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The effect of parent remediation on parent-child interaction.

Prudence Cromwell
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THE EFFECT OF PARENT REMEDIATION ON PARENT-CHILD INTERACTION

by
Prudence Cromwell
B.A., University of Montana, 1976

Presented in Partial Fulfillment of the requirements for the degree of Masters of Communication Sciences and Disorders 1985

Approved by

[Signatures]
Chairman, Board of Examiners
Dean, Graduate School

Date

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The questions addressed by this study were: what changes were seen in parents of both middle and lower SES, linguistic system following a parent remediation program, inhibitors and verbal style. In addition, what changes were seen in childrens' linguistic system following remediation. The final question addressed was: Following remediation were changes in the parents' linguistic system related to changes in the childrens' linguistic system.

The experimental population was 11 parent-child dyads. The parents and children were videotaped interacting pre and post remediation. The children ranged in age from 2 years 2 months to 3 years 10 months. All children had intact sensory systems and a language-disorder was the presenting problem.

Following the parent remediation program eight of the 11 parents increased the use of language facilitators. Six parents changed verbal style. Six parents decreased use of directives and five parents decreased their monologuing score. Neither parental directives nor monologuing appeared to have an inhibitory effect on child language development. High use of directives was associated with high use of language facilitators. Parents' monologuing was related to their child's language level with monologuing decreasing as the child's language abilities increased.

Eight children demonstrated increased language skills following remediation. Four of these childrens' increased language abilities were considered to be due to remediation. Three children demonstrated no linguistic improvement. For the four most improved children there did not appear to be a relationship between changes in parental language and changes in child language. For three other children who demonstrated linguistic change there did appear to be a relationship between changes in parental language and child language. The parents of the three children who demonstrated no linguistic gains, all increased their use of language facilitators. This suggested there was not a relationship between parents' use of language facilitators and the childrens' lack of progress.
Acknowledgements

My sincere thanks to my thesis director, Barb Bain, for her support and advice. Special thanks to Dr. Chris Dollaghan, Glenrose Hospital, for suggesting the initial idea.

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CHAPTER I

REVIEW OF THE LITERATURE AND JUSTIFICATION

Introduction

In the late 1960's psycholinguistics changed in focus from a syntactical view of language and language acquisition to a pragmatic semantic framework. Resulting from this change was an increased interest in studying parent-child communicative interaction. The results of early studies in parent-child interaction suggested adults, parents in particular, talked to children differently than they talked to adults. Adults' speech to children was characterized by high pitch, syntactic and semantic simplification, limited mean length of utterance, many repetitions and questions (Snow, 1972; Sach, 1972; Moerk, 1975, 1976). Researchers speculated on why parents spoke to their children in this way. One suggested explanation was to teach their children specific linguistic structures (Moerk, 1975, 1976; DePaulo and Bonvillan, 1978).

Later investigations (Cross, 1978, Van der Geest, 1977) suggested parents used this style of speech to communicate with a child who had limited linguistic understanding and limited linguistic productions. This view had major implications for researchers investigating parent-child interaction with language-disordered children. Although some studies have suggested parents of language-disordered children interacted differently with their children than did parents of normally developing children and provided a poor linguistic environment for language-disordered children (Wulbert, Inglis, Kreigeman and Mills, 1977).
1975; Marshall, Hergrenes and Goldstein, 1973), flaws existed in the designs of these experiments which rendered their conclusions questionable. A primary flaw was a failure to match the language-disordered children and the normally developing children on cognitive and linguistic variables. When these factors were controlled in the experimental design, many of the differences previously found in parent-child interaction between parents of normal children and language-disordered children did not exist (Cross, 1978; Conti-Ramsden and Friel-Patti, 1983). The authors of these studies speculated that parents of language-disordered children used particular interactive strategies to communicate with a partner who had limited communication skills.

Although most parent-child interaction did not appear to be directed toward teaching specific semantic and syntactic structures, children did learn to use these structures. Consequently researchers attempted to isolate the types of adult linguistic input that facilitated learning of specific semantic and syntactic structures (Nelson, 1973; Furrow, Nelson and Benedict, 1978). This research had therapeutic implications for work with language-disordered children and their parents. Specifically questions included: could parents of language disordered-children be taught to use facilitation techniques and would parental use of language facilitators result in improved linguistic skills in the language-disordered child? Though numerous studies have attempted to train parents to use language facilitators to improve the communication skills of their language-disordered children (Hornby, Jensen-Proctor, 1984; Seitz and Marcus, 1974;
Chelsdine and McConkey, 1979) these studies have been marred by failure to control for language acquisition due to maturation.

The literature on parent-child interaction will be reviewed from a variety of perspectives: normal parent-child interaction, parent-child interaction with language-disordered children, the influence of socioeconomic status and maternal style on parent-child interaction, language facilitators and training parents to be agents of therapeutic intervention.

**Parent-Child Verbal Interaction in Normally Developing Children**

Researchers investigating verbal interaction between parents and children found parents talked to their young children differently than they talked to adults (Snow, 1972; Moerk, 1975, 1976; and DePaulo and Bonvillan, 1978). Snow (1972) coined the term motherese to refer to the way parents talk to young children. Motherese included prosody differences which were characterized by high pitch, utterances ending with rising pitch, greater range of pitch and distribution of pitch (Sach, 1977; Garnica, 1977; and Snow, 1972). Motherese also included semantic and syntactic simplifications, reduced length and repetitions of utterance, and many questions (Snow, 1972; Moerk, 1975, 1976; and DePaulo and Bonvillan, 1978). Investigators began to question why parents modified their speech when talking to their children. Some researchers suggested speech modifications were made to enhance the child's understanding of language and to teach specific semantic and syntactic structures. (DePaulo and Bonvillan, 1978; Moerk, 1975, 1976).

The results of other research suggested parents modified their
verbalizations to enhance their children's understanding. Since parental language level was found to be slightly more complex than the child's language level, the assumption was made that motherese resulted in the child learning language even though parent-child verbal interaction was not directed at teaching specific linguistic structures (Cross, 1978; Van der Geest, 1979; Allen and Shatz, 1983). Cross (1978) studied the relationship between parent's language level and the child's language level. She found the parent's language level correlated most closely with the child's receptive language level: parents modified their speech to a level they thought their children could understand. Specifically, parents repeated their utterances when the child did not respond, and the parents' use of expansions decreased as the child's linguistic level increased. Further, Cross found the mother's mean length of utterance generally was less than 3 morphemes longer than the child's mean length of utterance and only a half a morpheme longer than the child's longest utterance.

Van der Geest (1977) also studied the relationship between the parent's language level and the child's language level. He found a correlation between the frequency of a syntactical structure in the mother's speech and the order in which the child acquired syntactical structures. The child appeared to determine to a large extent the topic or basic meaning of the conversation while the parent determined what structures would be used to discuss the topic. He also found children generally did not respond to maternal utterances that were significantly more or less complex than the child's most complex utterance.
Allen and Shatz (1983) studied parents' use of directives. They found the older the child the less direct and referentially explicit were the parents' directives. When a child did not respond to a directive the parent reiterated using simpler, more direct commands. Lombardia and Greenbaum (1983) also found the way the parent talked to the child changed with the child's linguistic level. Their results suggested that parents used more language teaching strategies with children who were 12 and 24 months old than they did with 48 month old children.

In summary, the results of the above four studies suggested parent-child verbal interaction was a subtle interplay between parent and child with the parent modifying his or her utterances depending on the child's response (Cross, 1978; Van der Geest, 1977; and Allen and Shatz, 1981). Specifically, the parents' language level was closely correlated to the child's receptive level. The child generally was not responsive to parental utterances that were too simple or too complex in comparisons to the child's most complex utterance (Cross, 1978; Van der Geest, 1977), and parents used simpler more direct linguistic forms following a nonresponse to a directive (Allen and Shatz, 1981). In conversation between parent and child, the child established the topic while the parent determined the structures that would be used to discuss the topic (Van der Geest, 1977). In addition, the parents' language level increased in complexity as the child's linguistic complexity increased. This again suggested the parent's language level was influenced by the child's language level (Lombardia and Greenbaum, 1983; Cross, 1978). The results of the studies reviewed did not
suggest parents modified their language to continue communication with a child who had limited communication skills. Was this same pattern of verbal interaction seen when the child was language-disordered?

**Parent-Child Interaction with Language Disordered Children**

Conflicting evidence exists regarding whether parents of language-disordered children provided a poorer linguistic environment than did parents of normally developing children. Research results indicated that the verbal interactions between language-disordered children and their parents were characterized by more directives, fewer opportunities for verbal interaction, and limited use of labelling and description as compared to the verbal interaction between parents and their normally developing children (Wulbert, Inglis, Kriegsman and Mills, 1975; Marshall, Hergrenes and Goldstein, 1971). The results of these studies were questionable because the normally developing children and the language-disordered children were not matched for cognitive and linguistic skills. Research results with normally developing children have suggested parents' verbal behavior changed depending on the child's age, linguistic and cognitive abilities. Specifically, parents of younger low verbal children used more demands and more language teaching strategies than did parents of older more verbal children (Beckwith, 1972; Cross, 1978; Dunst, 1980; Lombardia and Greenbaum, 1983). Studies in which the experimental design controlled for the differences in linguistic abilities between the normally developing children and language-disordered children found parents of language-disordered children did not use more demands or provide fewer opportunities for verbal interaction. Instead, parents attempted
to modify their linguistic output based on the childrens' responsiveness. Conti-Ramsden and Friel-Patti (1983) found language-disordered children initiated significantly fewer conversational turns than did normally developing children matched on mean length of utterance. This in turn influenced their parents to use many more questions than did parents of normally developing children in order to continue the conversation. Cross (1981) found verbal interactions between parents and their normally developing 4-year-old children were significantly different than were verbal interactions between parents and their language-disordered four-year-old children. When the parents of the language-disordered children were observed interacting with their normally developing two-year-old children the differences in verbal interaction patterns between the two groups of parents were no longer present. The results of these two studies suggested the verbal strategies used by the parents of the language-disordered children were in response to the child's language level. Siegel and Cramblitt (1977) found parents of a language-disordered child used different verbal strategies with their child than they did with their normally developing niece who was the same age. These same patterns of verbal interaction were seen when the child's aunt interacted with him. Specifically, the adults when speaking to the language-delayed child used a lower type token ratio, shorter mean length of utterance, used many more single words, repeated their utterances more frequently, and used more utterances that were considered to be language facilitators than they did when speaking to the normally developing child. These results suggested parents of language-disordered children modified their verbal strategies depending on the child's linguistic level just as parents of normally developing children
do (Cross, 1978; Van der Geest, 1977).

In summary, the results of the literature reviewed in this section suggested parents of language-disordered children like parents of normally developing children (Cross, 1978; Van der Geest, 1977; Allen and Shatz, 1983) modify their language in response to the child's language level (Siegel and Cramblitt, 1977; Cross, 1981; Conti-Ramsden and Friel-Patti, 1983). The results of the research reviewing parent-child verbal interaction with normally developing and language-disordered children suggested parents' speech modifications were made to continue communication and not to teach specific language structures (Van der Geest, 1977; Cross, 1977; Conti-Ramsden and Friel-Patti, 1983). Though parent-child verbal interaction did not appear to be directed toward teaching specific language structures, over time the children acquired more advanced language skills. Were there particular types of verbal interaction between parent and child that seemed to facilitate language learning?

**Language Facilitators**

The following studies have identified the type of adult-child verbal interaction that facilitated children learning language. Use of expansions by adults has been identified as facilitating children's language development. Scherer and Olswang (1984) studied the effects of training parents to use expansions in order to teach their children a target semantic structure. They found during the intervention period children began using the target structure. In addition, imitation of the target structure was most likely to occur following the parent's expansion and one subject generalized spontaneous production of the
target structure to an unfamiliar set of stimuli. Nelson (1973) studied the influence of providing two children with expansions using a syntactic structure the children were not yet using. Both children developed the use of the target syntactic structure during the intervention period. Nelson (1981) studied the relationship between parent's use of expansions and growth in children's mean length of utterance. Results suggested parent's use of simple expansions with reference and semantic use remaining the same and a structural change to one element of the utterance, subject, verb, or object was correlated with the growth of the child's mean length of utterance. Complex expansions with changes to two or more elements of the utterance were negatively correlated with growth of mean length of utterance. The results of Nelson's study (1973) and Scherer and Olswang (1984) suggested expansion could be used to teach children the use of specific syntactic and semantic structures. In addition, use of simple expansions by parents correlated with growth in mean length of utterance. Another factor in parental speech that correlated with child language growth was semantic and syntactic simplification. Furrow, Nelson and Benedict (1979) found the complexity of parent's speech as measured by number of words, verbs, pronouns, contractions, and copulas per utterance was negatively correlated with language growth. Nelson (1981) also suggested relative syntactic simplification in parental use of expansion was correlated with growth of mean length of utterance. The results of these studies suggested parental use of expansions and semantic and syntactic simplification were correlated with child language development. Cross (1978) studied parent-child verbal inter-
action with accelerated language learners and normal language learners. She found the parents' speech to their children was very similar though the parents of the accelerated children used expansions and had a greater number of utterances semantically related to the child's previous utterance. In addition, she found the parents of normal language learners used significantly more directives. Kaye and Charney (1981) in studying parent-child interaction also found the children of parents who used many directives were not as advanced linguistically as the children whose parents used fewer directives. Kaye and Charney found parental directives were generally not semantically related to the child's prior utterance. They speculated children whose parents used many directives heard fewer utterances that were semantically related to their own utterances and therefore did not have as advanced linguistic skills as did children who heard more utterances that were semantically related to their own. Other factors negatively correlated with language learning were monologuing by the parent and negation of the child's utterances (Newport, Gleitman, and Gleitman, 1978; Cross, 1978).

A number of verbal factors influencing parent-child verbal interaction have been identified (Scherer and Olswang, 1984; Nelson, 1973, 1981; Furrow et al, 1979; Newport et al, 1977; Cross, 1978; Kaye and Charney, 1981) however nonlinguistic factors exist which should be considered.

**Socioeconomic Status and Parental Verbal Style**

One non-linguistic factor has also been reported to influence verbal parent-child interaction. Low socioeconomic status was correlated
with less verbal interaction between parent and child from infancy through the preschool years (Bee, VanEgeren, Streissguth, Nyman and Leckie, 1969; Kilbride, Johnson, and Streissguth, 1977; Farran and Ramey, 1980). No differences were found in frequency of nonverbal interaction between parents of low socioeconomic status and their children, but significant differences were seen in frequency of verbal interaction and quality of verbal interaction. Specifically, parents of low socioeconomic status addressed less speech to their children, were more likely to respond to their infants' vocalization with a touch rather than a vocalization, and used shorter, simpler sentences with greater personal referents than did parents of middle socioeconomic status. Because differences exist in quality and quantity of verbal interaction between parents of middle and parents of low socioeconomic level perhaps the influence of parent training programs would be different for each. No known studies investigated the influence of parent training on parents of differing socioeconomic status.

Another factor influencing parent-child verbal interaction was parental verbal style. Few investigations have been conducted in this area. In the few studies reviewed, controversy existed regarding the definition of parental verbal style and in determining different types of maternal style. For example, McDonald and Pien (1981) categorized parents into two categories: controlling and conversational eliciting. Olsen and Fulera (1982) used the same method of analysis as McDonald and Pien (1981) which included measures of parental conversational behavior such as use of directives, questions, prompts, and attention devices and categorized four types of parental verbal style:
1. controlling, 2. conversational eliciting, 3. instructing, 4. intrusive. Lieven (1978) found parental verbal style influenced children's language development. He studied verbal interaction between two parent-child dyads. Lieven found no differences in parental ability to match length of utterance to the child's, or in ability to use semantic and syntactic simplification, but differences were seen in verbal interactional style. Parent A responded to her child's utterances 81% of the time, while parent B responded to her child's utterances only 46% of the time. Parent A responded to her child's utterances with questions and provided many opportunities for her child to take a verbal turn while parent B tended to respond to her child's utterances with cliche-like phrases, corrections, or unrelated comments. Child A's speech was characterized by high use of nouns, and pragmatically she primarily used her speech to comment on her environment. Child B's speech was characterized by high use of pronouns, many holophrases, and pragmatically she used speech primarily to gain and hold her parent's attention. If, as Lieven's results (1978) suggested, parental verbal style influenced child language learning, then verbal style would be an important factor to consider in parent training programs. Parents of different verbal styles may vary in their response to parent training and need different types of parent training. How parents with different parental verbal styles respond to a parental training program is not known at this time.

Training Parents to Facilitate Language Development

Parents have been used as primary agents for improving language-disordered children's language skills. The research relating to the
effectiveness of parent training in speech and language is reviewed next. In general many of the studies were flawed by either a lack of a control group or lack of experimental control within the design (Seitz and Marcus, 1976; Carpenter and Augustine, 1973; Hornby and Jenson-Proctor, 1984). Consequently, whether changes in the childrens' linguistic skills were due to parental intervention or maturation was difficult to ascertain.

Kares, Teska, and Hodgins (1970) studied the effect of parent training on infants considered at risk because of low socioeconomic status. This study was unusual because a control group matched on age, sex, and socioeconomic status was employed. The two year parent program consisted of weekly meetings to provide parent information on infant development and methods to facilitate infant development. Following the parent training program the experimental group scored significantly higher on intellectual measures than did the control group. The results supported the contention that training parents was beneficial in fostering intellectual abilities of low socioeconomic children. These children had intact sensory systems and had not been diagnosed as language-disordered. In studies investigating the effectiveness of parent training with language-disordered children, control groups were not employed. In addition, studies often failed to demonstrate experimental control. For example, Seitz and Marcus (1976) investigated the effect of modelling language teaching strategies and providing feedback on the use of these strategies to parents during their interaction with their 20 month old multi-handicapped child. Following parental training positive interaction
between parent and child had increased from 20% to 80%, and directive behaviors which they considered to be language inhibiting had decreased from 65% to 0%. In addition, an increase in the child's vocalizations was observed. Hornby and Proctor-Jenson (1984) studied the effect of parent training on a parent and her language delayed twins. The researchers provided the parent with two training sessions in which they played with the twins modelling appropriate questions and comments. The parent was instructed to spend 10 minutes a day for two weeks playing with the twins. During the intervention period the authors found an increase in the parent's verbalizations and an increase in the children's two and three-word utterances. Carpenter and Augustine (1973) conducted a day-and-a-half workshop to teach four parents of language delayed children to identify antecedent behaviors, target behaviors and consequent behaviors and use them in providing therapy for their language-disordered children. After a two-month interval the parents were contacted. Three of the four parents reported their children had made progress. The results of all these studies were difficult to interpret because changes in child behavior could be attributed to maturation, as well as to parental intervention. In addition, Carpenter and Augustine (1973) relied on parent reports to measure changes in the child's language abilities rather than a more objective form of measurement. The studies did suggest parents could be trained to provide therapy.

The following study controlled for maturation within its experimental design. Chelsedine and McConkey (1979) investigated the verbal strategies used by six parents in attempting to increase their Downs
childrens' two-word utterances. Three of six children increased their use of two-word utterances over a two-week period. The parents of the children who demonstrated increased use of two word utterances had reduced their length of utterance, had increased use of statements, and had decreased use of questions. The three children who had not improved parents' did not demonstrate the linguistic changes seen in the parents of the improved children, and served as a control group. These results suggested the change in parents' verbal behaviors was related to their childrens' language growth. The authors then provided the parents of the children who did not improve with written suggestions based on the linguistic changes demonstrated by the parents of the improved group, and modelled these behaviors for them. Following another two-week intervention period, two of the parents were found to be using shorter utterances, more statements, and less questions. In addition, the number of two-word utterances used by the children increased. The research results suggested the verbal strategies used by the parents increased their childrens' use of two-word utterances and parent training was effective. One of the final three parent-child dyads made no improvement, and the parent did not use the suggested verbal strategies. Though this article does not specifically address the issue of parental verbal style, the possibility exists that parents of the original improved group had a different style of verbal interaction than did the parents of the unimproved group or the parent who did not use the suggested strategies. 

Parental verbal style has not been investigated in relationship to the effectiveness of parent training. Tiegerman and Superstein
(1984), however, speculated it was difficult to change parental verbal style. Bromwich (1981) also in working with at-risk-infants and their parents commented parental style was difficult to change. Parental style was not operationally defined in either study. The little research available suggested parental style may be a factor in the effectiveness of parent training. If parental verbal style influences the parent-child verbal interaction, clinicians providing parent training need to be aware that parents of differing verbal styles may respond differently to parental training programs. Different verbal styles may hinder or enhance the effect of parent training, and additional instruction may need to be presented to parents with different verbal styles.

Another issue not addressed in the parent training research studies was socioeconomic status. In the studies reviewed, all the children were of middle socioeconomic status except the children in Kares et al (1970) who were of lower socioeconomic status, and no studies were found which compared the effects of parent training on parents of middle and lower socioeconomic status. The literature review suggested significant differences existed in verbal interaction between parents of middle socioeconomic status and parents of lower socioeconomic status (Bee et al, 1969; Farran and Ramey, 1980). Perhaps the socioeconomic level of parents may influence the effectiveness of parent training programs.

Many questions remain regarding the effectiveness of parent training programs when control was provided as part of the experimental design. Do parent training programs result in improved communication
skills for the language-disordered child? Does parent training have a differing impact on parents of differing parental verbal styles? Do parent training programs have a differential impact on parents of differing socioeconomic status?

**Summary and Justification**

In summary, the research results suggested parents talk to normally developing children in a simplified and repetitious manner (Snow, 1972; Moerk, 1975, 1976). Parents of language-disordered children also appear to use these same modifications when speaking to their children (Conti-Ramsden and Friel-Patti, 1983; Siegel and Cramblitt, 1970). Parents appear to make these modifications in order to improve communication with a partner who has limited linguistic skills (Cross, 1978; Van der Geest, 1977; Allen and Shatz, 1983). In addition, some of these modifications appeared to facilitate language development: expansion, and syntactic simplification.

Some of the studies which investigated the effectiveness of parent training on language-disordered children were flawed by a lack of control for child maturation or did not provide objective data to demonstrate a change in the child's communications skills (Seitz and Marcus, 1976; Carpenter and Augustine, 1973; Hornby and Jenson-Proctor, 1984). In addition, these studies did not examine whether the effectiveness of parent training was mitigated by individual parental verbal style and whether parent training impacts parents of varying socioeconomic levels differently. As parental verbal style and socioeconomic status may be factors influencing the effectiveness of parental training programs, these factors need to be investigated.
The specific research questions of the present study were:

I. Following the parent remediation program, did changes occur in parental behavior, and did parents of different socioeconomic status respond to remediation differently? Specifically, did changes occur in:
   A. Conversational measures used to determine style.
   B. Language Facilitators used.
   C. Language Inhibitors used.
   D. Mean length of utterance.

II. Following the child remediation program, did changes occur in the child's verbal behavior, specifically:
   A. Mean length of utterance.
   B. Semantic categories used.
   C. Pragmatic functions used.

III. Is there a relationship between changes in parental verbal behavior and child verbal behavior.
CHAPTER 2

METHODOLOGY

Subjects

The experimental subjects were 11 parent child dyads. Both parents and children were involved in a language remediation group at the Alberta Children's Hospital.

Child Descriptors: Selection and Description

All children met the following criteria for inclusion in the study:

1. Referral to the Alberta Children's Hospital by a doctor because of concerns regarding language development.
2. No known oral structural defects or neurological disorders.
3. Normal hearing sensitivity as determined by the Department of Audiology at the Alberta Children's Hospital.
4. Normal developmental milestones except for language were reported by the parents. Developmental milestones were based on items from the Denver Developmental Screening Test (Frandenburg, Dodd, and Fondall, 1973).
5. English was the only language spoken in the home.

Following the initial referral, each child was assessed by a speech and language clinician in the child's geographical area. A variety of tests were employed to assess the child's language depending on the child's age. Expressive language was assessed through language samples, and clinicians described language skills rather than using formal measures. A variety of Receptive language tests were employed to assess the child's receptive language depending on the
child's age. The Receptive tests were: Sequenced Inventory of Communication (Hedrick, Prather, and Tobin, 1975), Test of Auditory Comprehension of Language (Carrow, 1969) and The Preschool Language Scale (Zimmerman, Steiner, and Evatt, 1969). The children's chronological ages ranged from 2 years 3 months to 3 years 7 months. The children's receptive abilities ranged from age appropriate to a delay of 19 months and expressive abilities ranged from nonverbal to production of two-word utterances. Three of the children were female and eight of the children were male. Table 1 describes the children's chronological age and receptive and expressive language levels prior to intervention.

**Parent Descriptors: Selection and Description**

Each adult was a parent, either the mother or the father, of one of the language-delayed children described above. Each parent met the following criteria:

1. The parent was considered to be the child's primary caretaker, if the child spent the majority of his or her waking hours with the adult.
2. All parents reported normal hearing in at least one ear.
3. English was the parents' first language and the language spoken in the home.
4. The parents were not involved in individual or family counselling prior to, or during remediation.
5. All parents could read and write, and did not have a history of academic difficulty. This was determined by parents reporting no more than failure in one grade.

Socioeconomic status was assigned using two factors, education
<table>
<thead>
<tr>
<th>Subject</th>
<th>Age</th>
<th>Expressive Level</th>
<th>Receptible Level</th>
<th>Sex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child 1</td>
<td>3;5</td>
<td>1-2 word utterances</td>
<td>SICD 28 mo</td>
<td>f</td>
</tr>
<tr>
<td>Child 2</td>
<td>2;3</td>
<td>1-2 word utterances</td>
<td>SICD 27 mo</td>
<td>f</td>
</tr>
<tr>
<td>Child 3</td>
<td>3;7</td>
<td>Nonverbal</td>
<td>SICD 28 mo</td>
<td>m</td>
</tr>
<tr>
<td>Child 4</td>
<td>3;7</td>
<td>1-word utterances</td>
<td>Unable to test</td>
<td>m</td>
</tr>
<tr>
<td>Child 5</td>
<td>2;8</td>
<td>Nonverbal</td>
<td>SICD at age</td>
<td>m</td>
</tr>
<tr>
<td>Child 6</td>
<td>2;3</td>
<td>1-2 word utterances</td>
<td>TACL at age</td>
<td>f</td>
</tr>
<tr>
<td>Child 7</td>
<td>2;3</td>
<td>1-2 word utterances</td>
<td>SICD at age</td>
<td>m</td>
</tr>
<tr>
<td>Child 8</td>
<td>3;3</td>
<td>1-word utterances</td>
<td>PLS at 20 mo</td>
<td>m</td>
</tr>
<tr>
<td>Child 9</td>
<td>2;11</td>
<td>Nonverbal</td>
<td>SICD at age</td>
<td>m</td>
</tr>
<tr>
<td>Child 10</td>
<td>3;5</td>
<td>Nonverbal</td>
<td>PLS at age</td>
<td>m</td>
</tr>
<tr>
<td>Child 11</td>
<td>3;5</td>
<td>Nonverbal</td>
<td>Unable to test</td>
<td>m</td>
</tr>
</tbody>
</table>

Receptive tests were abbreviated as follows: Sequenced Inventory of Communication = SICD. Test of Comprehension of Language = TACL and Preschool Language Scale = PLS. The children's age should be read as years followed by months. Male children's sex was designated by m and female children by f.
and occupation, of the working parent. (Appendix A). Six parents were of middle socioeconomic status and 5 were of lower socioeconomic status as measured by the Hollinghead's Two Factor Index of Social Position. Ten of the parents were female and one parent was male. Table 2 provides parents' sex and socioeconomic status.

The remediation program had 2 treatment components. One component involved the children attending a language remediation group twice a week on Tuesday and Thursday, for 90 minutes. The second component involved a parent training program which occurred simultaneously with the childrens' group.

Language Remediation Group Children

The subjects were divided into two groups with the 2-year-old and nonverbal 3-year-old children in a morning treatment group and the verbal 3-year-old children in an afternoon treatment group. Language therapy was provided by an American Speech, Language and Hearing certified clinician and a speech aid who had an undergraduate degree in linguistics and one year of graduate training in Speech Pathology.

The setting for therapy was a large room arranged like a nursery school. It contained: 1) a fine motor center with puzzles, building blocks and beads, 2) a house center with a stove and sink, dishes, plastic fruit, empty food containers and dolls, 3) a sand or water table with bowls, bottles, funnels, spoons and vehicles. In addition, a variety of Fisher Price toys such as the barn, garage and house were available. Each day the same basic plan was followed: an opening activity in which the children identified pictures of their parents and themselves, a brief group activity that varied depending on the theme for that day, (Appendix B contains daily lesson plans), free play, snack
Table 2. Parents' Socioeconomic Status and Sex

<table>
<thead>
<tr>
<th>Parent</th>
<th>Socioeconomic Status</th>
<th>Sex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent 1</td>
<td>middle</td>
<td>f</td>
</tr>
<tr>
<td>Parent 2</td>
<td>middle</td>
<td>f</td>
</tr>
<tr>
<td>Parent 3</td>
<td>middle</td>
<td>f</td>
</tr>
<tr>
<td>Parent 4</td>
<td>low</td>
<td>f</td>
</tr>
<tr>
<td>Parent 5</td>
<td>middle</td>
<td>f</td>
</tr>
<tr>
<td>Parent 6</td>
<td>low</td>
<td>f</td>
</tr>
<tr>
<td>Parent 7</td>
<td>middle</td>
<td>f</td>
</tr>
<tr>
<td>Parent 8</td>
<td>low</td>
<td>f</td>
</tr>
<tr>
<td>Parent 9</td>
<td>middle</td>
<td>f</td>
</tr>
<tr>
<td>Parent 10</td>
<td>low</td>
<td>f</td>
</tr>
<tr>
<td>Parent 11</td>
<td>low</td>
<td>m</td>
</tr>
</tbody>
</table>

The parents' sex was abbreviated using f for female and m for male. Each parent child dyad shared the same number - therefore parent 1 was the parent of child 1, etc.
preparation and snack, craft time and story. During free play the centers described above were available to the children and they were free to move from center to center as they wished. The activities and play time were designed to encourage communication. Frequently communication was required to complete the activity, i.e., requesting materials at craft time. The therapist and aide modelled utterances appropriate to the situation and produced utterances semantically and syntactically one step beyond the child's most complex utterance. For example, if the child were at a single word level and said "more" when requesting juice, the therapist said "more juice" (Miller, 1978). The children's communication, verbal or nonverbal was consequented in a natural manner such as receiving the object they requested (McLean and Snyder-McLean, 1973). In order to establish verbal communication as the preferred mode of communication, verbal requests and comments were responded to immediately while the clinician waited 30 seconds before responding to nonverbal requests and comments.

**Parent Training Program**

During the children's Thursday remediation session a program was provided for the parents. A speech therapist with a bachelors of science degree in Speech Pathology and 7 years of experience with parent training programs led the parent training program. Information on language development, language facilitators and language inhibitors was provided to the parents through lectures, discussion, videotapes, roleplaying, books, and handouts. This occurred while the children were participating in the language remediation group. On Tuesday each parent spent 15 to 20 minutes in the children's language remediation group. The parents
began by observing the therapist and aid interacting with the children. By the parents' third time in the children's group they were interacting with their child and receiving feedback on their use of language facilitators. Only the certified speech clinician provided feedback to parents. Specifically, feedback centered on when to expand their child's utterances, encoding of the child's nonverbal communication, using parallel talk while the child played and consequenting the child's communication in a natural manner (Appendix C contains specific information on books, handouts and films used).

**Targets and Controls**

Specific behaviors were chosen as targets for both the parents and the children. For the children the semantic categories targeted were: existence, nonexistence, reoccurrence, possession, location, and action. Pragmatically the targeted functions were: commenting on objects and actions, and requesting objects. Targets were selected in a developmental order (Bloom and Lahey, 1973; McLean and Snyder-McLean, 1978). To provide control for maturation, one semantic category, attribution, and one pragmatic function, request for information were not targeted during remediation. Following remediation if the children were using the targeted structures but not the control structures this would suggest that remediation had a significant effect on the children's language development. If the children were using both the target and control structures at the same frequency this would suggest maturation of the children's language system was responsible for the linguistic changes.

Target behaviors for the parents were greater use of language
facilitators specifically expansions, labelling, encoding, and parallel talk.

**Procedures**

Each parent-child dyad was videotaped playing in the sand with their child for a five-minute period prior to remediation and a five-minute period following the remediation program. Parent-child verbal interaction research indicated the period of time the parent and child were observed interacting together ranged from a 90-minute period to a five-minute period (Conti-Ramsden and Friel-Patti, 1983; Cramblitt and Siegel, 1977). The present study investigated the same kind of parent-child interaction as did Conti-Ramsden and Friel-Patti, (1983) and Cramblitt and Siegel (1977). Consequently a five-minute sample of parent child interaction was considered adequate.

A Sony beta max cassette video recorder, (#210-22), Sony camera, (#146-13) and Dynamo microphone were used. The tape used was a Sony video cassette tape L-500. Toys provided remained constant across each parent child dyad and across both tapings. Toys included: the sand box, bowls, bottles, funnels, shovels, spoons, and a variety of toy vehicles.

The parents' speech was analyzed for conversational measures used to assign verbal style, use of language facilitators, use of language inhibitors, degree of monologuing and mean length of utterance from video-taped samples prior to and following remediation. Appendix D contains definitions of the codes used and Appendix E contains procedures used to compute mean length of utterance.
Analysis of Children's Verbal Behaviors

The childrens' speech was analyzed for semantic categories and pragmatic functions used. In addition, mean length of utterance was computed. Appendix D contains definitions of the behaviors analyzed and Appendix E contains procedures used to compute mean length of utterance. Appendix F contains category abbreviations used while coding parent and child transcripts.

Measurement Summary

In summary, language-disordered children and their parents were videotaped playing at a sandbox prior to and following the remediation program. The communicative interaction between parent and child was transcribed. Then the parents' communicative behaviors were analyzed for conversational measures used to assign verbal style, language facilitators, language inhibitors and mean length of utterance. The childrens' speech was analyzed for semantic categories, pragmatic functions, and mean length of utterance.

Data Analysis

Descriptive analysis rather than statistical analysis were used to analyze parents' and childrens' speech and language prior to and following remediation. Frequency tabulations of the conversational measures used to determine parental verbal style, use of language facilitators and language inhibitors were done. Frequency tabulations of the childrens' use of semantic categories and pragmatic functions were also computed. The frequency tabulations of the above measures, mean length of utterances were compared prior to and following the remediation period.
In comparing the children's mean length of previous to and following remediation, a formula was used to account for maturation. This was accomplished by dividing the child's mean length of utterance pre and post remediation by the child's chronological age. If the resulting figure was approximately the same prior to and following remediation, any changes that occurred could be attributed to the child's increasing age rather than from treatment.

Reliability

A second speech and language clinician certified by the American Speech, Language and Hearing Association, provided inter reliability. She was trained to analyze the measures through reading and discussion with the investigator. Then three transcripts were randomly chosen by the second clinician. She analyzed the transcripts independently of the investigator, and then her coded transcripts were compared to the investigator's transcripts. Appendix G and H provide points of agreement and disagreement by the investigator and the second coder for both the parents' and the children's language samples. A point-by-point reliability coefficient of .84 was obtained for parental measures and .88 for the child measures.

Intra-reliability measures were obtained by the investigator by randomly selecting three transcripts and recoding them. A point-by-point reliability coefficient of .96 was obtained.
CHAPTER 3
RESULTS

Introduction

The purpose of the present investigation was to determine whether changes occur in the linguistic system of parents and children following remediation. The following aspects of the parents' linguistic system were examined:
1. Verbal style.
2. Use of Language Inhibitors.
3. Use of language facilitators.

In addition, the effects of parental socioeconomic status on the above linguistic factors was considered. The following aspects of the children's linguistic system were examined:
1. Mean length of utterance.
2. Use of semantic categories.
3. Use of pragmatic functions.

The final issue addressed was the relationship between changes in parental language and changes in child language.

Parental Socioeconomic Status and Verbal Style

Six of the parents were of middle socioeconomic status, and five were of lower socioeconomic status. Prior to remediation the four categories of style defined by Olsen-Fulera (1982) were demonstrated by some parents. Two categories of verbal style were seen in both socioeconomic levels, intrusive and elicitive. The directive style was seen only in parents of middle socioeconomic status and the instruct-
ive style was seen only in parents of lower socioeconomic status. Prior to remediation the verbal styles of the six parents of middle socioeconomic status were:

1. 3 intrusive.
2. 2 directive.
3. 1 eliciting.

Previous to remediation the verbal styles of the five parents of lower socioeconomic status were:

1. 1 intrusive.
2. 2 instructive.
3. 1 elicitive.

Table 3 provides parents' socioeconomic status and verbal style pre and post remediation.

The Influence of Remediation on Parental Verbal Styles

Note that prior to and following remediation, parents used more utterances categorized as language facilitators than they did other types of utterances used in determining style. The criteria used to determine changes from one style to another style following remediation were as follows:

1. directive to intrusive - a decrease in the number of directives used with an increase in the use of real questions and verbal reflective questions, use of directives and questions were approximately equal.
2. directive to elicitive - a decrease in the number of directives used with an increase in the use of real questions and verbal reflective questions. The number of questions used was greater than the number of directives used.
3. intrusive to elicitive - decrease in the number of directives used with an increase in the use of real questions and reflective questions; the number of questions used was greater than directives.

4. intrusive to facilitative - decrease in the use of directives and questions with an increase in use of language facilitators.

5. elicitive to facilitative - a decrease in the number of questions used with an increase in use of language facilitators.

6. instructive to elicitive - decrease in use of test questions and increase in the number of real questions and verbal reflective questions.

Following remediation, eight of the eleven parents changed their verbal style. Four of those parents could not be assigned a style using Olsen-Fulera's (1982) four categories of style because the utterances they used were no longer the type of utterances identified by Olsen-Fulera (1982) to assign style, i.e. use of directive and questions. Instead, these parents used utterances considered to be language facilitators. From this point on, the verbal style of parents who could not be categorized according to Olsen-Fulera's method because of the number of language facilitators used will be referred to as facilitative.

After the remediation program the following observations were made regarding parents' verbal style:

1. two parents changed from an elicitive style to a facilitative style.

2. two parents changed from an intrusive style to a facilitative style.

3. one parent changed from a directive style to an elicitive style.

4. one parent changed from a directive style to an intrusive style.

5. one parent changed from an instructive style to an elicitive style.
6. one parent retained an intrusive style.
7. two parents retained an instructive style.

Table 3 provides the category of parents' verbal style, the number, and type of questions, the number of directives, and the number of language facilitators used pre and post remediation.

In summary, prior to remediation the intrusive and elicitive verbal styles were demonstrated by parents of both middle and low socioeconomic status. The directive style was only demonstrated in parents of middle socioeconomic status and the instructive style was only demonstrated in parents of low socioeconomic status. Following remediation eight of the eleven parents changed their verbal style in the following manner: elicitative to facilitative, intrusive to facilitative, directive to intrusive or elicitative, instructive to elicitative. In addition, these eight parents' verbal interaction became more child centered.

**Parental Mean Length of Utterance**

Ten of the eleven parents increased their mean length of utterance following remediation and one parent decreased mean length of utterance. The ten parents who increased mean length of utterance increased it by less than one morpheme per utterance. The parent who decreased mean length of utterance decreased it by less than one morepheme per utterance. The investigator did not consider this change clinically significant. Table 3 provides the parents' mean length of utterance prior to and following remediation.
Table 3: Structures Used to Determine Verbal Style, Socioeconomic Status, Language Facilitators and Mean Length of Utterance

<table>
<thead>
<tr>
<th>Parent SES</th>
<th>Verb Style</th>
<th>SES</th>
<th>Verbal Style</th>
<th>Socioeconomic Status</th>
<th>Language Facilitators</th>
<th>Mean Length of Utterance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>Post</td>
<td>Pre</td>
<td>Post</td>
<td>Pre</td>
<td>Post</td>
</tr>
<tr>
<td>1 mid</td>
<td>intru</td>
<td>intru</td>
<td>14</td>
<td>12</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>2 mid</td>
<td>direc</td>
<td>direc</td>
<td>14</td>
<td>2</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>3 mid</td>
<td>direc</td>
<td>intru</td>
<td>18</td>
<td>12</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>4 low</td>
<td>instruc</td>
<td>instruc</td>
<td>0</td>
<td>5</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>5 mid</td>
<td>intru</td>
<td>facil</td>
<td>5</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6 low</td>
<td>instruc</td>
<td>elicit</td>
<td>6</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>7 mid</td>
<td>elicit</td>
<td>facil</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>8 low</td>
<td>elicit</td>
<td>facil</td>
<td>7</td>
<td>24</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9 mid</td>
<td>intru</td>
<td>elicit</td>
<td>16</td>
<td>9</td>
<td>14</td>
<td>9</td>
</tr>
<tr>
<td>10 low</td>
<td>intru</td>
<td>facil</td>
<td>11</td>
<td>5</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>11 low</td>
<td>instruc</td>
<td>instruc</td>
<td>4</td>
<td>9</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>

Abbreviations were as follows: directive = direc, instructive = instruc, intrusive = intru, elicitative = elicit, facilitative = facil, verbal style = verb style, real questions = real ?, test questions = test ?, reflective questions = reflex ?, and language facilitators = lang facil, mean length of utterance = MLU, Socioeconomic Status = SES, and middle = mid.
Parallel Talk

Following remediation 8 of the 11 parents increased their use of parallel talk: these were the same parents who increased their general use of language facilitators. The parents' increased use of parallel talk following the remediation program ranged from an increase of 3 to an increase of 34 utterances. Two parents decreased their use of parallel talk. The decrease in parallel talk ranged from a decrease of four to a decrease of 31 utterances. One parent's use of parallel talk remained the same.

Encoding

Four of the eleven parents increased their use of encoding. All 4 of these parents also increased their use of parallel talk. The increase in use of encoding ranged from an increase of 2 to 6 utterances. Two of the 11 parents decreased their use of encoding. One parent decreased her encoding by 5 utterances. Four parents' use of encoding remained the same, and one did not use any utterances that could be categorized as encoding.

Labelling

No parent increased the use of labelling. Three parents decreased their use of labelling. The decrease in labelling ranged from 4 to 7 utterances. None of these parents decreased their use of other categories of language facilitators. Six parents' use of labelling remained the same, and 2 parents produced no utterances categorized as labelling.

Expansion

Five of the 11 parents increased their use of expansion. Two of these parents increased their use of parallel talk and encoding, and three other parents also increased their use of parallel talk. The
Table 4: Parental Use of Language Facilitators and Inhibitors

<table>
<thead>
<tr>
<th>Parent</th>
<th>Parallel Talk</th>
<th>Language Facilitators</th>
<th>Language Inhibitors</th>
<th>Monologuing Score</th>
<th>Verbal Style</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>Post</td>
<td>Pre</td>
<td>Post</td>
<td>Pre</td>
</tr>
<tr>
<td>1</td>
<td>11</td>
<td>27</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>31</td>
<td>27</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>37</td>
<td>41</td>
<td>6</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>5</td>
<td>20</td>
<td>34</td>
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<td>8</td>
<td>2</td>
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<tr>
<td>6</td>
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<td>74</td>
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<td>9</td>
<td>55</td>
<td>24</td>
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<tr>
<td>11</td>
<td>3</td>
<td>22</td>
<td>11</td>
<td>11</td>
<td>10</td>
</tr>
</tbody>
</table>

Style abbreviation should be read intrusive = intru, directive = direc, elicitative = elicit, instructive = instruc and facilitative = facil. The columns of numbers are the number of utterances the parents used in each category of language facilitators and inhibitors previous to and following remediation. The last column of figures are the parents' monologuing scores previous to and following remediation.
increase in the use of expansion ranged from three to eight utterances. No parents decreased their use of expansion.

**Parents Using Greatest and Fewest Number of Language Facilitators**

In order to illustrate the types of changes parents made in their use of language facilitators following remediation, the parents' use of language facilitators prior to remediation will be described. Specifically noted were the use of language facilitators by the parents using the fewest and the greatest number of language facilitators. Previous to remediation, parents 3, 8, 9, and 10 used the greatest number of language facilitators. Two parents were of middle socioeconomic status and two were of lower socioeconomic status. Two parents used an intrusive style, one parent a directive style, and one an elicitative style.

The parents who used the fewest language facilitators prior to remediation were parents 1, 4, 7, and 11. Two were of middle socioeconomic status, and two were of lower socioeconomic status. Two parents used an instructive style, one an intrusive style, and one an elicitative style.

Following remediation, three of the four parents using the greatest number of language facilitators were also the parents who used the greatest number of language facilitators previous to remediation. The parent who had used a directive style previous to remediation changed to an intrusive style, and the parents who used an elicitative style and an intrusive style were using a facilitative style following remediation. Two of the four parents using the fewest number of language facilitators following remediation were the same parents who had used the fewest
### Table 5: Parents Using the Most and Least Language Facilitators

<table>
<thead>
<tr>
<th>Parents Using Most Lang Fac Pre Rx</th>
<th>Parents Using Most Lang Fac Post Rx</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent SES Verbal Style #Lang Fac</td>
<td>Parent SES Verbal Style #Lang Fac</td>
</tr>
<tr>
<td>3 mid direc 44</td>
<td>3 mid direc 48</td>
</tr>
<tr>
<td>8 low elic it 33</td>
<td>8 low facil 85</td>
</tr>
<tr>
<td>9 mid intru 61</td>
<td>5 mid intru 52</td>
</tr>
<tr>
<td>10 low intru 35</td>
<td>10 low facil 76</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parents Using Least Lang Fac Pre Rx</th>
<th>Parents Using Least Lang Fac Post Rx</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent SES Verbal Style #Lang Fac</td>
<td>Parent SES Verbal Style #Lang Fac</td>
</tr>
<tr>
<td>1 mid intru 23</td>
<td>1 mid intru 33</td>
</tr>
<tr>
<td>4 low instruc 8</td>
<td>4 low instruc 7</td>
</tr>
<tr>
<td>7 mid elic it 13</td>
<td>2 mid elic it 31</td>
</tr>
<tr>
<td>11 low instruc 24</td>
<td>9 mid intru 31</td>
</tr>
</tbody>
</table>

| Parents Demonstrating Most Increase in Use of Language Facilitators Post Rx |
| Pre Post | Pre Post |
| 7 mid elic it facil 13 45 |
| 8 low elic it facil 33 85 |
| 10 low instruc facil 35 76 |
| 11 low instruc instruc 24 39 |

Abbreviations are as follows: language facilitators = Lang Fac, remediation = Rx, socioeconomic status = SES, middle = mid, instructive = instruc, directive = direc, elicitative = elic it, intrusive = intru, and facilitative = facil.

The columns of numbers are the number of language facilitators used by the parents pre and post remediation.
number of language facilitators following remediation. The other parent did not use the greatest or the least language facilitators previous to remediation.

Of the four parents who demonstrated the greatest increase in language facilitators following remediation, three were of lower socioeconomic status and one was of middle socioeconomic status. Two parents who demonstrated the greatest gain in language facilitators, prior to remediation, had used the greatest number of language facilitators. Following remediation, three used a facilitative style.

Following remediation, two parents did not increase the number of language facilitators used. One parent was of middle socioeconomic style and used a directive style previous to and following remediation. The other parent was of lower socioeconomic status, and used an instructive style previous to and following remediation.

Table 5 provides the frequency of language facilitators for parents using the fewest and the greatest number of language facilitators pre and post remediation and the frequency of language facilitators for parents who demonstrated the greatest increase in use of language facilitators. In addition, the parental verbal style, and socioeconomic status are provided.

In summary, eight of the eleven parents increased their use of language facilitators following remediation. Two parents maintained the same level of language facilitators and one parent decreased her use of language facilitators. The greatest change was demonstrated in parallel talk with minimal or no change demonstrated in the other categories of language facilitators. Three of the parents using the greatest number
of language facilitators prior to remediation were also identified as the parents using the greatest number of language facilitators following remediation. Two of the parents identified as using the fewest language facilitators prior to remediation were also identified as using the fewest language facilitators following remediation. These two parents did not demonstrate any change in use of language facilitators following remediation. One parent moved from using the greatest number of language facilitators prior to remediation to using the fewest language facilitators post remediation.

**Parental Use of Language Inhibitors**

Three types of language inhibitors were measured: directives, monologuing, and negative comments. Three parents made negative comments, all directed at their children's behavior and all occurring post remediation. No parental negative comments were directed at the children's speech.

Six of the eleven parents decreased their use of directives, and five parents decreased their monologuing scores. One parent's use of directives remained the same. Four parents increased their use of directives. Four of the six parents who decreased their use of directives were also the same parents who decreased their monologuing scores. Only one parent who increased her use of directives also increased her monologuing score. Parents who decreased their use of directives and monologuing score following remediation generally used an intrusive or directive style previous to remediation.

Table 4 provides the number of directives used by parents and monologuing scores used pre and post remediation by parents.
In summary, the parents in the study were categorized as using one of five verbal styles, directive, intrusive, instructive, elicitative, and facilitative. The directive style was only seen in parents of middle socioeconomic status and the instructive status was only seen in parents of lower socioeconomic status. The other three verbal styles were seen in parents of both socioeconomic levels. Following remediation eight of the eleven parents changed their verbal style. Stylistic changes tended to be in the direction of less directive and more elicitative. The verbal style that was least likely to change following remediation was the instructive style. Following remediation nine of the eleven parents increased their use of language facilitators, primarily parallel talk. One parent's use of language facilitators remained essentially the same and one parent decreased her use of language facilitators. Six parents decreased their use of directives and five parents reduced their monologuing score. Parents who decreased the number of directives used tended to use an intrusive or directive style previous to remediation. Three parents' use of directives remained essentially the same, and three parents' increased their use of directives. Six parents' decreased their monologuing scores following remediation and five parents' increased their monologuing scores.

**Children's Mean Length of Utterance**

Following remediation, seven of the eleven children increased their mean length of utterance. To ensure minimal changes in the children's mean length of utterance were not due to the children's increased age, a language ratio was used. This was computed by assigning each child an
### Table 6: Children’s Mean Length of Utterance and Expressive Language Ratios

**Children with Increased Lang Ratio**

<table>
<thead>
<tr>
<th>Child</th>
<th>MLU Pre</th>
<th>MLU Post</th>
<th>Language Ratio Pre</th>
<th>Language Ratio Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.34</td>
<td>2.70</td>
<td>.5219</td>
<td>.7534</td>
</tr>
<tr>
<td>2</td>
<td>1.00</td>
<td>2.75</td>
<td>.7074</td>
<td>1.148</td>
</tr>
<tr>
<td>7</td>
<td>1.33</td>
<td>2.14</td>
<td>0.9551</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>1.00</td>
<td>1.91</td>
<td></td>
<td>0.6365</td>
</tr>
</tbody>
</table>

**Children with Decreased Lang Ratio**

<table>
<thead>
<tr>
<th>Child</th>
<th>MLU Pre</th>
<th>MLU Post</th>
<th>Language Ratio Pre</th>
<th>Language Ratio Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>2.0</td>
<td>2.1</td>
<td>0.6255</td>
<td>0.6155</td>
</tr>
<tr>
<td>5</td>
<td>1.0</td>
<td>1.14</td>
<td>0.5368</td>
<td>0.5617</td>
</tr>
<tr>
<td>6</td>
<td>1.51</td>
<td>1.44</td>
<td>0.8518</td>
<td>0.7655</td>
</tr>
<tr>
<td>10</td>
<td>1.00</td>
<td>1.00</td>
<td></td>
<td>0.4658</td>
</tr>
</tbody>
</table>

**Nonverbal Children Previous to Rx**

<table>
<thead>
<tr>
<th>Child</th>
<th>MLU Pre</th>
<th>MLU Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>1.00</td>
</tr>
<tr>
<td>9</td>
<td>0</td>
<td>2.81</td>
</tr>
<tr>
<td>11</td>
<td>0</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Abbreviations are as follows: language ratio = Lang Ratio, mean length of utterance = MLU and remediation = Rx. The first two columns of numbers are children's mean length of utterance in morphemes and the second column are the children's expressive language ratio. The first number in a column refers to status pre remediation and the second to post remediation.
expressive language age based on the child's mean length of utterance (Miller, 1980) and dividing the expressive language age by the child's chronological age (Kyelsey et al, 1981). The score obtained prior to remediation was then compared to the score obtained post remediation.

Four childrens' language scores increased following remediation. The increase in language scores ranged from .1468 to .3406. Four childrens' language scores remained essentially the same previous to and following remediation. Three children could not be assigned language scores because they were nonverbal previous to remediation. Their mean length of utterance following remediation ranged from 1 morpheme per utterance to 2.81 morphemes per utterance.

Table 6 provides the mean length of utterance and expressive language ratios previous to and following remediation for the subjects.

Childrens' Use of Semantic Categories and Pragmatic Functions

Following remediation, ten of the eleven children increased the number of semantic categories used. Following remediation the increase in semantic categories used ranged from an increase of one semantic category to six semantic categories. In addition to increasing the number of categories used, four of these same children also increased the number of utterances in the semantic categories they used previous to remediation. The increase in utterances per category ranged from one utterance to seven utterances. One child used the same categories post remediation as were used previous to remediation, though a slight increase was seen in the number of utterances used in the categories. Two children decreased the utterances they used in three categories by one utterance each. Prior to remediation the number of semantic categories used by the children ranged from one to four. Following remediation, one child used all seven
semantic categories. The number of categories used by the other children ranged from one to six.

The semantic category used by the most children prior to and following the remediation program was existence. Following remediation two children decreased the number of utterances in a semantic category by one utterance. Six semantic categories were chosen as goals for remediation: existence, nonexistence, reoccurrence, possession, action, and location. One semantic category was chosen for a control: attribution. Prior to remediation one child marked the semantic control, attribution with a single utterance. Following remediation five children used the semantic control. For four of the five children the average number of utterances in the target semantic categories were greater than the number of utterances in the control semantic category following remediation. The number of utterances in the targeted semantic categories ranged from 1.33 to 5.16 and the number of utterances in the semantic control ranged from 1 to 4 (Appendix H contains procedures for computing averages). Table 7 provides the number of utterances in the semantic categories prior to and following remediation for each subject. Table 7 also provides the number of children using each semantic category pre and post remediation, and the total number of children who increased, decreased, and used the same number of utterances in each semantic category post remediation. Table 8 provides the average number of utterances in the semantic targets and controls.

Six children increased the number of pragmatic functions following remediation. Three children used the same number of pragmatic functions following remediation as were used prior to remediation. Two children
Table 7: Semantic Targets and Control

<table>
<thead>
<tr>
<th>Child</th>
<th>Exist Pre</th>
<th>Post</th>
<th>Nonexist Pre</th>
<th>Post</th>
<th>Reocc Pre</th>
<th>Post</th>
<th>Poss Pre</th>
<th>Post</th>
<th>Act Pre</th>
<th>Post</th>
<th>Loc Pre</th>
<th>Post</th>
<th>Attrib Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>0</td>
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<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>9</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>7</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>6</td>
<td>11</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
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<td>2</td>
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<td>0</td>
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<td>0</td>
<td>0</td>
<td>0</td>
</tr>
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<td>2</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>0</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>9</td>
<td>0</td>
<td>16</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
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<td>1</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
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<td>10</td>
<td>1</td>
<td>3</td>
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<td>0</td>
<td>0</td>
<td>0</td>
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<td>0</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
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<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**Number of Children Marking Each Category**

<table>
<thead>
<tr>
<th>Exist</th>
<th>Nonexist</th>
<th>Reocc</th>
<th>Poss</th>
<th>Act</th>
<th>Loc</th>
<th>Attrib</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>11</td>
<td>2</td>
<td>6</td>
<td>3</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>
Total = 10

**Number of Children Increasing Utterances in Each Category Post Rx**

<table>
<thead>
<tr>
<th>Exist</th>
<th>Nonexist</th>
<th>Reocc</th>
<th>Poss</th>
<th>Act</th>
<th>Loc</th>
<th>Attrib</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>5</td>
<td>5</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
Total = 1

**Number of Children Decreasing Utterance Each Category**

<table>
<thead>
<tr>
<th>Exist</th>
<th>Nonexist</th>
<th>Reocc</th>
<th>Poss</th>
<th>Act</th>
<th>Loc</th>
<th>Attrib</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>
Total = 2

**Utterance Remaining Same Each Category**

<table>
<thead>
<tr>
<th>Exist</th>
<th>Nonexist</th>
<th>Reocc</th>
<th>Poss</th>
<th>Act</th>
<th>Loc</th>
<th>Attrib</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>6</td>
<td>4</td>
<td>6</td>
<td>4</td>
<td>4</td>
<td>0</td>
</tr>
</tbody>
</table>

Abbreviations are as follows: existence = exist, nonexistence = nonexist, reoccurrence = reocc, possession = poss, action = act, location = loc, attribution = attrib, remediation = Rx

Total refers to number of children to demonstrate change. First number refers to number of utterances pre remediation, second number refers to number of utterances post remediation.
Table 8: Average Number of Utterances in Target and Control Semantic Categories Post Rx

<table>
<thead>
<tr>
<th>Child</th>
<th>Targets</th>
<th>Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>Post</td>
</tr>
<tr>
<td>1</td>
<td>.083</td>
<td>2.83</td>
</tr>
<tr>
<td>2</td>
<td>.083</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>.333</td>
<td>3</td>
</tr>
<tr>
<td>7</td>
<td>.333</td>
<td>1.33</td>
</tr>
<tr>
<td>9</td>
<td>0</td>
<td>5.16</td>
</tr>
</tbody>
</table>

The first and second column of numbers were the average number of utterances in the target semantic categories. The third and fourth columns were the number of utterances in the semantic control pre and post remediation. The average number of utterances was computed by adding the number of utterances in the target semantic categories together and dividing by the total number of target semantic categories.
decreased the number of pragmatic functions used following remediation by one function. Following remediation six children increased the number of utterances in the pragmatic functions used prior to remediation. The increase ranged from two to ten utterances per function. Three children decreased the number of utterances used in one pragmatic function. The decrease ranged from eight to four utterances. The number of utterances in two pragmatic functions remained the same for one child and another child increased the utterances in one category and decreased them in another. The pragmatic function marked most frequently was request for object for both pre and post remediation conditions. Three pragmatic functions were chosen as targets for remediation: comment on objects, comment on actions and requests for objects. One pragmatic function was chosen as a control, request for information. Previous to remediation one child used the pragmatic control. Following remediation four children used the pragmatic control including the child who used it previous to remediation. For the three children who did not use the control previous to remediation the average number of utterances in the pragmatic control ranged from one to three while the average number of utterances in the pragmatic target ranged from 1.6 to 7.3 functions. Table 9 provides the frequency of the pragmatic functions previous to and following remediation. In addition, Table 9 provides the number of children marking each pragmatic function pre and post remediation, and children increasing, decreasing, or using the same number of utterances in each pragmatic function post remediation. Table 10 provides the average number of utterances in the pragmatic controls and functions.
<table>
<thead>
<tr>
<th>Child</th>
<th>Com Pre</th>
<th>Obj Post</th>
<th>Targets</th>
<th>Control</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Com Pre</td>
<td>Act Post</td>
<td>Req Pre</td>
<td>Obj Post</td>
<td>Req Pre</td>
</tr>
<tr>
<td>1</td>
<td>3</td>
<td>3</td>
<td>13</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>13</td>
<td>1</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>7</td>
<td>13</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
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<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>7</td>
<td>3</td>
<td>5</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
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<td>15</td>
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<td>5</td>
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<tr>
<td>11</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Number of Children
Marking Semantic Categories
7 11 6 5 1 1 1 4
Total = 8

Increasing Utterances Each Category
10 4 1 3
Total = 11

Decreasing Utterances Each Category
0 2 0 0
Total = 4

Utterances Remain the Same Each Category
8 3 10 1

Abbreviations are as follow: comment on object = com obj, comment on action = com act, requesting object = req obj, and request information = req. info.
Total refers to number of children to demonstrate change or lack of change.
Table 10: Average Number of Utterances in Targets and Control Post Treatment

<table>
<thead>
<tr>
<th>Child</th>
<th>Pragmatic Targets</th>
<th></th>
<th>Pragmatic Control</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>Post</td>
<td>Pre</td>
<td>Post</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>7</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>1.6</td>
<td>7.3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>6</td>
<td>4</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>7</td>
<td>1.6</td>
<td>1.6</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

The first and second columns of numbers are the average number of utterances in the target pragmatic functions pre and post remediation and the third and fourth columns are the number of utterances in the pragmatic controls pre and post remediation.
Children Making the Greatest and the Least Change Following Remediation

The children who made the greatest progress and the children who made the least progress were compared to determine if sex, age, expressive language and receptive language would predict whether remediation would be effective. The four children who demonstrated the greatest linguistic abilities ranged in age from two years five months to three years seven months. Two of the most improved children were females and two were males. The least improved children were all male. Three of the most improved childrens' receptive abilities were at age level and one child's was 13 months delayed. The most improved childrens' mean length of utterance prior to remediation ranged from 0 to 1.34 morphemes and the least improved childrens' mean length of utterance ranged from 0 to 1.51 morphemes. The average mean length of utterance prior to remediation for the most improved children was .9175 and for the least improved children was .8366. Prior to remediation the number of semantic categories used by the most improved children ranged from zero to three with the average number being 2.75 categories. Prior to remediation the number of semantic categories used by the least improved children ranged from zero to five with the average being 1.33. Prior to remediation the number of pragmatic functions used by the most improved children ranged from zero to four with the average number being 3.25 functions. Prior to remediation the number of pragmatic functions used by the least improved children ranged from zero to two with the average being 2.3 functions. Prior to remediation the most improved children demonstrated a slightly longer mean length of utterance, less than a tenth of a morpheme. Differences existed between the most improved
children and the least improved children with regard to pragmatic functions and semantic categories used. On the average the most improved children used 1.15 more pragmatic functions and 1.42 semantic categories than did the least improved children (Appendix H provides information on how average scores were computed). Four other children demonstrated some improvement but not to the degree of the most improved children. They ranged in age from two years ten months to three years nine months. Their mean length of utterance previous to remediation ranged from zero to two words. The number of semantic categories ranged from zero to one and pragmatic functions from zero to two. The average number of semantic categories used previous to remediation was .66 and the average number of pragmatic functions was 1. The greatest difference between these children and the most improved children was the increased number of pragmatic functions and semantic categories used by the most improved children. On the average, 2.09 more semantic categories and 2.25 more pragmatic functions were used by the children demonstrating the greatest linguistic progress.

Table 11 provides the average number of semantic categories and pragmatic functions previous to remediation for the most improved children, least improved children, and other children.

In summary, after controlling for maturation, seven children increased mean length of utterance following remediation. Five children increased the number of semantic categories and pragmatic functions used. Three children increased only the number of semantic categories used, and one child increased only the number of pragmatic functions used. Four children who had not used the controls previous to remediation used
Table 11: Average Number of Semantic Categories and Pragmatic Functions for Most Improved Children, Least Improved Children and Other Children Previous to Remediation.

<table>
<thead>
<tr>
<th></th>
<th>Most Improved Children</th>
<th>Least Improved Children</th>
<th>Other Children</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semantic Pragmatic</td>
<td>2.75</td>
<td>3.25</td>
<td>1.33</td>
</tr>
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</tr>
<tr>
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<td></td>
<td>.66</td>
</tr>
<tr>
<td>Semantic Pragmatic</td>
<td></td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

Average scores were computed by totalling the number of semantic categories or pragmatic functions used by each child and dividing by the number of children.
both the semantic control and the pragmatic control following remediation. The average number of utterances was greater in the semantic and pragmatic targets than it was in the semantic and pragmatic controls. The difference in the number of utterances between the semantic target and control ranged from one to 3.31 utterances. The difference in the number of utterances between the pragmatic target and control ranged from three to 9.5 utterances.

The only clinically significant difference between the most improved children and the least improved children was the greater number of pragmatic functions used by the most improved children. On the average 1.333 more pragmatic functions were used.

**The Relationship Between Parents' Language and Children's Language**

This section will examine the relationship between parents' use of language facilitators, language inhibitors, parental verbal style, socioeconomic status, and children's language abilities. First the relationship between children who demonstrated the greatest linguistic improvement and their parental socioeconomic status and linguistic system will be examined. The parents of the children demonstrating the greatest linguistic abilities were all of middle socioeconomic status. Following remediation, two parents used an elicitative style. One parent used an intrusive style, and one parent a facilitative style. All four parents decreased their use of directives. Two of the parents increased their use of language facilitators. One parent's use of language facilitators remained at the same level and one parent's use of language facilitators decreased. Three of the four parents' monologuing scores decreased, and one parent's monologuing score increased. None of the parents of the
children demonstrating the greatest linguistic improvement were the parents who used the greatest number of language facilitators. Two of the parents used the least number of language facilitators.

Four other children demonstrated linguistic improvement but not to the degree of the most improved children. Two of the children's parents were of middle socioeconomic status, and two were of lower socioeconomic status. Two parents used a facilitative style, one an intrusive style, and one an instructive style. Two of the children's parents' use of directives decreased. One parent's use of directives remained at the same level, and one parent increased the number of directives used. Three parents increased their monologuing scores and one parent decreased her monologuing score. Two parents of the children demonstrating some linguistic improvement, use of language facilitators increased and two parents decreased. Three of the parents were the parents using the greatest number of language facilitators pre and post remediation and one parent used the least number of language facilitators pre and post remediation.

Three children made essentially no linguistic improvement. The parents of these children were of lower socioeconomic status. Two of the parents used an instructive style, and one parent used an elicitive style. Two parents decreased their use of directives and one parent increased her use of directives. All three parents increased their monologuing scores. All three parents increased their use of language facilitators. One parent used the greatest number of language facilitators post remediation. Two parents demonstrated the greatest increase in use of language facilitators.
In summary, increase in parental use of language facilitators did not always result in improved child language. For three of the children who demonstrated some linguistic improvement but not the greatest improvement, a relationship was seen between parental use of language facilitators and improvement in child language. Parental use of directives or monologuing did not appear to be related either to improvement or lack of improvement in child language. Children of middle socioeconomic status tended to demonstrate greater improvement than did children of lower socioeconomic status. Children of parents using an instructive style tended to demonstrate less linguistic improvement than did children of parents using the other styles.

Table 12 provides a summary of parent and child data, including receptive abilities, mean length of utterance, semantic categories, and pragmatic functions used pre and post remediation, parental verbal style following remediation, parental use of language facilitators and directives.
Table 12: Summary of Child and Parent Information

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Table 12: Summary of Child and Parent Information

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Abbreviations are as follows: intrusive = intru, instructive = instruc, elicitive = elic, facilitative = facil, verbal style = verb style, and directive = direc
CHAPTER 4

DISCUSSION

This chapter will discuss the results of this investigation with regard to:

1. The relationship of socioeconomic status to parental verbal style,
2. Changes in parental verbal style following remediation,
3. Changes in parental use of language facilitators and language inhibitors, implications for treatment,
4. Changes in children's linguistic abilities following remediation, specifically mean length of utterance and semantic and pragmatic usage,
5. The relationship between changes in the parent's linguistic system and changes in the child's linguistic system following remediation.

This will be followed by a discussion of limitations of the present study and suggestions for further investigation. A final summary and conclusions will complete this chapter.

Socioeconomic Status and Parental Verbal Style

The results of the present study indicated two of the four parental verbal styles, defined by Olsen-Fulera (1982), intrusive and elicitive occurred in both parents of middle and lower socioeconomic status while the directive style only occurred in parents of middle socioeconomic status and the instructive style only in parents of lower socioeconomic status. Instructive parents were characterized by Olsen-Fulera as being generally low verbal with a high use of real questions and test questions. The results of studies investigating linguistic differences between parents of middle socioeconomic status and parents of lower
socioeconomic status have suggested parents of lower socioeconomic status were less verbal than their middle class counterparts (Bee et al, 1969; Kilbride et al, 1977; Farran and Ramey, 1980). This finding may explain why the instructive style, which was characterized as low verbal (Olsen-Fulera, 1982) was only seen in parents of lower socioeconomic status. The directive parents were highly verbal, a characteristic associated with parents of middle socioeconomic status. The directive style was characterized by a high use of directives. Why high use of directives would be seen in parents of middle socioeconomic status and not lower socioeconomic status was not known.

Changes in Parental Verbal Styles Following Remediation

Following remediation, a pattern was seen in the stylistic changes made by eight parents. Olsen-Fulera speculated a parent's verbal style was a reflection of their underlying agenda in communicating with their child. She speculated directive parents' agenda was to control the communicative interaction, instructive parents' was to factually instruct their children, elicitative parents' wished to elicit communication from their child, and the intrusive parent vacillated between directive and elicitative. Following remediation, the parents who developed a facilitative style had an intrusive or elicitative style previous to remediation. The facilitative style was characterized by the use of many language facilitators. These facilitators required the parent to reflect on the child's actions and respond to his communication; in general, the communication interaction was child centered. The elicitative and intrusive parents used many utterances directed at passing
the communicative turn to the child and reflecting the child's utterances and actions. These styles of communication were already child centered. The author speculated the parent-child communication was already child centered, and it may have been easier for these parents to develop a facilitative style than it was for the directive and instructive parents. The directive and instructive parent style of communication was adult centered with the parent controlling the communication interaction through commands and test questions. Following remediation, the directive parents' style changed toward a less directive and more elicitive style. The instructive parents were least likely to change verbal style following remediation. The single instructive parent who changed style following remediation also became more elicitive. The parents' verbal style changed toward a less directive more elicitative style. This may be due to emphasis in the parent remediation program on following the child's lead in communicative interaction.

The results of this study, which found parental verbal style changed following remediation, were not consistent with Tiegerman and Superstein (1984) and Bromwich (1981). They commented that parental verbal style did not change following a parental remediation program, though neither study operationally defined style. Perhaps their definition of style differed from the definition in this study, and that accounted for the different findings.

In summary, the eight parents who changed verbal style following remediation generally became less directive and more facilitative. This may be due to the emphasis placed on following the child's communication lead in the parent remediation program.
Language Facilitators

The language facilitator most frequently used both prior to and following remediation was parallel talk. The occurrence of parallel talk ranged from twice to 30 times as often as other language facilitators. The author speculated parallel talk was the language facilitator used most frequently because unlike expansion it did not require child communication, and as the children were language-disordered, verbal communication was often limited. This does not entirely explain the predominance of parallel talk, as neither encoding or labelling require a verbal communication. The children in this study expressive language was generally in the 12 to 24 month range. Lombardia and Greenbaum (1983) found the language facilitators most frequently used by parents when speaking to their two-year-old children were parallel talk and expansion, with expansion and parallel talk being used in the same proportions. Conti-Ramsden and Friel-Patti (1983) found language-disordered children initiated significantly less dialogue than did their normally developing counterparts matched for mean length of utterance. This may partially explain why parents of normally developing children use more expansion which requires a child to verbally communicate. The results of the current study may differ from Lombardia's and Greenbaum's (1983) because the children were language-disordered and did not have the linguistic skills of the children in Lombardia and Greenbaum's (1983) study. As previously noted, following remediation parallel talk continued to be used far more frequently than the other language facilitators measured. Perhaps because many of the children continued to demonstrate a language-disorder the parents continued to use parallel talk which did not require
a verbal communication by the child. In addition, the parent remediation program encouraged the parents to talk to their children during daily activities, though expansion and encoding were also emphasized. In addition, the parents may have found it easier to increase an already frequent behavior rather than a low occurring behavior or establishing a new behavior.

Tieger and Superstein (1984) found following their parent remediation program, the only change parents demonstrated in speaking to their children was an increase in utterances that were semantically related to the child's utterance. They did not specifically investigate use of the language facilitators studied in the current study. Perhaps an increase in parental utterances semantically related to their child's utterances would be analogous to parallel talk as it was related to the child's activity or utterance. Tiegerman and Superstein (1984) did not provide specific definitions of semantically related utterances, but if their semantically related utterances were parallel talk, the results of this study would generally be consistent with their results, and both suggested the greatest change made by parents was an increase in parallel talk. Perhaps parallel talk was the language facilitator easiest for parents to understand and use.

Language Inhibitors

Three types of language inhibitors were measured: negative comments, directives, and monologuing. Only six instances of negative comments were observed among three parents which were all directed towards the child's behavior, not speech, and all which occurred post remediation. Consequently the use of negative comments was not
considered to have an inhibitory effect for the subjects in the present study.

Of the four parents who used the greatest number of directives prior to remediation, two also used the greatest number of language facilitators. Following remediation, three of the four parents using the greatest number of directives were the same parents who had used the greatest number of directives prior to remediation. Two of these parents also used the greatest number of language facilitators post remediation. Parental use of many directives did not preclude the use of many language facilitators. This finding made the author question whether directives were language inhibitors if associated with high use of language facilitators. Cross (1978) and Kaye and Charney (1981) found children whose parents used fewer directives were more linguistically advanced than children whose parents used few directives. These researchers did not comment on whether these parents also had high use of the type of utterances that were defined by this study as language facilitators. The results of this study do not support Kaye and Charney (1981) and Cross (1978) contention that directives have an inhibitory effect on child language development. Perhaps if high use of directives were not associated with high use of facilitators they would have an inhibitory effect.

Parents changed verbal style following remediation though they tended to continue using many directives if they used many prior to remediation. Again, as with use of language facilitators, there were individual exceptions. A parent who was one of the four parents using the greatest number of directives prior to remediation was one of the
parents using fewest directives post remediation. Monologuing will be discussed in the section that explores the relationship between parent language and child language.

In summary, in order to answer the question did parents change their linguistic system following remediation the individual components, verbal style, use of language facilitators and language inhibitors, were examined. Each component required a separate answer. With the exception of the instructive style parents tended to change their style in the direction of less directive to more elicitative and facilitative. A general trend existed for parents to increase the number of language facilitators with parallel talk being the most frequently employed. In addition, there was a general trend for parents using many language facilitators prior to remediation to continue using many facilitators following remediation. This general trend was seen in parents' use of directives. Other studies have not commented on this pattern other than to note parental style was difficult to change (Tiegerman and Superstein, 1984; Bromwich, 1981). The results of this study suggest parental verbal style was amenable to change with the exception of frequency of use of directives and language facilitators.

Childrens' Linguistic Skills

The four children who demonstrated the greatest linguistic improvement following remediation were the same children who developed the use of pragmatic and semantic controls, suggesting maturation played a part in the linguistic improvement. Though these four children used utterances in the targeted categories more frequently than they did the
controls, suggesting intervention also influenced childrens' linguistic improvement. Another four children demonstrated some improvement though not as dramatic as the most improved children. Specifically, improvement was seen in an increase in semantic categories used. Three of these children did not use the pragmatic and semantic controls following remediation. One child used the semantic control but not pragmatic control. This finding suggested for the three children who did not develop use of the controls the linguistic gains made could be attributed to remediation. Three children made no linguistic improvement. Prior studies examining changes in childrens' linguistic systems following parent remediation did not use controls (Hornby and Jenson, 1984; Chelsedine and McConkey and Scherer and Olswang, 1984). Other studies did not measure changes in the childrens' linguistic system following remediation (Tiegerman and Superstein, 1984 and Carpenter and Augustine, 1973). Due to these factors, the results on childrens' linguistic change cannot be compared to the findings of other studies.

The children who demonstrated the greatest improvement following remediation used a greater number of pragmatic and semantic categories prior to remediation. There were no differences in receptive abilities or mean length of utterance between the most improved children and the other children. The children demonstrating the greatest improvement made gains in mean length of utterance, number of pragmatic functions and semantic categories used. While the four other children who demonstrated linguistic growth made change primarily in an increased number of pragmatic functions and semantic categories used, and not in mean length of utterance. The results of previous studies did not validate
or contradict these findings.

Relationship Between Parents' Socioeconomic Status and Childrens' Language

The relationship between parents' socioeconomic status and improvement in child language will be discussed first. Socioeconomic status was one parent factor that appeared to related to the childrens' linguistic gains. Children of lower socioeconomic status made less linguistic improvement than did children of middle socioeconomic status. The four children demonstrating the greatest linguistic gains had parents of middle socioeconomic status, and the three children who did not demonstrate any change had parents of lower socioeconomic status. For the other four children who demonstrated some linguistic improvement but not to the degree of the most improved group, two parents were of middle socioeconomic status, and two parents were of lower socioeconomic status. Other studies have found parents of lower socioeconomic status were less verbal than their middle class counterparts (Bee et al, 1969; Kilbride et al, 1977, and Farran and Ramey, 1980).

Though socioeconomic status appeared to be one factor affecting the degree of linguistic improvement made by the child it did not necessarily relate to the parents' use of language facilitators. Of the four parents using the greatest number of language facilitators, both prior to and following remediation, two were of middle socioeconomic status, and two were of lower socioeconomic status. Of the four parents using the least language facilitators prior to remediation, two were of middle socioeconomic status, and two were of lower socioeconomic status. Three parents of lower socioeconomic status and one parent of middle
socioeconomic status demonstrated the greatest increase in use of language facilitators following remediation. Two parents of middle socioeconomic status and two parents of lower socioeconomic status demonstrated the least improvement following remediation. In conclusion, although socioeconomic status appeared to be a factor in the degree of linguistic growth, seen in the children, it did not appear to affect the parents' ability to use language facilitators.

The Relationship Between Parental Language and Changes in Child Language

The relationship between changes in parents' linguistic systems and changes in children's linguistic systems will be discussed first for the children who demonstrated the greatest linguistic improvement, next for the children who demonstrated some improvement, and last for the children who demonstrated no linguistic improvement. None of the parents using the greatest number of language facilitators were parents of the children who demonstrated the greatest linguistic improvement. Following remediation one of the parents of the most improved children was one of the parents demonstrating the greatest increase in language facilitators. Two parents demonstrated no change in use of language facilitators, and one parent decreased the use of language facilitators. The linguistic gains demonstrated by the most improved children were considered partially due to maturation rather than remediation. These children also demonstrated more advanced pragmatic and semantic skills prior to remediation than did the other children, perhaps signifying their readiness for language learning as compared to the other children. If this were the case, parental linguistic input would not be as
important to the language learning process as it would be to the other children. These results were not consistent with other studies examining the relationship between parent language and child language. Hornby and Jenson-Proctor (1984) and Chelsdine and McConkey (1979) found with a decrease in parents' questions and an increase in statements, an increase in the children's two and three-word utterances was seen. Their analysis of the parent child data, however, was not as detailed as the present study which may account for differing results.

Four other children also demonstrated linguistic gains, but not to the degree of the most improved children. Three of these children did not use either the semantic or pragmatic control, and one child used only the semantic control. Three of the four parents of these children were the parents using the greatest number of language facilitators post remediation. Two of these parents did not increase the number of language facilitators used, but were using many language facilitators previous to remediation. The fourth parent was one of the parents using the least language facilitators pre and post remediation. Her child developed use of the semantic control. For three of the four children who demonstrated some linguistic improvement there may have been a relationship between high use of language facilitators by the parents and child linguistic improvement.

None of the children demonstrating the least linguistic improvement had parents who used the fewest language facilitators. All three parents of the children demonstrating the least linguistic growth increased their use of language facilitators, though in one case minimally. Two of these parents were using the greatest number of language facilitators...
post remediation. Perhaps these children were not maturationally ready for further language learning, therefore their parents' linguistic input had no effect. If these children had been followed over a longer period of time changes in their linguistic system may have been seen.

In conclusion, the relationship between changes in the parental linguistic system and changes in the child's linguistic system appeared to be related to how maturationally ready the child was for language learning. For the children who demonstrated maturational readiness for language learning and had the greatest linguistic improvement, a relationship between increased use of parental language facilitators and improvement in child language was not seen. For the children who improved, but to a lesser degree, a relationship seemed to exist between high use of language facilitators by parents and improvement in child language. Two of the three children who demonstrated no linguistic improvement had parents who used many language facilitators. Despite this, no improvement was seen in the children's linguistic abilities, perhaps because these children were not maturationally ready for further language learning. However, the state of knowledge in the field does not allow for determining whether a child was maturationally ready to learn. Further research is needed in this area.

Parental use of directives did not appear to have an inhibitory effect on child language development. This finding was not consistent with the findings of Kaye and Charney (1981) and Cross (1978) who found parents of advanced language learners used less directives than did parents of other children. These studies did not comment on whether high use of directives by parents were associated with high use of language
facilitators, as they were in the present study.

Following remediation, parents who increased monologuing scores were generally the parents of the children who demonstrated the least linguistic improvement. Parents who decreased monologuing scores were generally parents of children who demonstrated the greatest linguistic improvement. This finding would suggest high monologuing acted as an inhibitor to child language development. Another possible interpretation was parents' monologuing varied systematically in relationship to their child's language level. The parent may have taken many communicative turns when the child had very limited verbal communication. The parent decreased the number of communicative turns as the child's linguistic abilities improved, resulting in a lower monologuing score. The parents of the children who demonstrated little or no linguistic improvement may have had increased monologuing scores as a result of increasing parallel talk. Further research was needed to determine whether monologuing acted to inhibit child language development.

One parent of the most linguistically improved children demonstrated linguistic changes that were different from any other parent. She was the only parent to move from the group using the greatest number of language facilitators previous to remediation to the group using the fewest language facilitators following remediation. Her child demonstrated the greatest linguistic growth of all the children. Lombardia and Greenbaum (1983) results suggested parents' use of language facilitators decrease as the child's linguistic abilities increase until by the time the child is four years old the parents' use of language facilitators was practically nonexistent. The author speculated the decreases
in this parent's use of language facilitators were in response to her child's vastly improved language.

The relationship between childrens' linguistic improvement and parental use of language facilitators and inhibitors was not a clearly delineated one. There did not appear to be a relationship between parental use of language facilitators and improvement in child language for the children whose linguistic improvement was partially attributed to maturation. It may be these children were maturationaly ready to learn language and made rapid linguistic gains, therefore their parents may not see the need to use many language facilitators. In addition, if the childrens' linguistic growth was due primarily to maturation, you would not expect there to be a relationship between parents' use of language facilitators and linguistic growth in the children. Lombardia and Greenbaum (1983) found that as the child's linguistic system matured the parent decreased the use of language facilitators. The findings of this study were consistent with Lombardia and Greenbaum's findings.

Three childrens' linguistic improvement was thought to be attributed to remediation. The parents of two of these children demonstrated dramatic increases in use of language facilitators. Thus, for some children, linguistic improvement may be related to parents' use of language facilitators. Three children did not demonstrate any linguistic gains following remediation. The parents of these three children increased their use of language facilitators, two parents dramatically, and one parent minimally. The parents' increase use of language facilitators did not result in improved child language.

Parental use of high directives and high monologuing scores did not
appear to inhibit child language development. This was not consistent with Kaye and Charney (1981) and Cross (1978) who found parents of advanced language learners used less directives than did parents of other children. The present study found high use of directives and high use of language facilitators occurred together. Kaye and Charney (1981) and Cross (1976) did not comment on whether they found parents using many language facilitators as well as directives. Parents' monologuing scores decreased as the children's linguistic abilities improved because the children were taking more conversational turns. Parents of children who demonstrated little linguistic improvement increased their monologuing scores. This increase appeared to reflect the parents' increase in use of parallel talk. The author was not aware of other studies that looked at parental monologuing in a comparable way to this study.

Limitations of the Present Study and Further Suggestions for Research

The experimental population of this study consisted of eleven parent-child dyads. A larger population sample would be needed to determine whether, in the population at large the instructive verbal style only occurred in parents of lower socioeconomic status and the directive style only in parents of middle socioeconomic status. A study with a larger number of subjects would more clearly delineate the impact of a parent training program. Specifically, how do parents of different socioeconomic status respond to a parent training program, and how did parents using differing verbal styles respond differently. Did parents
using an instructive style usually demonstrate few changes, and parents using an intrusive or facilitative demonstrate the greatest increase in use of language facilitators. A study with a larger number of subjects would be better able to determine whether parental use of directives and high monologuing scores acted as inhibitors to child language development. Studying parent-child interaction over a greater period of time perhaps a year would aid in clearly delineating the relationship between parent language and child language. This would help assess the long range effects of parent remediation programs on parent-child verbal interaction.

This study did not explore what types of parent training programs were most effective. Essentially, no research has been done in this area. It would be clinically useful to know whether giving parents the theoretical background of language stimulation helps them become better language stimulators or whether the same effect results from observing parents interact with their children and giving them feedback about the interaction. In addition, whether individual instruction or group instruction are more effective in changing parental verbal behavior, and if the length of instruction period affects changes in parents' verbal behavior are unknown.

The results of this study suggested semantic and pragmatic abilities better predicted response to remediation as conducted in the present study, than did mean length of utterance or receptive language level. The children with the most sophisticated semantic and pragmatic abilities prior to remediation demonstrated the greatest language growth following remediation. A study with a greater experimental subject pool would
be needed to confirm these findings as a general pattern for language-disordered children.

The findings of the present study suggested maturation was a factor for the four children who demonstrated the greatest language growth. The language growth in three other children appeared to be related to remediation. A study with a larger number of subjects, and in which the number of targets was more equal to the number of controls would more clearly delineate whether remediation was effective in developing the use of the targets, or if maturation was the primary cause of improved language abilities.

The data for this study was obtained from two five-minute interaction samples for each parent-child dyad. A longer interactive sample or more frequent samples would provide more information about the child's linguistic abilities and the parents' use of language facilitators. A study in which interactive samples were taken more frequently over the course of the remediation period would provide more information on both the parent's and the child's learning curve.

This study was a retrospective one. Problems related to this were: unequal controls and targets, too many variables, and only two five-minute parent-child interaction samples, and the limited parent-child interactive samples. Selecting the controls previous to collecting the data would ensure the childrens' use of controls and targets were in equal proportions would better allow the investigator to determine whether maturation or remediation were responsible for the childrens' linguistic changes. Fewer number of variables would also allow the investigator to determine the effects of remediation, as conducted in this
study, on both the parent and child. More frequent parent-child interaction samples would provide a clearer picture of parent-child interaction and the effects of remediation on it.

Conclusions

The results of the present study tended to support the contention that parents make changes in their linguistic system following remediation (Chelsdine and McConkey, 1979; Hornby and Jenson-Proctor; Seitz and Marcus, 1974). Specifically, parents' verbal style tended to become less directive and more elicitative following remediation, with the exception of a verbal style seen in parents of lower socioeconomic status. In addition, parents generally increased their use of language facilitators, particularly parallel talk following remediation. Generally, parents who used many language facilitators prior to remediation used many language facilitators following remediation, and parents using few language facilitators prior to remediation used relatively few following remediation. There were, however, individual exceptions to this pattern.

The results of the present study did not support the contention that parental use of directives inhibit language development (Cross, 1978; Kaye and Charney, 1981). Parental directives did not appear to be related to children's linguistic improvement or lack of linguistic improvement rather, they appeared to be one aspect of parental style.

This study supported the contention that linguistic differences existed between parents of middle socioeconomic status, and parents of lower socioeconomic status (Bee et al, 1969; Farran and Ramey, 1980). Specifically, a more directive style was associated with parents of middle socioeconomic status and an instructive style with parents of
lower socioeconomic status.

The results of this study suggested language-disordered children were not a homogenous group in response to remediation (Chelsdine and McConkey, 1979, and Hornby and Jenson-Proctor, 1984). Specifically, some children made linguistic improvement due either to remediation or maturation, and some children did not demonstrate linguistic growth.

The results of this study did not clearly demonstrate a relationship between parental language and child language. High use of parental language facilitators did not necessarily result in improved child language. This may have been a result of the heterogeneous nature of children's language disorders for the subjects, specifically, in regards to the child's maturational readiness to learn language.

Clinically, this study suggests parents of differing socioeconomic status and verbal styles may need differing types of remediation, specifically, with parents using an instructive style who demonstrated little change following remediation. This study suggested directives were not language inhibitors. Consequently clinical time should not be spent attempting to reduce parents' use of directives. In addition, parents were more likely to increase language facilitators that were already frequently occurring. This suggested in increasing parents' use of language facilitators success would be easier achieved by initially attempting to increase the frequency of the language facilitators that were already present than to teach a non-existent behavior.

In determining children's intervention needs the results of this study suggested pragmatic and semantic abilities could be used to differentiate between children needing more intense intervention, as con-
ducted in this study, and children needing less intervention. As the results of the present study found the children with the highest semantic and pragmatic skills previous to remediation demonstrated dramatic linguistic growth in ten weeks. Mean length of utterance and receptive language abilities did not differentiate between the children demonstrating the greatest linguistic gains, and the other children, who needed further intervention.
Appendix A

Two Factor Index of Social Position

Socioeconomic status was assigned using two factors: education and occupation of the working parent. There were seven occupational levels ranging from graduate professional training to less than seven grades completed. To assign a socioeconomic level the adult's occupational level was multiplied by seven and added to the adult's educational level multiplied by four. This resulted in five socioeconomic levels: a score of 11 to 17 resulted in level I, the highest level; a score of 18 to 27 resulted in level II; a score 28 to 43 resulted in level III; a score of 44 to 60 resulted in level IV; and a score of 61 to 77 resulted in level V, the lowest level. For the purpose of the study levels II and III were considered middle socioeconomic status and levels IV and V were considered low socioeconomic status. Following are the categories used in Hollingshead (1965).

Two Factor Index of Social Position

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Executors and proprietors of concerns and major professionals</td>
<td>1. Graduate training</td>
</tr>
<tr>
<td>2. Managers and proprietors of medium concerns and minor professionals</td>
<td>2. Four years of college</td>
</tr>
<tr>
<td>3. Administrative personnel, owners, of small businesses and semi-professionals</td>
<td>3. Partial college training</td>
</tr>
<tr>
<td>Level</td>
<td>Education Level</td>
</tr>
<tr>
<td>------------------------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td>4. technicians, clerical and sales people</td>
<td>4. high school education</td>
</tr>
<tr>
<td>5. Skilled workers</td>
<td>5. partial high school</td>
</tr>
<tr>
<td>6. Semiskilled workers</td>
<td>6. junior high graduates</td>
</tr>
<tr>
<td>7. Unskilled workers</td>
<td>7. less than seven grades</td>
</tr>
</tbody>
</table>
Appendix B

Daily Lesson Format

**Theme:** Animals

**Group Activity:** Volunteers from zoo bring rabbits, guinea pigs, and ducks. Children pet animals.

**Free Play**

**Snack Preparation:** Peel oranges and bananas with children's help.

**Snack:** Eat fruit.

**Craft:** Glue ears, tails, and whiskers on picture of a rabbit.

**Story:** Our Animal Friends.
Appendix C

Books and tapes used in parent remediation group

Books

Tuscon: Communication Skill Builders.

Calgary: Alberta Education Corporation.

Nashville: Language Development Center.

Films

*Pay Attention When You Talk*
Produced by Language Development Center Nashville

*Focus on Childhood*
Produced by Alberta Education Corporation, Calgary.

*Longitudinal Study*
Inreel Program, Boulder

Rita Weiss
Appendix D

Coding of Parents' Verbal Behavior

The parents' speech was coded for verbal style, language facilitators, language inhibitors, mean length of utterance, monologuing, and parent dominance of the conversation. Specific measures were defined below.

Measures used to assign style

I. Directives

All utterances which were used to elicit and constrain the physical behavior of the listener. These included: requests "Would you pick up your coat?", suggestions, "Why don't you put dolly to bed?", complaints, "You spilled sand on mommy.", threats, "I'll spank you if you do that.", in addition to direct commands, "Don't do that."

II. Questions

All utterances that function to pass the communicative turn to the listeners and elicit a response from the hearer.

A. Test questions were questions the listener already had the answer to and functioned to instruct the listener or have the listener demonstrate his knowledge. "What color is the firetruck?".

B. Real questions functioned to seek information the speaker did not have. "What are you going to do now?"

C. Reflective questions functioned to pass the communicative turn to the listener by commenting on the listener's activity or by repeating or paraphrasing the listener's previous utterance. "You're driving the truck, aren't you?"
III. Prompts

Prompts were an attempt by the speaker to force a response from the hearer. To be coded as a prompt, an utterance must follow a previous utterance by the same speaker, must be meaningless in itself, and must elicit a response from the hearer. "Huh?"

IV. Attention Devices

Attention devices functioned to elicit attention, and could take the form of an imperative, "Look!", question, "See?", or a contingent query, "Guess what?"

V. Spontaneous Declaratives

Spontaneous declaratives were all declaratives that continued the conversation and were not directives, prompts, attention devices, or simply acknowledging the previous utterance.

Language Facilitators

1. Expansion: a parental utterance that expands the preceding child utterance to a more grammatically complete one.
2. Parallel talk: utterances by the parent that relate to action of the parent or child as they are occurring during joint attention or action.
3. Encoding: an utterance by the parent which encodes the meaning expressed nonverbally by the child.
4. Labelling: an utterance in which the parent provides a word for an agent or object in the environment which is not contingent upon a previously asked question or a verbal or nonverbal cue.
Language Inhibitors

1. Negative comments: an utterance that comments negatively about the child's actions or utterances.
2. Directives: an utterance by the parent that functions to elicit or constrain the physical behavior of the child.
3. Parental dominance of the conversation: the number of parent utterances per conversational turn score.

Coding of Children's Verbal Behavior

Semantic Coding System

1. Existence: to point out an object or person (therapy goal).
2. Recurrence: to request or comment on the recurrence of an action or object (therapy goal).
3. Nonexistence: to comment on the disappearance of an object which had existed in context or to comment on nonexistence where existence had been expected. (therapy goal).
4. Action: to request or comment on the action of an object or person (therapy goal).
5. Location: to comment on the spatial location (therapy goal).
6. Possession: to comment on possession of an object (therapy goal).
7. Attribution: to comment on a particular attribute of an object or person (control).

Pragmatic Coding System

1. Comment on action: a verbal or nonverbal behavior that appears to call the listener's attention to the movement of an object rather than
the object (therapy goal).
2. Comment on object: a verbal or nonverbal intentional behavior that appears to call the listener's attention to an object identified by the child (therapy goal).
3. Protesting: verbal or nonverbal disapproval of the speaker's action or utterance (therapy goal).
4. Request for object: an intentional verbal or nonverbal behavior that directs the listener to provide the child with an object (therapy goal).
5. Request for information: verbal or nonverbal intentional behavior that directs the listener to provide information on an object, action, or location (control).
6. Answering: a verbal response to a request for information that is semantically appropriate.
7. Acknowledging: a verbal or nonverbal response providing notice that a gesture or utterance was received.
8. Request for action: an intentional verbal or nonverbal behavior that directs the listener to move an object. The child's interest appears to be in the movement rather than the object per se (therapy goal).
Appendix E

Computing Mean Length of Utterance

Mean length of utterance was computed for the parents and children using a modification of Brown's rules (Miller, 1981). To determine mean length of utterance, morphemes were counted. Single words as well as inflections that conveyed meaning such as possessive (s), plural (s), third person singular (s), regular past tense (ed), and present progressive (ing) were considered to be single morphemes. All compound words, proper names, and ritualized reduplication were counted as single words, for example, allgone, bye bye, and quack quack. Fillers such as oh and um were not counted. The number of morphemes were divided by the number of utterances to obtain mean length of utterance.
### Appendix F

**Coding Abbreviations**

The following were the abbreviations used when coding the transcript:

<table>
<thead>
<tr>
<th>Conversational Measures</th>
<th>Abbreviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>directives</td>
<td>dir</td>
</tr>
<tr>
<td>test question</td>
<td>test ?</td>
</tr>
<tr>
<td>real question</td>
<td>real ?</td>
</tr>
<tr>
<td>reflective question</td>
<td>ref ?</td>
</tr>
<tr>
<td>Prompts</td>
<td>pro</td>
</tr>
<tr>
<td>attention devices</td>
<td>att. dev.</td>
</tr>
<tr>
<td>spontaneous declaratives</td>
<td>spo dec</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Language Facilitators/Inhibitors</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Parallel talk</td>
<td>Par talk</td>
</tr>
<tr>
<td>Encoding</td>
<td>enc</td>
</tr>
<tr>
<td>Labelling</td>
<td>lab</td>
</tr>
<tr>
<td>expansion</td>
<td>exp</td>
</tr>
<tr>
<td>dir</td>
<td>dir</td>
</tr>
<tr>
<td>negative comments</td>
<td>neg com</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semantic Categories</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>existence</td>
<td>exi</td>
</tr>
<tr>
<td>nonexistence</td>
<td>non</td>
</tr>
<tr>
<td>reoccurrence</td>
<td>reo</td>
</tr>
<tr>
<td>possession</td>
<td>pos</td>
</tr>
<tr>
<td>rejection</td>
<td>rej</td>
</tr>
</tbody>
</table>
action
location
attribution
state

**Pragmatic Functions**

comment on object
comment on action
request object
request action
request information
answer
acknowledge
protest

**Parent Communication**

there we go, sit down now (dir)
look at this one (pro)
there's a little one and a big one
(par talk) (spon dec)
look what we have here (pro)
a rake (label) (spon dec)
pour the sand (spon dec) (par talk)
that's full (spon dec) (par talk)
you want that one (encode) (spon dec)
does Laura have a small one (test?)

**Child Communication**

me rake (com act) (act)
more (com obj) (reo)

**Abbreviations**

com obj
com act
req obj
req act
req inf
ans
ack
pro

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what's that for?
(exp) (par talk)
you're pouring it out, aren't you? (ref?)
(par talk)
## Appendix G

### Reliability

Parents

<table>
<thead>
<tr>
<th>Coding Verbal Behavior</th>
<th>Agree</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>Post</td>
</tr>
<tr>
<td>Real Questions</td>
<td>6/6 = 100%</td>
<td>7/7 = 100%</td>
</tr>
<tr>
<td>Test Questions</td>
<td>12/7 = 92%</td>
<td>7/7 = 100%</td>
</tr>
<tr>
<td>Reflective Questions</td>
<td>11/7 = 100%</td>
<td>12/7 = 100%</td>
</tr>
<tr>
<td>Spontaneous Declarative</td>
<td>46/60 = 77%</td>
<td>72/82 = 90%</td>
</tr>
<tr>
<td>Parallel Talk</td>
<td>62/73 = 85%</td>
<td>90/104 = 87%</td>
</tr>
<tr>
<td>Labelling</td>
<td>4/5 = 80%</td>
<td>3/4 = 75%</td>
</tr>
<tr>
<td>Encoding</td>
<td>8/9 = 89%</td>
<td>12/13 = 92%</td>
</tr>
<tr>
<td>Expansion</td>
<td>6/10 = 60%</td>
<td>10/12 = 84%</td>
</tr>
<tr>
<td>Directives</td>
<td>31/36 = 86%</td>
<td>10/16 = 63%</td>
</tr>
<tr>
<td>Negative Comments</td>
<td>0/6 = 100%</td>
<td>0/6 = 0%</td>
</tr>
<tr>
<td>Existence</td>
<td>3/3 = 100%</td>
<td>6/6 = 100%</td>
</tr>
<tr>
<td>Nonexistence</td>
<td>1/1 = 100%</td>
<td>3/3 = 100%</td>
</tr>
<tr>
<td>Reoccurrence</td>
<td>0/2 = 100%</td>
<td>0/2 = 0%</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
<th>Percentage</th>
<th>Value</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
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<td>Location</td>
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<td>100%</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Action</td>
<td>9/10</td>
<td>90%</td>
<td>1/3</td>
<td>33%</td>
</tr>
<tr>
<td>Attribution</td>
<td>3/4</td>
<td>75%</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Comment Object</td>
<td>8/8</td>
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<td>12/14</td>
<td>86%</td>
</tr>
<tr>
<td>Request Object</td>
<td>1/2</td>
<td>50%</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Request Information</td>
<td>2/2</td>
<td>100%</td>
<td>0</td>
<td>0%</td>
</tr>
</tbody>
</table>
Appendix H

Obtaining Average Scores

Average pragmatic and semantic scores for individual children were obtained by totalling the number of utterances in each semantic category and pragmatic functions and dividing by the total number of categories or functions. Average scores for the most improved and least improved children were obtained by adding the total number of pragmatic functions or semantic categories used by the children and dividing by the number of children in the most improved group.

The total average scores for the most improved, least improved and other children was computed by totalling the number of semantic categories or pragmatic used by each individual child within the group and dividing by the number of children in the group.


