devised to provide detailed analysis of the linguistic interaction behaviors presented by teachers to children at each linguistic level. Of primary concern was whether these interaction behaviors differed in accordance with the child's linguistic status.

The child speech behaviors - spontaneous, elicited, and imitative - were coded according to the categories outlined by Seitz and Stewart (1975). The remaining categories representing unintelligible responses by the subjects - unintelligible-

acknowledged and unintelligible-unacknowledged - were developed to account for the total amount of responses produced by each child (intelligible + unintelligible). The reason for making an account of unintelligible utterances was the hypothesis that these represent potential communicative feedback available to the teacher.

Reliability for the categorization procedure was established by having both the experimenter and a second qualified graduate student independently reanalyze five randomly selected seven-minute speech samples. A further requirement was that the selected samples represent various teacher-child combinations in a variety of conditions (circle, tablework, etc.).

TEACHER VERBAL BEHAVIOR

The disabled and nondisabled children presented a wide range of syntactic productivity to which the teachers were exposed. The child verbalizations demonstrated one aspect of his communicative competence, and provided a cue upon which the teachers could adjust their level of complexity to accomodate that of the child's. Table 1 provides a list of these interaction variables.

Teacher responses were categorized as expansions if the response (a) immediately followed and was in response to the child's utterance, (b) retained the same word order as the child's utterance, and (c) contained the same content words

TABLE 1.--Examples of teacher interaction variables to developmentally disabled and non-disabled preschool children.

Teacher Behavior	Child	Teacher
Expansion	Water	It is water.
Expaitation	A squirrel	See his big bushy tail.
Direct Imitation	A flower.	A flower.
Request for verbal response	-----	What do you like to wear?
Behavior request	-----	Can you hang up your coat?
Directive/Instruction	----- -----	Go put your doll away. This piece belongs here.
Conversational Comment	I sang on T.V.	You have such a pretty voice.
Description of on-going behavior	(circle)	Yeah, Micki is seeing herself in the mirror.
Self-expatiation	-----	(We didn't talk about David.) 1. David has light brown hair. 2. And its curly.

TABLE 1.--(cont'd)

Teacher Behavior	Child	Teacher
Sequential repetition	-----	(We need to check throat.) 1. We need to check throat. 2. Time to check throat. 3. Need to check throat.
Self-answered question	-----	(Did you get a new hair cut?) Yes, you did.
Verification of child Response	I'm singing.	Yes, you're singing.
Expatiation + question	I got a flower.	Is that a shamrock flower?
Expansion + question	Got a fire on it.	It has a fire on it?
Imitation + question	Take the skin off.	Take the skin off?
Reduction	I'm wearing a red dress.	Red dress.
Answer to child question	What are you doing?	I'm going to sit down here and talk.
Verbal prompt	-----	Say hair. Hair. Say it.
Description of response/ response attempt	(unintelligible "ba") (unintelligible.....)	Yes, that's a ball. Oh, you want your overalls.

but a greater number of functors thus adding syntactic information. This definition differed from Brown and Bellugi's (1964) original definition in that it was not necessary for the child's utterance to be expanded into the nearest properly formed complete sentence.

A response was categorized as an expatiation if it (a) immediately followed and was in response to a statement by the child, and (b) added referential information to the child's utterance. An expatiation did not have to retain the same word order nor any of the words contained in the child's response. It may or may not have contained a greater number of lexical items.

Teacher responses were categorized as direct imitations if they immediately followed a child utterance and (a) retained the same word order, and (b) contained the same lexical items as the child's utterance.

The question category was subdivided to account for two types of questioning behavior which occurred. The category "request for verbal response" included statements which (a) began with a wh-word such as what, where, which, who, when, or how, or the reversed order auxillary "is/are", and/or (b) ended in a rising inflection. This question type was viewed as a direct attempt to elicit a verbal response from the child. The second category - behavior request - was defined as a verbal request, in interrogative form, requiring

a specific behavior or compliance by the child. No verbal response was required (Schraeder, Note 3). An additional requirement for this category was that the teacher verbalization must either (a) precede a child utterance or (b) fail to meet the definition for expansion, expatiation, or imitation plus question.

A directive/instruction was defined as any statement which required (a) a verbal response from the child ("Tell me"), or (b) non-verbal compliance ("Shut the door"), or (c) instructional comments ("This piece belongs here").

A conversational comment was defined as a teacher statement which served to maintain an ongoing conversation. It was a comment on the child's utterance, rather than a modification of it (typical of adult-adult conversations). Moerk (1974) found that intentional didactic modeling diminishes as language skills of the child increases and that more casual conversation develops in place of the direct teaching efforts. Statements which served to initiate a new topic of conversation which could not be classified elsewhere were also included.

McNamara (1972) suggested that it is the encoding of currently observable events in adult's speech that makes language acquisition possible. Other investigators (Moerk, 1974; Snow, 1976) reported that mothers, when addressing their young children, typically accompany their own activities and/or the child's activities with verbal descriptions. On this

basis, the category "description of ongoing behavior" was included to account for statements which described or explained ongoing teacher or child behaviors or surrounding activities.

The category of self-expatiation was defined as one or more consecutive statements which added additional information to the teachers' original comment. These sequential utterances maintained the same topic across several sentences.

A sequential repetition was an immediate repetition of all, or part of, the teacher's own preceding statement. The vocabulary used remained constant, but minor features of the sentence form may vary. An investigation by Snow (1976) illustrated a high incidence of repetition of utterance constituents or entire utterances in mothers' speech. Broen (1972, p. 61) reported a "sentence manipulation" behavior demonstrated by mothers in which sentences were paired in various ways. Mothers were observed not only to repeat sentences, but also to, "...expand, reduce, and internally manipulate sentence structure in sequentially produced sentences".

The category of self-answered questions was defined as a teacher statement which was an immediate response to a question posed by that teacher. There was a minimal time interval between when the question was posed and then answered. This category may reflect Snow's (1972) observation that an essential aspect of mothers' speech to young children was

her willingness to "fill-in" for the child whenever necessary, giving the impression of an ongoing conversation.

A response was classified as a verification of child response if it served to reaffirm the correctness or validity of a preceding child statement. When the adult had no additional information to add to the child utterance, this provided a form of acknowledgement of his remark.

The categorization of a response as either (a) expatiation + question, (b) expansion + question, or (c) imitation + question met the combined criteria for expatiation, expansion, or imitation as well as question (question defined as any statement beginning with a wh-word or the reversed order auxilliary "is/are", or ending with a rising inflection). By definition, these question-types were a result of a child initiation. This division was based on previous accounts of "modeled questions" reported in mothers' speech data (Muma, 1971; Reichle, Longhurst, & Stepanich, 1976). Leach (1973) also suggested that expansions frequently co-occur with questions, and Reichle (1973, p. 19) proposed that, "...interaction patterns previously undetected may be observed..." from the breakdown of modeled questions into types of modeled questions.

Reductions were immediate and exact repetitions of a portion of a preceding child utterance. Moerk (1974, p. 109) described one type of interaction strategy employed by mothers

as "corrective feedback" which often appeared in the form of, "imitation through expansion, repetition without expansion, or even as repetition with reduction of the child's sentence."

The classification of a response as an answer to child question was directly dependent on the child's verbal productivity. A response was included in this category if it (a) immediately followed and was in response to the child's utterance, and (b) was an attempt to provide the information requested.

The category of verbal prompt was based on a behavior termed "prodding" by Moerk (1974). It defined instances when the mother made it verbally clear she wanted the child to say or repeat something. The mother usually modeled the word she wanted repeated after her prodding statement. In the current investigation, instances where the target word(s) was not modeled (such as a prompt to complete an unfinished statement) were also included. Additionally, any instance where it was evident that the teacher was making a direct attempt to elicit a response (other than a question as previously defined) was included.

The category "description of response/response attempt" served a similar function as the verification category previously described, but was qualitatively different in relation to the child's response. With the linguistically immature children, this category accounted for a large number of

unintelligible utterances, which occurred infrequently with the more advanced children.

CHILD VERBAL BEHAVIOR

All child utterances were defined as elicited, imitative, or spontaneous (Seitz & Stewart, 1975). An elicited response was one that followed a question and was an attempt to answer that question. Not all utterances that followed a question were categorized as elicited. An imitative response was defined as one that contained at least one content word from the immediately preceding teacher utterance and was of the same grammatical type (that is, statement or question). For the current investigation, additional requirements were that the child utterance could not be syntactically more complex, nor add any new information. All other intelligible child utterances were categorized as spontaneous.

Unintelligible utterances were tabulated because any response by the child may represent a form of information available to an adult signaling a communicative attempt. Thus the category "unintelligible-acknowledged" accounted for all unintelligible child utterances which were acknowledged as a communicative attempt by the teacher. Those unintelligible responses which were not responded to by the teacher as an attempt to communicate (that is, they failed to alter her ongoing speech or behavior, or an otherwise

inappropriate response, or no response) were defined as unintelligible-unacknowledged.

RESULTS

RELIABILITY

Interscorer agreement for protocol preparation ranged between 90 and 97 percent with protocol segmentation between 89 and 95 percent. Scorer agreement on the 19 parameters of teacher speech ranged from 84 to 100 percent. On the 5 parameters of child speech scorer agreement was 100 percent.

CHILD SPEECH BEHAVIORS

Analysis was made of the number of intelligible and unintelligible utterances produced by the two groups of subjects. The nondisabled subjects responded considerably more often than the disabled subjects (see Table A, appendix). The nondisabled group made 1883 ($\bar{x}$ = 470, range = 50 - 549) responses and the disabled group made 439 ($\bar{x}$ = 109, range = 3 - 119) responses. Percentages for the childrens' speech behaviors are presented in Table 2. Analysis of the intelligibility of child responses revealed that 4.1% and 70.6% of the responses were unintelligible for the nondisabled and disabled groups respectively. Ranked according to their frequency of occurrence, the speech behaviors of the nondisabled and disabled group (including mean percentages by category) were as follows: spontaneous 51.0% ($\bar{x}$ = 42.9), elicited 39.7% ($\bar{x}$ = 47.4), imitative 4.8% ($\bar{x}$ = 4.4), unintelligible-

TABLE 2.--Comparison of child speech variables by percent, based on total child responses (intelligible and unintelligible speech).

Child Speech	high-level	low-level
Spontaneous	51.1	4.1
Elicited	39.7	20.7
Imitative	4.8	4.5
Total intelligible responses	95.8	29.3
Unintelligible-acknowledged	2.9	24.8
Unintelligible-unacknowledged	1.2	45.7
Total unintelligible responses	4.1	70.6

acknowledged 2.9% ($\bar{x}$ = 3.4), unintelligible-unacknowledged 1.2% ($\bar{x}$ = 1.5). The pattern of behaviors for the disabled subjects was markedly different; unintelligible-unacknowledged 45.7% ($\bar{x}$ = 33.0), unintelligible-acknowledged 24.8% ($\bar{x}$ = 36.7), elicited 20.7% ($\bar{x}$ = 21.2), imitative 4.5% ($\bar{x}$ = 5.3), spontaneous 4.1% ($\bar{x}$ = 3.5). The findings showed substantial differences in speech productivity between the two linguistic levels. Spontaneous utterances were the most frequently occurring response type of the nondisabled group, but occurred least frequently with the disabled group. Likewise, unintelligible-unacknowledged responses occurred most frequently with disabled subjects and least with nondisabled subjects.

Additional analysis revealed that T2 received three times as many responses from the disabled children (N = 330, $\bar{x}$ = 82.5) as did T1 (N = 109, $\bar{x}$ = 27.3). The number of utterances per teacher did not differ greatly within the nondisabled group, totaling 1012 ($\bar{x}$ = 253) and 871 ($\bar{x}$ = 217) for T1 and T2 respectively.

The results exposed two substantial differences in the speech characteristics of linguistically disabled and nondisabled subjects: (1) the amount of verbal productivity - nondisabled subjects produced three times as many responses as disabled subjects; and (2) the percentage of intelligible vs. unintelligible responses - over half of the responses by

disabled subjects were unintelligible vs. 4.1% for nondisabled subjects.

TEACHER SPEECH BEHAVIORS

Analysis of teacher speech was to determine the frequency of occurrence of each response-type within each linguistic level in order to compare the patterns of usage. Total teacher utterances (T1 + T2) were 3448 ($\bar{x}$ = 431, range = 182 - 904) and 2542 ($\bar{x}$ = 317, range = 98 - 700) to the high-level and low-level groups respectively (see Table 3). Almost 1000 more utterances were directed to the nondisabled children. Differences were also found in the frequency of occurrence of the individual response categories. Percentages by category and linguistic level are summarized in Table 4. The data revealed that 2 - 3 categories within each linguistic level accounted for most of the speech directed to that level.

Ranked according to their frequency of occurrence, responses to the nondisabled group were as follows: request for verbal response 30.0%, conversational comment 12.7%, expatiation 8.2%, verification of child response 5.7% , description of ongoing behavior 5.6%, direct imitation 5.4%, directive/instruction 4.7%, behavior request 4.6%, self-expatiation 4.2%, expatiation + question 4.2%, answer to child question 4.0%, imitation + question 4.0%, expansion 2.4%, self-

TABLE 3.--Comparison of total number of utterances by Teacher 1 and Teacher 2 according to individual child and linguistic level.

	H1	H2	H3	H4	Total	L1	L2	L3	L4	Total
T1	904	284	190	483	1861	319	111	98	402	930
T2	764	335	182	346	1627	493	149	700	270	1612
Total	1668	619	372	829	3488	812	260	798	672	2542

TABLE 4.--Comparison of teacher speech variables (T1 + T2) by percent to developmentally disabled and nondisabled preschool children.

Teacher Speech	high-level	low-level
Request for verbal response	30.0	19.1
Conversational comment	12.7	9.7
Description of on-going behavior	5.6	7.7
Direct imitation	5.4	.8
Directive/Instruction	4.7	24.3
Behavior request	4.6	7.7
Self-expatiation	4.2	5.3
Self-answered question	1.2	2.8
Sequential repetition	1.0	10.5
Expatiation	8.2	-
Verification of child response	5.7	-
Expatiation + question	4.2	-
Answer to child question	4.0	-
Imitation + question	4.0	-
Expansion	2.4	-
Reduction	.9	-
Expansion + question	.5	-
Verbal prompt	-	5.9
Description of response/ response attempt	-	4.4

answered question 1.2%, sequential repetition 1.0%, reduction .9% and expansion + question .5%. Total of the first three categories accounted for half (50.9%) of all speech addressed to these subjects.

Responses followed a different pattern in the speech directed to low-level subjects. Ranked according to their frequency of occurrence, responses to this group were as follows: directive/instruction 24.3%, request for verbal response 19.1%, sequential repetition 10.5%, conversational comment 9.7%, behavior request 7.7%, description of on-going behavior 7.7%, verbal prompt 5.9%, self-expatiation 5.3%, description of child response/response attempt 4.4%, self-answered question 2.8%, and direct imitation .8%. The first three categories again accounted for over half (53.9%) of the speech addressed to this group.

Results showed substantial differences in the frequency of occurrence of individual categories in accordance with the child's linguistic performance. Percentage data reveals that requests for verbal response ($\bar{x}$ = 32.1), conversational comment ($\bar{x}$ = 13.7%), and expatiation ($\bar{x}$ = 6.1) occurred with the greatest frequency to nondisabled children. In contrast, conversational comments ($\bar{x}$ = 12.0) were ranked fourth and expatiations did not occur with the disabled children. Directives/instruction ($\bar{x}$ = 20.0%) occurred most frequently with disabled children. Imitation of child responses occurred

more often with nondisabled children ($\bar{x}$ = 5.5%) than with disabled children ($\bar{x}$ = .9%).

Eight of the response measures occurred with the nondisabled subjects only. Of these, verification of child response occurred most often. These eight measures accounted for 30% of the total speech to nondisabled subjects.

Only two response categories occurred with the disabled children only: verbal prompt (5.9%) and description of child response/response attempt (4.4%). These two measures accounted for 10.3% of the total speech directed to the disabled subjects.

A second analysis of the data was to evaluate inter-teacher differences within each linguistic level (see Table C & D appendix). To the nondisabled group, mean percentages for 15 of the 17 reported categories were highly similar (differences less than 4.0). Teacher 2 used a higher percentage of requests for verbal response ($\bar{x}$ = 37.0) than did T1 ($\bar{x}$ = 27.2), while T1 used more direct imitations ($\bar{x}$ = 8.3) than T2 ($\bar{x}$ = 2.6). Inter-teacher differences were greater within the disabled group data. Differences (mean percents by category) were less than 4.0 in only five of the eleven reported categories. Teacher 1 produced a greater percentage of conversational comments ($\bar{x}$ = 17.4, T2 = 6.5), descriptions of ongoing behavior ($\bar{x}$ = 13.8, T2 = 3.8) and self-expatiations ($\bar{x}$ = 11.5, T2 = 2.9). Teacher 2 produced a greater amount of

requests for verbal response ($\bar{x}$ = 22.3) and behavior requests ($\bar{x}$ = 10.0) than did T1 ($\bar{x}$ = 15.0 and 4.4 respectively). Directives/instruction were also used more frequently by T2 ($\bar{x}$ = 25.1) than by T1 ($\bar{x}$ = 14.8).

DISCUSSION

The present investigation revealed that the kinds of interaction strategies used by two teachers differed when addressing preschool children who possessed high versus low verbal skills. Small inter-child differences within groups allow for the following consideration of group data, rather than addressing individual children.

It was found that both teachers used a higher rate of directives and instructions with disabled than with nondisabled children. This may be a result of two factors observed during the course of their interactions. The teachers usually interacted with the disabled children in structured (tablework) activities rather than in less structured play or conversation. This supports a similiar finding by Siegel (1963a) in a study of adult speech to mentally retarded children with high and low verbal skills. Also, many directives required only a nonverbal response or physical manipulation by the child. Since these children made few verbal responses, teachers naturally relied on nonverbal responses and compliance by the child in their interactions. There is a necessary

caution to using this kind of strategy. It is easy to credit the child with greater comprehension skills than he actually possesses. Even if the child's response is appropriate, he may be relying on a number of environmental cues or responding to one or two familiar words rather than the sentence as a whole. Marshall, Hegrenes, and Goldstein (1973) described a high rate of manding behavior by mothers of retarded children, and suggested that this could become a habitual response which could generalize to play situations.

Questions occurred frequently with both groups of children in the current study. It has been suggested by Bee and her colleagues (1969), Leach (1972) and Riedl (Note 4) that questioning behavior is an important interaction occurring between a mother and child during the child's language learning years, and that it may facilitate development. Riedl found that mothers used a fairly high rate of questions when assembled with their children between the ages of three and five years. She reported that approximately 40% of the total utterances were questions. Stephanich (1973) found that about 41 - 44 percent of the utterances of 1 - 3 year olds were questions. These figures closely correspond to the 35% rate for questions to nondisabled children in the present study. Questions to disabled children accounted for 27% of the teachers' speech.

In addition to the percentage of questions used by the

teachers, two types of questions were further examined (see Schraeder, 1978 for a summary of teacher question-types). Questions to both groups of children were often syntactically complex, unrelated to previous context, or had no immediate referent in the environment. Each of these factors can adversely affect listener comprehension. As was expected, the nondisabled group received more requests for a verbal response, while the disabled children received more requests for behavior. Like the directive or instruction, behavior requests were easier for the child to respond to than requests for verbal replies. The appropriateness of giving behavioral commands in the form of interrogations has been questioned by several investigators. Holzman (1974) suggested that verbalizations containing implicit directions rather than direct commands assume that the child can fill in, on the basis of experience and knowledge, the missing links. Based on the response rates obtained for requests for behaviors, Schraeder (Note 3) suggested that it is more appropriate for teachers to give nondisabled children requests for behavior in interrogative form than disabled children. The current study supports these findings and suggests that a question form that is syntactically simple, with rising intonation, that deletes the fronted auxilliary may facilitate early comprehension. Brown (1973) reported that it is this kind of question form which first appears in a child's speech

and may be easier for him to process.

As was expected, the disabled group received a low percentage of expansions, expatiations, imitations, and these variables when combined with questions. Teachers did respond with direct imitations in some instances to the childrens' intelligible one-word utterances. Seitz and Stewart (1975) found significant differences for modifications (expansions, contradictions, and reductions) in mothers' speech to 2- and 4-year old children. Nelson (1973) reported a 6% rate for expansions and imitations in mothers' speech to 2-year-olds. She attributed this low rate (as compared to the 30% rate for expansions alone reported by Brown & Bellugi, 1964) to the relatively undeveloped level of language competence in her children (average utterance length = 1.9 morphemes). She indicated that mothers might use more expansions, "...when the child has begun to make relatively complex statements that need further interpretation" (p. 68). In the current study, teachers also responded at a low rate with expansions (5.4%) and imitations (2.4%). These rates are similar to the rates for expansion and imitation in mothers' speech reported by Nelson. The current data do not approach the 30% rate for expansion found in Brown & Bellugi's data. This low rate for expansion may have been affected by teachers' use of expatiation in the current study. Expatiations accounted for 8% of teacher responses to the

nondisabled children. These children were capable of producing simple but grammatically complete sentences. However, incomplete sentence forms were also characteristic of their speech. It may be that as the child's surface constructions grow increasingly complex, there is a proportionate decrease in the need, and the opportunity, for expansions and correction. This suggests that expatiations are an appropriate form of feedback to complex child utterances.

Cross (1977) found that 55% of mothers' utterances were semantically related to their children's utterances between the ages of 19 and 32 months (identified as rapid in language development). She suggested that, "...the coincidence of immediate referentiality and semantic contingency may have considerable importance in accounting for the rapid rate at which these children were acquiring language..." (p. 169). Although the measures in the current investigation are not identical with Cross', they allow for a similar kind of analysis. Approximately 41% of the teachers' utterances were semantically related to utterances produced by nondisabled children. Only 13% were semantically related to disabled childrens' utterances. These data lend some support for Cross' findings for more advanced children. In addition, these figures provide some estimate of the degree to which the teachers were "tuned in" to what the children were producing. Such instances may represent ideal opportunities

for the teacher to adjust her speech complexity to accomodate that of the child.

One obvious difference between groups was the use of verbal prompts. Teachers frequently made direct attempts to elicit specific responses from disabled children (such as, "What's this?" or "What do you want?"). Often such elicitation attempts were repeated several times. Since nondisabled children were more verbal, such repetition and prodding was usually unnecessary. Also, nondisabled children frequently initiated the conversation. Bloom, Rocissano, and Hood (Note 1) indicated that it may be more difficult to produce a contingent message than to produce a spontaneous message. Berko-Gleason (1977) suggested that a speaker who attempts to address a child in language that is either too complex or on a topic that is inappropriate may be deserted or ignored by the child. In the present study, teacher prompts were able to successfully elicit a child response in only a few instances. These findings may indicate the need for increased language training at the preverbal (cognitive) level, especially for handicapped youngsters. This might take the form of training in such areas as functional play activities, object permanence (to facilitate later noun labeling), and relational skills before any verbal responses are required. The role of verbal prompts in language development cannot be determined until they have been further defined

and analyzed.

Individual teacher differences were greater when interacting with disabled children. It is widely accepted that adults respond to feedback cues provided by the child. The low rate of responding by the disabled group may be one explanation for these differences. Snow (1972) found that adults were unable to produce the same modifications in their speech when addressing children who provided little or no feedback. Cross (1976) suggested that signs from the child signalling what he could and could not understand were probably the most instrumental source of feedback for a mother in adjusting her speech. The teachers in the current investigation may have been unequally skilled at utilizing child feedback. They may also have received different amounts of feedback. Teacher 2 was reponded to three times more often than T1 by the disabled children (see Table B, appendix). However, both teachers frequently ignored communicative attempts by these children. These findings support those by Bryan (1974). Bryan found that a teacher was almost three times as likely to respond to verbal initiations of normal children than she was to learning disabled children (34.9% and 12.8% respectively). Cross (1977) found an approximately 1:1 ratio between child and mother utterances. In the present investigation contrasting results for child-to-teacher utterances for T2 ranged from approximately 1:3 (L4 - T2) to 1:8 (L2 - T2). Ratios for T1 ranged from approximately 1:7 (L4 - T1)

to 1:37 (L2 - T1). It is interesting to note that the same two children (L4 and L2) received the highest and lowest proportion of utterances by each teacher. This finding is support for the assumption that the child may be somehow responsible for the adult's behavior. The child-to-teacher ratios for the nondisabled children were similar to Cross' (1:1) findings for more advanced children. Ratios for T2 ranged from 1:1 (with H4 and H2) to 1:5 (H2 - T2). Ratios for T1 ranged from approximately 1:1 (H1 - T1) to 1:3 (with H2 and H3). Again, the teachers, were found to behave similarly to individual children. These data illustrate a real difference in the linguistic environment of disabled children from that of their nondisabled peers.

The results of the current investigation support the conclusion that linguistically disabled children differ both qualitatively and quantitatively in their verbal output from nondisabled children. As a result, they are exposed in a number of ways to a different linguistic environment. The exact nature of these differences must be further evaluated to determine their effects on language acquisition, especially for handicapped children.

Further, the results of this and similar investigations should provide valuable information for the development of remedial programs for language handicapped children. These results also show a need to conduct further research in which

language acquisition is the dependent variable, and types of adult input the independent variable.

APPENDIX TABLE A.--Comparison of total number of child utterances by category and linguistic level.

Child Speech Behaviors	High-Level	Low-Level
Spontaneous	964	18
Elicited	748	91
Imitative	92	20
Total intelligible	1804	129
Unintelligible-acknowledged	56	109
Unintelligible-unacknowledged	23	201
Total unintelligible	79	301
Total responses (intelligible + unintelligible)	1883	439

APPENDIX TABLE B.--Total number of utterances produced by low-level children by category and communicative partner.

Child Behavior	T1				T2			
	L1	L2	L3	L4	L1	L2	L3	L4
Spontaneous	1	-	1	3	5	-	6	2
Elicited	1	1	1	33	4	2	-	49
Imitative	5	-	1	3	9	1	1	-
(total intelligible)	7	1	3	39	18	3	7	51
Unintelligible-acknowledged	17	2	8	9	42	6	14	11
Unintelligible-unacknowledged	10	-	1	12	45	10	98	25
(total unintelligible)	27	2	9	21	87	16	112	36

APPENDIX TABLE C.--Total number of utterances produced by high-level children by category and communicative partner.

Child Behavior	T1 H1	T1 H2	T1 H3	T1 H4	T2 H1	T2 H2	T2 H3	T2 H4
Spontaneous	349	24	15	143	283	32	22	96
Elicited	161	56	42	134	191	30	25	109
Imitative	39	5	1	12	18	3	3	11
(total intelligible)	549	85	58	289	492	65	50	216
Unintelligible-acknowledged	18	3	2	2	19	3	4	5
Unintelligible-unacknowledged	5	-	-	-	5	4	1	7
(total unintelligible)	23	3	2	3	24	7	5	12

APPENDIX TABLE D.--Teacher 1 and Teacher 2 speech variables by percent to linguistically low-level children.

Teacher Behavior	T1				T2			
	L1	L2	L3	L4	L1	L2	L3	L4
Request for verbal response	20.3	12.6	12.2	14.9	33.6	21.4	10.2	24.0
Conversational comment	10.0	27.9	13.2	18.6	8.3	10.7	4.8	2.2
Description of ongoing behavior	14.7	7.2	20.4	12.9	5.2	3.3	4.5	2.2
Direct imitation	.9	-	2.0	.2	.8	.6	.7	2.2
Directive/Instruction	11.5	19.8	6.1	21.8	17.0	22.8	42.8	18.1
Behavior request	7.5	2.7	4.0	3.4	13.5	9.3	5.5	11.8
Self-expatiation	13.4	15.3	12.2	5.2	3.0	3.3	1.7	3.7
Self-answered question	5.9	4.5	-	3.4	3.4	5.3	.2	2.9
Sequential repetition	5.0	6.3	16.3	7.2	6.4	11.4	19.2	5.9
Expatiation	-	-	-	-	-	-	-	-
Verification of child response	-	-	-	-	-	-	-	-
Expatiation + question	-	-	-	-	-	-	-	-
Answer to child question	-	-	-	-	-	-	-	-
Imitation + question	-	-	-	-	-	-	-	-
Expansion	-	-	-	-	-	-	-	-
Reduction	-	-	-	-	-	-	-	-
Expansion + question	-	-	-	-	-	-	-	-
Verbal prompt	5.3	3.6	5.1	5.9	1.0	4.6	5.4	19.2
Description of response/ Response attempt	3.1	-	6.1	4.9	6.2	4.0	3.5	5.5

APPENDIX TABLE E.--Teacher 1 and Teacher 2 speech variables by percent to linguistically high-level children.

Teacher Behavior	T1				T2			
	H1	H2	H3	H4	H1	H2	H3	H4
Request for verbal response	20.4	27.1	35.2	26.2	34.0	46.8	35.1	32.3
Conversational comment	8.5	12.3	16.8	15.1	13.6	11.9	15.9	15.3
Description of ongoing behavior	7.0	10.2	5.7	5.3	2.7	6.2	6.0	3.7
Direct imitation	6.3	7.0	9.4	10.7	2.6	1.1	3.8	3.1
Directive/Instruction	6.1	5.2	3.6	2.2	5.8	4.4	1.6	3.7
Behavior request	3.7	5.6	3.1	1.0	4.3	10.1	7.1	5.7
Self-expatiation	5.7	4.2	3.6	4.9	3.6	1.7	3.8	3.7
Self-answered question	.7	4.5	1.5	.6	.9	2.0	.5	.5
Sequential repetition	.7	2.1	1.5	.2	.5	2.3	1.6	1.1
Expatiation	11.7	5.2	4.7	13.0	7.7	1.4	6.0	4.0
Verification of child response	5.6	3.5	4.7	5.3	6.1	4.1	6.0	8.9
Expatiation + question	3.4	2.4	2.1	4.1	6.1	2.0	3.8	6.9
Answer to child question	8.5	-	.5	1.8	5.3	-	.5	3.1
Imitation + question	4.9	3.5	.5	2.8	3.9	3.8	4.3	5.4
Expansion	3.8	4.5	5.2	2.8	1.1	.2	1.6	.5
Reduction	1.5	.3	.5	1.8	.2	.5	.5	.8
Expansion + question	.3	1.4	-	1.2	.5	-	1.0	-
Verbal prompt	-	-	-	-	-	-	-	-
Description of response/ response attempt	-	-	-	-	-	-	-	-

APPENDIX TABLE F.--Comparison of the number of teacher utterances (T1 + T2) by category and child linguistic level.

Teacher Speech	High-level	Low-level
Request for verbal response	1049	486
Conversational comment	443	248
Description of ongoing behavior	196	196
Direct imitation	189	22
Directive/Instruction	165	620
Behavior request	161	197
Self-expatiation	149	135
Self-answered question	43	73
Sequential repetition	36	268
Expatiation	287	-
Verification of child response	199	-
Expatiation + question	147	-
Answer to child question	140	-
Imitation + question	140	-
Expansion	87	-
Reduction	33	-
Expansion + question	19	-
Verbal prompt	-	152
Description of response/ response attempt	-	113
Miscellaneous	10	28

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TEACHER VERBAL INTERACTIONS WITH DEVELOPMENTALLY DISABLED AND NONDISABLED PRESCHOOL CHILDREN

by

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ABSTRACT

The process of language acquisition in children has been the focus of a significant amount of research, particularly in recent years. A number of researchers have investigated the effects of environmental variables on language development, especially mothers' verbal input to young language-learning children. Little research has been conducted on how teachers interact with children in the classroom. The purpose of this investigation was to examine the nature of the verbal interactions of teachers to developmentally disabled and nondisabled preschool children. The speech of two preschool teachers to four disabled (MLU less than or equal to 1.5) and four nondisabled (MLU = 2.9 - 4.3) preschool children was examined. Teacher speech was recorded on a dual cassette tape recorder using FM-Telemetry over a four week period. Teacher and child discourse was recorded on channel one of the tape, supplemented with contextual descriptions by the experimenter on a second channel. Verbatim typewritten transcriptions of teacher-child discourse and contextual comments were prepared from the recordings. Teacher speech was analyzed according to 19 variables. Child speech was classified into 5 categories, including unintelligible utterances. Interaction patterns were analyzed along three main parameters: (1) similarities and differences in teacher speech according to linguistic level of the child; (2) inter-teacher differences within each child level; and

(3) similarities and differences in child speech according to linguistic level. As was expected, the two groups of children differed markedly in their speech and language performance. It was concluded that the two groups of children were exposed to a different linguistic environment. Non-disabled children received more total teacher utterances, more requests for verbal responses, and more spontaneous conversation than disabled children. Behavior requests, directives and instructions were more frequent with disabled children. Ratios of teacher-to-child utterances were substantially higher for the disabled children. The nature of these differences suggest that the child's behavior directly influences his language environment.