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The relationship between maternal verbal input and linguistic competency level of pre-school children

Jan Carpenter Key

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THE RELATIONSHIP BETWEEN MATERNAL VERBAL INPUT AND LINGUISTIC COMPETENCY LEVEL OF PRE-SCHOOL CHILDREN

by

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B.A., University of Iowa, 1974

Presented in partial fulfillment of the requirements for the degree of Master of Arts

UNIVERSITY OF MONTANA

1976

Approved by:

[Signatures]

Chairman, Board of examiners

Dean, Graduate School

Date Aug 25, 1976

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The relationship between maternal verbal input and the linguistic abilities of 4-year-old children was examined. Samples of mothers' language addressed to five pre-school language-deficient children were compared with samples of mothers' language addressed to five pre-school children of advanced-linguistic competency. Measurements of maternal mean length of utterance, total number of words spoken, type-token ratio, sentence types, and communicative intent were compared for the two groups.

Results indicated that the maternal speech addressed to language-deficient subjects was shorter in length, more grammatically incomplete, more redundant, and less informative than the maternal speech addressed to language-advanced subjects.

Because the child's age had been eliminated as a factor and because the major difference between the two groups of children was in language skill, it was concluded that the difference in the linguistic productions between mothers of the two language groups were determined predominately by the level of the child's linguistic abilities.
ACKNOWLEDGEMENTS

To the staff of the Angel Day Care Center, I would like to express my thanks for their cooperation and assistance in providing me with the subjects for the study.

I would like to extend my deepest appreciation to Dr. Evan Jordan for his time, guidance, and encouragement in helping me with this work.

And a special thanks is given to my husband, Marc, for his never-ending patience, and the paramount role he played in seeing me through to the completion of this study.
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CHAPTER 1
INTRODUCTION

The study of language acquisition includes a wide range of theoretical views on the underlying accounting for the rapid development of verbal communication in young children. However, many modern-day theorists of language acquisition emphasize the interplay between an innate knowledge of linguistic structure and the socio-linguistic environment (Ervin-Tripp, 1973). According to Chomsky (1965), a language acquisition device (LAD) receives primary linguistic information in the form of speech input from speakers in the environment, and by the use of complex and little-understood intellectual equipment, the LAD constructs and processes the grammar of the input language. It is thought that innate biological foundations play a large role in the earliest formative stages of language development, but as a child matures, social and verbal interaction with important people in his environment becomes an important factor in the child's mastery of language (Blount, 1972).

The speech young people hear is their only acquired source of information about the language they are to learn (Snow, 1972). Because a child learns to talk from
people in his environment, parents are typically the most influential speecha and language models during the pre-
school years (Van Riper, 1972). A recent study indicated that mothers are much more active than fathers in their
children's language environments (Friedlander, 1972). The father's limited contributions appeared to reflect their
absence during major portions of the child's waking day. It was suggested that the largest percentage of language
stimulation in an ordinary American nuclear family comes from the mother.

The results of one study indicate that the importance of parental behavior in the creation of the child's early
language environment cannot be over-emphasized. Five of the seventeen factors studies by these investigators that
were thought to be associated in some way with the level of verbal ability attained by children concerned attitudes
and behaviors of the parent (Jones, 1972).

Developmental psychologists have often assumed that children are exposed to typical adult utterances, complete
with all the disfluencies, revisions, inconsistencies, and complexities which are common in adults' speech to other
adults (McNeill, 1970). However, it has been found that adult child-directed speech is qualitatively and quantita-
tively different from the type of language adults use among themselves (Broen, 1972). Findings of recent studies
indicate that middle-class children hear a relatively
consistent, organized, simplified, and redundant set of 
adult utterances (Broen, 1972; Snow, 1972).

This simplification may be a universal phenomenon. 
In listening to an Estonian mother, Slobin (1971), with 
no knowledge of the Estonian language, found that the 
mother's speech to another adult sounded like a 
continuous, rapid flow without a cue of sentence, word, 
or phoneme boundaries; however, speech to the child fell 
into clear-cut recognizable short sentences.

Remick (1973), found that when speaking to their 
children, mothers used a restricted vocabulary, spoke in 
utterances of brief length, used pronouns differentially, 
spoke in a high median fundamental frequency, and 
restricted their verbal tense usage. Phillips (1973), 
concluded that there are differences in syntax, vocabu­
lary, and intonation between speech addressed to adults 
and speech addressed to children. It has also been shown 
that adult-to child speech is highly repetitive; up to 
34% of parental utterances to children under two years 
consisted of self-repetitions (Drach, 1969).

Significant correlations were found between the 
frequency of parental "informative" talk, parental 
question answering, and the language comprehension scores 
of the children. This finding was interpreted by the 
experimenter to be evidence of the effect of the verbal 
Another characteristic of adult responses to children is a tendency to repeat the child's utterances, filling in what has been left out by the child. Such responses are typically called expansions (Brown, 1964). Expansions typically use the child's words in the child's order, but also include new words to make an expanded, grammatically correct sentence (Nelson, 1973). Brown (1964) found that two (of three) children who acquired language most quickly had mothers who used expansions less frequently than the mother of the child whose language development was slowest. Perhaps this indicates that expansions do not aid grammatical development. Blount (1972) thought that the effectiveness of utilizing expansions as a tutorial technique had yet to be substantiated.

Whatever the specific changes in the child-directed utterances of adults, it seems clear that, in general, the changes are directed toward grammatical and semantic simplicity. Thus the surface structure, which the child hears, is related by a smaller number of steps to its underlying deep structure than is the case with adult-directed utterances. In simpler utterances, the child has fewer minor language units to process, so it becomes less difficult to search for the major meaningful units in the sentence (Snow, 1972). Drach (1969) suggests that the mother doesn't just simplify her speech as she talks with children but also changes the type of form of the
sentences generated. This suggests the idea that children hear a special or base language form in the speech samples addressed to them.

Phillips (1970), found that mothers' speech addressed to 28 month-old boys was more complex than speech addressed to 18 month-old boys. Broen (1972), showed that when speaking to their children aged 18 to 26 months, mothers utilized a slower rate, fewer disfluencies, and a lower total number of different words in a given sample in comparison to utterances directed to their children aged 45 to 94 months. Snow (1972), found that maternal repetitions were about four times as frequent for 2-year-olds as for 10-year-olds. Maternal speech input appears to be adjusted when the mother decides that the child is able to comprehend more complex syntactic and semantic distinctions.

**SUMMARY OF LITERATURE**

The literature indicates that maternal language directed to children is qualitatively and quantitatively less complex than the language the mothers utilize with other adults. Children hear a relatively consistent, organized, and redundant set of utterances. Studies further show that as children advance in age the language addressed to them by their mothers becomes increasingly complex. When speaking to younger children, maternal utterances are simplified in diversity of vocabulary, total number of words spoken, and length of the average utterance in comparison to utterances spoken to older children. The
interaction of maternal linguistic environment with child language development was further indicated when a high frequency of parental "informative" talk and high language comprehension of scores of children were significantly correlated.

STATEMENT OF PURPOSE

In the literature concerning mother-child verbal interaction, there has been the frequent conclusion that the mothers' selection of language input appears to be influenced by the child's linguistic level. However, because the literature has focused on comparisons of children of different age groups, it is unclear whether the changes in parent-child language pattern relationships are dependent upon cues from the general level of children's language competency, or whether they are dependent upon chronological-age expectations or cues inherent in the relative sophistication of the child's non-verbal behavior. In the normal child, all three factors advance simultaneously. The mother may depend on verbal feedback from the child to determine the level of speech she addresses to him (Blount, 1972), or the child's chronological age and/or his non-verbal behavior patterns may have influenced the mothers' language selection. By studying children of the same chronological age who function within normal limits motorically and with respect to their non-verbal social and intellectual behavior, but
who differ significantly in language competency, the contribution of age differences as determiners of the mothers' language behavior could be ruled out. With the ruling our of cues resident in age-related variables, there is some consequent strengthening of the inferential case for oral language as the source of cues to which mothers respond in adjusting their child-directed language behavior.

In addition to the child's influence on the mothers' speech, it has also been suggested that maternal usage of expansions, repetitions, and informative talk when speaking to children, enhances the child's exposure, understanding, and capacity to process his linguistic environment, and thus, may act to facilitate language development. One would expect to find maternal remarks of this kind to be associated with significant acceleration of language skill in children.

In this study, samples of mothers' language addressed to 4-year-old language-deficient children were compared with mothers' language addressed to 4-year-old children of advanced linguistic competency. Measurements of mean length of utterance, total number of words spoken, type-token-ratio, sentence type (including repetitions and expansions), and communicative intent were compared for the two groups and differences between the groups were analyzed with an appropriate statistical test.
If verbal-interaction differences occurred between the two groups of subjects this was considered supportive evidence that child language differences influenced mother-child linguistic interaction in children of the same age.

If child language behavior is the source of cues influencing maternal language behavior, then one of the results of the present experiment would be that the maternal child-addressed speech would be more syntactically and semantically complex in the linguistically advanced group than in the language-deficient group; it was this result which was anticipated.

If maternal revisions, expansions, and informative talk facilitate children's language development, one would expect mothers of the children with advanced language skills to use more of these facilitating devices in their child-directed utterances than the mothers of the language-deficient group. It was hypothesized that this would be one of the findings of this study.
CHAPTER 2

METHOD

The purpose of this study was examination of the relationship between maternal verbal input and the linguistic abilities of children with deficient and advanced language skills when age differences among the children were eliminated. The language of mothers of five 4-year-old pre-school children with deficient-language skills was compared to that of mothers of five similarly aged children with advanced language skills.

Subjects

Forth-three children attending a local day care center were administered the Peabody Picture Vocabulary Test, Form A (Dunn, 1959), and the Auditory Association and Grammatical Closure subtests of the Illinois Test of Psycholinguistic Abilities (Kirk, 1968). Ten Subjects were placed into either language-deficient or language-advanced groups on the basis of the selected pre-test scores. Broen (1972), used these criteria to identify the language competency of children for purposes of a similar study. Five of the six children who performed between the 32nd and 12th percentiles of their age group on the selected pre-tests were chosen as the subjects in the language-deficient group. Five of the eighteen children
who performed within the 78th and 98th percentiles in their age group norms were chosen as the subjects for the group with above-normal language skills. These cut-offs for subject selection were utilized to assure important differences in the linguistic performances of the two groups of children.

In order to minimize variables other than language which could contribute to the reaction of the mother to her child, and thus, the level of maternal verbal interaction, the two groups were matched on the basis of the following factors: chronological age within 2 months, because linguistic performance normally advances as a child increases in age; sex, because consistent differences in sound production skills between children of different sexes have been found and there is some evidence that mothers react differently to boys than to girls; and race and father's occupational level as determined by the Minnesota Scale for Parental Occupation (Patterson, 1953), because a number of subcultural and ethnic group variables, in addition to social stratification, have been found to account for linguistic variations in maternal verbalizations (Williams and Cairns, 1973).

To further minimize the effects of factors which could contribute to maternal reactions and consequent verbal interactions, only children meeting the following criteria were selected as subjects for the study: hearing within 20 dB HL ANSI at 500, 1000, 2000, 4000, and 6000 Hz.
bilaterally (Anderson, 1972), no obvious physical disabilities, no apparent structural or functional oral deviations determined by an oral examination, no prior language therapy, not from a bilingual home, not a twin, not classified as a stutterer, and not considered by the day care center instructor or the examiner to have significant intellectual, social, or motoric deficits. In addition, the children could not have been separated from their mothers for a consecutive time period of one month or more, and both parents had to reside in the home with the children.

**Procedures**

After greeting the subjects upon their arrival at the Speech and Hearing Clinic, the experimenter informed the mother, in advance of the mother-child session, that she and her child would be observed and the experimenter was interested in studying how mothers and children interacted (or dealt) with one another. By utilizing such an abstract statement the experimenter did not misinform the mothers and such information was less likely to influence their behavior than would the specific statement that the language utilized by them or their child was of primary importance in the study. The examiner answered any interrogation for specific detail by telling the mother that all of her questions would be fully answered after the interaction so as not to influence subjects' behavior.
prior to the study.

The mother, child, and experimenter then entered the designated experimental room; a clinical therapy room with a one-way observational mirror. The room contained a child-sized table and three chairs, a toy sink and stove, a wooden toy truck, two small dolls, a box of one-inch wooden cubes of assorted colors, "Noah's Ark", and an assortment of miniature plastic animals. The assortment of toys in the room were brought to the attention of the mother and child and they were told that they were free to make use of everything in the room until the experimenter returned to the room approximately five minutes later. The experimenter then left the room and observed the mother and child at play from the adjoining observation room. This time for free-play was provided to give the mother and child time to familiarize themselves with the new surroundings.

At the end of the five minute time period, the experimenter returned to the experimental room with a picture poser illustrating numerous activities taking place in a city park. (Grough, et al, 1970). The experimenter showed the poster to the mother and child. She then said the following to the mother: "I'd like you to sit at the table and talk to your child about this poster. When you're finished or have spent about five minutes talking about the picture please feel free to play with the toys or anything else in the room that
interests you. I'll be back in approximately fifteen minutes." The experimenter then left the room and observed the mother and child at play from the adjoining observation room. The entire mother-child interaction was tape recorded.

After fifteen minutes, the experimenter returned to the mother-child dyad and informed them that the activity has ended. At the time the mother was interviewed to determine the number of children in the family, the ordinal-sibling position of the child participating in the study, and the highest educational level which the mother had attained.

The mother was then informed as to the exact role of her participation in the mother-child interaction. The possibility of becoming self-conscious and less spontaneous with prior knowledge of her contribution to the study was offered as an explanation for not having previously informed her of the experimenter's specific interests. The examiner answered any questions the subjects posed concerning the study and their participation in it. The mother was informed that upon completion of this study, results would be made available to her upon request.

**Measurements**

The experimenter was interested in determining whether a structured situation yielded information consistent with
a free-play situation about maternal verbal interaction. The first twenty utterances of the taped structured situation (picture poster) language sample and the first fifty utterances in the second free-play situation were transcribed. Definitions taken from Johnson, Darley, and Spriestersbach (1963), were used in determining what constitutes an utterance (Appendix 1). The transcribed utterances from the two samples were compared for mean length of utterance, total number of words spoken, and type-token ratios. Mean length of utterance was obtained by counting the number of morphemes in each utterance, totaling these numbers, and dividing by the number of utterances. The mean length of utterance is an excellent index of grammatical complexity because in almost every instance, when there is an increase in language complexity there is also an increase in number of morphemes. Rules taken from Brown (1973), were used for identifying separate morphemes (Appendix 2). Type-token ratio, a measure of vocabulary variability expressing the ratio of different words (types) to total words (tokens) in a given language sample, were computed to express quantitative differences between the language samples (Johnson, 1944; Fairbanks, 1944).

The data from the structured and free-play situations were compared between the two groups of subjects. If the two sets of measurements yielded group differences in the same direction, it attested to the generality or
representativeness of language samples taken from structured situations compared to free-play situations.

The mothers' transcribed free-play utterances were also classified according to the following sentence types adapted from Broen (1972), Blount (1972), and Muma (1971):

I. Interrogatorives

II. Declarative

A. Active - original, self-initiated statements

B. Imitation

1. simple imitation of child's previous utterance.

2. repetition of mother's previous, self-initiated utterance. The repetition was scored only if it occurred within three utterances of the original.

C. Expansion

1. expansion of child's previous utterance-the utterance was retained and syntactically or semantically completed.

2. expansion of mother's previous self-initiated utterance. An utterance was scored as an expansion when the mother syntactically or semantically completed, expanded, or paraphrased a previous self-initiated utterance.

III. Imperatives

IV. Grammatically incomplete

V. Single word utterances

A measure of communicative purposes was also undertaken. The frequency with which mothers made "informative remarks" to their children was measured in comparison to utterances of negative control, positive control, offering
the child a choice, expressions of pleasure and affection, expressions of displeasure and anger, and "supervisory talk," (Tizard, 1972). "Informative remarks" were defined as those that were likely to further the child's language development, i.e., telling the child something about present, past, or future events or activities, giving an opinion, naming objects, giving or explaining a piece of information, or expanding the child's previous utterance. Negative control were considered as instructions to terminate an activity. Instruction to initiate an activity were classified as positive control, impressions of pleasure and affection were considered as reinforcements and expressions of displeasure and anger were considered as punishment. "Supervisory talk" categorized the verbalizations used when the mother wished to respond to her child but had no real communication to make, i.e., meaningless comments, repetitions or confirmation of responses made by the child.

When analyzing the language samples, the order of utterances produced by any one mother was retained. The entire transcribed collection of intact maternal language samples, however, was randomly ordered by an independent observer before the samples were analyzed by the experimenter.

Because of the subjective judgmental nature of some of the measurements, an independent observer also scored sentence types and communicative intent and the measurements
obtained were compared with those of the examiner's to determine inter-observer reliability correlations. Measurements of total number of utterances spoken, mean length of utterance, and type-token ratio required only simple counting, so this computation was solely by the experimenter.
CHAPTER 3
RESULTS

Subjects

Four-year-old children attending a local day care center were administered the Peabody Vocabulary Test, the Auditory Association and the Grammatical Closure subtests of the Illinois Test of Psycholinguistic Abilities, and an audiometric screening test presented at 20 dB HL ANSI at 500, 1000, 2000, 4000, and 6000 Hz.

All subjects chosen passed the audiometric screening test at all frequencies presented.

Ten subjects were assigned to one of two experimental groups on the basis of scores received on the above-mentioned language tests. Results of these tests are summarized in Table 1. The five language-advanced subjects scored at or above the 87th percentile on the Peabody Picture Vocabulary Test, the 89th percentile on the Grammatical Closure subtest, and the 78th percentile on the Auditory Association subtest. The five language-deficient subjects scored from the 14th to the 30th percentile on the Peabody Picture Vocabulary Test, from the 12th to the 32nd percentile on the Grammatical Closure subtest and from the 12th to the 16th percentile on the Auditory Association subtest. The nonparametric Mann-Witney U test was used to determine significance of group
TABLE 1

Comparison of Sex, Age, and Screening Test Results Between Language-Advanced and Language-Deficient Children

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Sex</th>
<th>Age</th>
<th>PPVT</th>
<th>Auditory Association</th>
<th>Grammatical Closure</th>
</tr>
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<tbody>
<tr>
<td>Language-Advanced</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>M</td>
<td>4-8</td>
<td>87</td>
<td>93</td>
<td>89</td>
</tr>
<tr>
<td>2</td>
<td>M</td>
<td>4-9</td>
<td>96</td>
<td>89</td>
<td>98</td>
</tr>
<tr>
<td>3</td>
<td>M</td>
<td>4-9</td>
<td>93</td>
<td>93</td>
<td>96</td>
</tr>
<tr>
<td>4</td>
<td>F</td>
<td>4-6</td>
<td>97</td>
<td>89</td>
<td>93</td>
</tr>
<tr>
<td>5</td>
<td>F</td>
<td>4-11</td>
<td>91</td>
<td>78</td>
<td>97</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td>4-9 1/2</td>
<td>92.8</td>
<td>88.4</td>
<td>94.6</td>
</tr>
<tr>
<td>SD</td>
<td></td>
<td>1.8 mos.</td>
<td>3.6</td>
<td>5.5</td>
<td>3.3</td>
</tr>
<tr>
<td>Language-Deficient</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>M</td>
<td>4-6</td>
<td>18</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>2</td>
<td>M</td>
<td>4-8</td>
<td>27</td>
<td>16</td>
<td>12</td>
</tr>
<tr>
<td>3</td>
<td>M</td>
<td>4-10</td>
<td>14</td>
<td>16</td>
<td>27</td>
</tr>
<tr>
<td>4</td>
<td>F</td>
<td>4-5</td>
<td>24</td>
<td>16</td>
<td>32</td>
</tr>
<tr>
<td>5</td>
<td>F</td>
<td>4-8</td>
<td>30</td>
<td>12</td>
<td>16</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td>4-9</td>
<td>22.6</td>
<td>14.4</td>
<td>19.8</td>
</tr>
<tr>
<td>SD</td>
<td></td>
<td>2.4 mos.</td>
<td>5.9</td>
<td>2.0</td>
<td>8.2</td>
</tr>
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</table>
differences because of the wide dispersion of variability between the two groups of subjects. (Seigel, 1956) Differences between groups where p .05 were considered significant. The three language subtest scores of the two groups of subjects were significantly different at the .004 level of confidence.

Groups were matched for sex and age of the participating children. These data are shown in Table 1. Similar matching for the fathers; occupational level is displayed in Table 2. A summary of these data indicates that each language group consisted of 3 boys and 2 girls. The mean age was 4 years and 9 1/2 months for the children in the linguistically-advanced group and 4 years and 9 months for the children in the language-deficient group. A summary of the fathers' occupational levels indicates that no significant difference existed between the fathers' occupational level of the two groups of subjects. In general, the data in Tables 1 and 2 indicate that the two groups were highly similar with respect to the matching variables.

Additional information concerning number of children in the family, ordinal position in the family of the participating child, mothers' occupational status, and mothers' educational level were obtained from the mothers upon completion of the mother-child interaction. This information is summarized in Table 3. Though no attempt was made to match subjects for these variables, inspection
### TABLE 2

Comparison of Father's Occupational Status Between Language-Advanced and Language-Deficient Children

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Father's Occupation</th>
<th>Weighted Score$^a$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Language-Advanced</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>University professor</td>
<td>15</td>
</tr>
<tr>
<td>2</td>
<td>Custodian</td>
<td>9</td>
</tr>
<tr>
<td>3</td>
<td>High School Teacher</td>
<td>14</td>
</tr>
<tr>
<td>4</td>
<td>Camera Shop Owner</td>
<td>13</td>
</tr>
<tr>
<td>5</td>
<td>Unemployed</td>
<td>7</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td>11.6</td>
</tr>
<tr>
<td>SD</td>
<td></td>
<td>3.2</td>
</tr>
<tr>
<td>Language-Deficient</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>High School Teacher</td>
<td>14</td>
</tr>
<tr>
<td>2</td>
<td>Computer Specialist</td>
<td>13</td>
</tr>
<tr>
<td>3</td>
<td>Lumber mill Worker</td>
<td>9</td>
</tr>
<tr>
<td>4</td>
<td>Carpenter</td>
<td>11</td>
</tr>
<tr>
<td>5</td>
<td>Master Mechanic</td>
<td>14</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td>12.2</td>
</tr>
<tr>
<td>SD</td>
<td></td>
<td>1.7</td>
</tr>
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</table>

### TABLE 3

Maternal and Family Characteristics of Study Participants

<table>
<thead>
<tr>
<th>Subjects</th>
<th># children</th>
<th>Ordinal Position of Child</th>
<th>Mother's Occupational Status</th>
<th>Mother's Educational Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Language-Advanced</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>oldest</td>
<td>Housewife</td>
<td>4 yr. college</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>--</td>
<td>Secretary (full time)</td>
<td>1 yr. college</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>--</td>
<td>Housewife</td>
<td>4 yr. college</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>oldest</td>
<td>Teacher (part time)</td>
<td>4 yr. college</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>--</td>
<td>Map Maker (part time)</td>
<td>3 yr. college</td>
</tr>
<tr>
<td>Language-Deficient</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>--</td>
<td>Housewife</td>
<td>High School</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>--</td>
<td>Graduate Student (full time)</td>
<td>5 yr. college</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>youngest</td>
<td>Dental Asst. (full time)</td>
<td>3 yr. college</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>--</td>
<td>Housewife</td>
<td>4 yr. college</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
<td>youngest</td>
<td>Saleswoman (part time)</td>
<td>1 yr. college</td>
</tr>
</tbody>
</table>
of Table 3 indicates that the groups of children came from highly similar families in terms of family constellation and proportion of mothers employed away from home full or part time. One difference that was possibly related to the language differences between the two groups concerned the two children in the language-deficient group from multi-child families who were youngest siblings as opposed to the two children in the linguistically-advanced group from multi-child families who were oldest siblings.

**Comparison Of Structured and Free-Play Situations**

Language samples from the twenty-utterance structured situation and the second free-play situation were compared for mean length of utterance, type-token ratio (TTR), and total number of words spoken to determine whether the two situations yielded similar information about maternal verbal interaction.

Results are summarized in Table 4 and show only slight differences in these measures between maternal remarks occurring during a structured task situation and remarks occurring during free-play except for type-token ratios (TTR), which are higher in the structured situation than in the free-play situation. The Direction and magnitude of TTR differences between the two situations, however, was the same for both subject groups. In advanced subjects the mean TTR decreased by 34 relative percentage points from the structured to free-play situation while in the deficient
### TABLE 4
Comparison of Utterances of Mothers of Language-Advanced and Language-Deficient Children for Sentence Complexity in Structured and Free-Play Situations

<table>
<thead>
<tr>
<th>Measure</th>
<th>Advanced</th>
<th>Deficient</th>
<th>Advanced</th>
<th>Deficient</th>
<th>Pdiff in gps</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X</td>
<td>SD</td>
<td>X</td>
<td>SD</td>
<td>Mdn</td>
</tr>
<tr>
<td>Mean length utterances:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(morphs)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Structured</td>
<td>8.1</td>
<td>1.3</td>
<td>4.8</td>
<td>0.2</td>
<td>8.4</td>
</tr>
<tr>
<td>Free-play</td>
<td>8.0</td>
<td>1.6</td>
<td>4.5</td>
<td>0.4</td>
<td>8.0</td>
</tr>
<tr>
<td>diff</td>
<td>0.1</td>
<td></td>
<td>0.3</td>
<td></td>
<td>0.4</td>
</tr>
<tr>
<td>Type token ratio:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Structured</td>
<td>54.8%</td>
<td>3.0</td>
<td>58.4%</td>
<td>5.0</td>
<td>55%</td>
</tr>
<tr>
<td>Free Play</td>
<td>41.8%</td>
<td>3.0</td>
<td>45.6%</td>
<td>4.4</td>
<td>42%</td>
</tr>
<tr>
<td>diff</td>
<td>13.0%</td>
<td></td>
<td>12.8%</td>
<td></td>
<td>13.0%</td>
</tr>
<tr>
<td>Total number of wds:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Structured</td>
<td>143.0</td>
<td>25.6</td>
<td>79.4</td>
<td>12.6</td>
<td>150.0</td>
</tr>
<tr>
<td>Free Play</td>
<td>142.6</td>
<td>29.0</td>
<td>80.8</td>
<td>6.2</td>
<td>149.2</td>
</tr>
<tr>
<td>diff</td>
<td>0.4</td>
<td></td>
<td>1.4</td>
<td></td>
<td>0.8</td>
</tr>
</tbody>
</table>
**TABLE 5**

Comparison of Maternal Sentence Type Production of Mothers of Language-Advanced and Mothers of Language-Deficient Children (measured in percentages).

<table>
<thead>
<tr>
<th>Measure</th>
<th>Advanced Mean (X)</th>
<th>Advanced SD</th>
<th>Deficient Mean (X)</th>
<th>Deficient SD</th>
<th>Advanced Mdn</th>
<th>Deficient Mdn</th>
<th>P diff. in gps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interrogatives</td>
<td>20.6 10.8</td>
<td>23.8 5.2</td>
<td>24 7.38</td>
<td>23 3.75</td>
<td>.579</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active-declarative</td>
<td>52.2 14.3</td>
<td>29.6 9.0</td>
<td>51 8.50</td>
<td>25 9.63</td>
<td>.016</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repetition of child's previous utterance</td>
<td>0.8 0.3</td>
<td>6.6 4.2</td>
<td>0 1.00</td>
<td>4 3.63</td>
<td>.008</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repetition of mother's previous utterance</td>
<td>1.8 1.4</td>
<td>1.6 1.0</td>
<td>1 2.00</td>
<td>2 0.75</td>
<td>.421</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expansion of child's previous utterance</td>
<td>0.4 0.4</td>
<td>2.8 2.4</td>
<td>0 0.25</td>
<td>2 2.25</td>
<td>.028</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expansion of mother's previous utterance</td>
<td>3.2 2.8</td>
<td>3.2 2.5</td>
<td>3 2.13</td>
<td>3 2.63</td>
<td>.210</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Imperative</td>
<td>10.2 3.4</td>
<td>8.0 3.7</td>
<td>8 3.38</td>
<td>7 3.88</td>
<td>.345</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grammatically Incomplete</td>
<td>3.8 2.0</td>
<td>13.2 4.5</td>
<td>4 2.13</td>
<td>13 3.90</td>
<td>.004</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single word Utterances</td>
<td>7.0 6.8</td>
<td>11.2 3.9</td>
<td>6 3.88</td>
<td>14 4.75</td>
<td>.155</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
subjects the mean TTR decreased by 32 relative percentage points.

**Sentence Complexity**

Measurements of mean length of utterance (MLU), TTR, and total number of words spoken were compared between language groups to assess grammatical complexity of maternal verbal input of language-advanced and language-deficient subjects.

Results are summarized in Table 4. As these indicate there were marked differences in the standard deviations between groups dictating the use of nonparametric statistics for evaluating group differences; the statistic used was the Mann-Whitney U test.

As shown in Table 4, the mean length of utterance (MLU), and total number of words spoken are significantly greater in the maternal utterances to the language-advanced group than in the maternal utterances to the language-deficient group. No significant differences existed between the two groups of subjects in the maternal TTR.

Mothers speaking to their linguistically advanced children used more words in longer utterances on the average than did mothers speaking to their language-deficient children.

**Sentence Type Productions**

The mothers' transcribed free-play utterances were
classified according to sentence types.

To determine inter-observer reliability, scoring was done independently by the examiner and an independent observer. The observers agreed on 94.4% of their judgments of utterance types. Analysis of the various sentence-types was based upon the mean of the two individual scorers' judgments.

The measures from the two groups of mothers were compared as to percentage of utterances occurring in each of the sentence-type categories. Results are summarized in Table 5 and show that mothers of the language-advanced group produced significantly more active-declarative sentences than the mothers of language-deficient children; mothers of the language-deficient group produced significantly more repetitions of the child's previous utterances, expansions of the child's previous utterances, and grammatically incomplete utterances than did mothers of the language-advanced group. Again, significance of difference was evaluated via the Mann-Whitney U test because of differences in group distributions.

No significant differences existed between the two groups of subjects in the maternal productions of the remaining sentence-type measurements.

Active-declarative sentences accounted for slightly over 1/2 of the utterances of mothers of language-advanced children but only about 1/3 of the maternal utterances to
the language-deficient group. This is related to the finding that mothers of the deficient-language group used a significantly greater number of grammatically incomplete utterances when speaking to their children than did the mothers of the advanced-language group. Grammatically incomplete productions accounted for 1/8 of the maternal utterances to the language-deficient group and only 1/25 of the maternal utterances to the language-advanced group.

Comparisons of the two language groups reveal that mothers of the language-deficient group utilized significantly more expansions and repetitions of the child's previous utterance than did the mothers of the advanced-language group. Maternal repetitions and expansions of the child's previous utterances composed approximately 1% of the language sampled in the advanced group and 7 1/2% of the language sampled in the deficient group. The children with less language skills were more often exposed to repetitions and expansions of their utterances than were the children with advanced language skills.

**Communicative Intent**

The maternal free-play language samples were classified according to the communicative intent of the utterances. The language-advanced and language-deficient subjects were compared for the percentage of utterances occurring in each of the communicative intent categories.
### TABLE 6
Comparison of Maternal Communicative Intent in Productions of Mothers of Language-Advanced and Mothers of Language-Deficient Children (measured in percentages)

<table>
<thead>
<tr>
<th>Communicative Intent</th>
<th>Advanced</th>
<th>Deficient</th>
<th>Advanced</th>
<th>Deficient</th>
<th>P diff. in gps</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X</td>
<td>SD</td>
<td>X</td>
<td>SD</td>
<td>Mdn</td>
</tr>
<tr>
<td>Informative remarks</td>
<td>65.6</td>
<td>13.5</td>
<td>49.2</td>
<td>3.66</td>
<td>62</td>
</tr>
<tr>
<td>Negative control</td>
<td>1.0</td>
<td>1.26</td>
<td>0.8</td>
<td>1.60</td>
<td>0</td>
</tr>
<tr>
<td>Positive control</td>
<td>12.8</td>
<td>10.4</td>
<td>10.4</td>
<td>4.2</td>
<td>6</td>
</tr>
<tr>
<td>Offering a choice</td>
<td>4.2</td>
<td>4.2</td>
<td>4.6</td>
<td>3.9</td>
<td>4</td>
</tr>
<tr>
<td>Expressions of pleasure</td>
<td>1.0</td>
<td>0.89</td>
<td>2.4</td>
<td>2.4</td>
<td>1</td>
</tr>
<tr>
<td>Expressions of displeasure</td>
<td>0</td>
<td>0</td>
<td>0.2</td>
<td>0.4</td>
<td>0</td>
</tr>
<tr>
<td>Supervisory talk</td>
<td>15.4</td>
<td>9.5</td>
<td>32.6</td>
<td>6.4</td>
<td>13</td>
</tr>
</tbody>
</table>
To determine inter-observer reliability, scoring was done independently by the examiner and an independent observer. The observers agreed on 93.4% of their judgments of utterance types. The final analysis of percent of utterances falling into the various communicative intent categories was based upon the mean of the two individual scorers' judgments.

Results are summarized in Table 6 and show that significant differences existed between the language-deficient and language-advanced groups in the maternal productions of informative remarks and supervisory remarks. No significant differences existed between the two groups in the maternal productions of utterances in the remaining communicative intent categories. Because of the differences in group variability, the Whitney-Mann U test was again used to determine significance of group differences.

Informative remarks accounted for approximately 2/3 of the maternal utterances in the language-advanced group but 1/2 of the maternal utterances in the deficient group. Maternal supervisory remarks composed about 1/6 of the language sampled in the language-advanced group and about 1/3 of the language sampled in the language-deficient group.

Children with greater language skills were more often exposed to verbal information about their environment than were children with less language skills.
CHAPTER 4

DISCUSSION

The results of this study would seem to indicate that maternal verbal input is related to the linguistic abilities of the children when age or age related factors are kept constant.

Maternal language samples spoken to 4-year-old language-deficient and language-advanced subjects were compared. Speech addressed to language-deficient subjects was shorter, contained more repetitions and expansions of the child's own previous utterances, contained more grammatically incomplete utterances, included fewer complete active-declarative sentences, and fewer informative remarks than the maternal language samples spoken to the linguistically advanced subjects.

These differences occurred in the absence of differences in chronological age between the two groups of children. Clearly age (and probably age-related variable such as social behavior and physical size) is not the source of cues to which mothers respond when adjusting the language they direct to children. Because the child's age has been eliminated as a factor and because the major difference between the groups of children was in language skill, the most reasonable conclusion seems to be that the child's linguistic
competency level played a major role in determining the selection of maternal child-directed utterances.

Language may be considered as a series of verbal interactions between two or more people in which the language behavior of each person is at least partially under the control of the other. Thus, in any verbal interaction between two people, the nature of the dyad itself affects the behavior of each of the individuals, as past research has indicated (Siegal, 1965). An adult conversing with another adult behaves quite different linguistically than does an adult conversing with a child (Phillips, 1973). In interactions between mothers and their children, the mother may be manipulating, modifying, or facilitating the linguistic behavior of the child by her usage of revisions, expansions, and informative remarks. At the same time, the child may be exerting considerable influence over the maternal child-directed linguistic productions via grammatical errors and syntactical misuses. The complexity of the verbal stimulation the child receives may be related to the kinds of verbal cues the child presents.

**Comparison Of Structured and Free-Play Situations**

For the three sets of measurements, MLU, TTR, and total number of words spoken, the structured and free-play situations yielded mean (and median) differences of the same size and in the same direction as the utterances.
of mothers of language-deficient children. However, the TTR was significantly higher in the structured situation than in the free-play situation.

The poster utilized in the structured situation in this study illustrated numerous types of animals and persons of various ethnic background engaged in different activities, thus, offering the mothers a wide variety of content words to utilize while talking to their children. Nouns such as steamroller, Arab, tulip, seal, turban, festival, and many other non-typical conversational words were frequently utilized in the maternal vocabulary during the structured situation. The diffuse content of the posters probably encouraged a more diverse vocabulary than that utilized in the free-play situation. In the latter situation there were fewer "pre-arranged" content words at the mothers' disposal. The content words that were utilized tended to be repeated more often than in the conversation of the structured-situation, for example, "This block goes here and this block goes there."

The diversity of content words produced in the structured situation and the repetitions of content in the free-play situation seemed to account for the smaller TTR in the latter situation.

The results indicate that language samples taken from a structured situation of the design utilized in this study will probably be comparable to free-play situations in length but will probably differ in TTR. Thus, in future
studies it would appear that adult language samples could be efficiently obtained from structured situations and the results would yield information comparable to a non-structured situation for measurements of grammatical complexity as assessed by MLU and total number of words spoken.

Sentence Complexity

MLU and total number of words spoken

The maternal language samples spoken to the language-deficient group were shorter and probably syntactically less complex than the maternal language samples spoken to the advanced-language group as measured by MLU and total number of words spoken.

Apparently, mothers react to the lower level of the child's language level by keeping their child-directed oral language shorter and simpler. When the child's productions become somewhat more advanced, the maternal utterances spoken to the child appear to become longer and syntactically more complex. It doesn't seem likely that these alterations in maternal language are conscious or arrived at thoughtfully. This behavior is demonstrated over a wide range of mothers; most of whom have little knowledge of child language development.

Studies by Siegal (1963), suggested that adults responded differentially to the verbal behavior of retarded children with high and low language abilities.
Blount (1972), proposed that verbal feedback from the child influences the complexity of maternal language spoken to the child. Blount's conclusion fits the data of this study very well.

**TTR:**

It appears that the level of maternal vocabulary diversity, as measured by TTR, does not distinguish between mothers of linguistically advanced children versus mothers of language-deficient children in this study. The results of this study appear not to agree with the findings of Broen (1972), who showed that mothers utilized a lower TTR in a given sample when speaking to their children aged 18 to 26 months in comparison to utterances to their children aged 45 to 94 months. It may be that the language differences demonstrated by children in Broen's study were not equivalent to the language differences demonstrated in the present study. Broen's youngest group of subjects in particular probably exhibited language-deficient group of subjects in the present study. The vocabulary competency level of the children in the language-deficient group of the present study was probably not depressed enough to provide mothers with cues to significantly simplify their child-directed vocabulary. It may also have been that differences in the children's age and/or verbal maturation, rather than the language competency, influenced the TTR of the mothers'
language selection in Broen's study. These latter variables were, of course, equated in the two language-level groups studies in the present research.

The contribution of the child's linguistic output in determining diversity of vocabulary spoken to the child is not fully understood. Further research is needed to assess confidently the relationship between maternal vocabulary diversity and children's linguistic performance.

**Sentence Type Productions**

Complete vs. incomplete utterances:

The maternal productions to the advanced-language children contained more complete active-declarative sentences, and fewer grammatically incomplete utterances than did the maternal productions to the language-deficient children.

This finding agrees with the studies by Snow (1972), and Phillips (1973), which suggest that when mothers speak to children who have less language competency, the maternal input is more simplistic than when mothers speak to children who possess advanced linguistic skills. Snow hypothesized that the child's task of searching, remembering, and inducing governing rules for the major units in a sentence is considerably easier when there are fewer minor language units to process in addition to the major unit.

Thus, the circular interaction of the parent-child
verbal behavior is again apparent; the child's language output would seem to influence the mothers' selection of verbal input to him and, in turn, over a longer period of time, the mothers' verbal input influences the language development of the child.

It appears that the maternal grammatically-incomplete utterances spoken to the language-deficient group may be ideally suited to these children's present level of language competency. If the mothers of the language-deficient group utilized longer, grammatically complete utterances, the length, complexity, and abundance of qualifying, conditional, and attributive units in the language addressed to the child would probably create significantly more difficulty in processing and correctly interpreting these remarks.

In contrast, the children in the language-advanced group may be capable of comprehending more complex linguistic structures and thus, have less difficulty in processing and interpreting the more lengthy and complex productions that their mothers address to them.

**Repetitions and expansions**

The maternal productions to the language-deficient group contained more repetitions and expansions of the child's previous utterances than did the maternal productions to the linguistically-advanced group of subjects.
These results appear to be in agreement with Brown's findings, (1964), but it is not concluded from this study that the use of expansions and repetitions do not facilitate language development. Although acquisition of language skills of the children in the deficient-language group of the present study might be increasing, language comprehension and production difficulties exist to some extent. These children showed significant failures in noun-verb agreement, misuse of verb tenses, missing articles, etc., and it seems likely that these grammatical errors might have cued repetitions and expansions of their utterances on the part of the listening mothers. As these errors began to disappear, as in the language of the advanced-linguistic children, the mothers no longer received such cues, and the maternal repetitions and expansions of the child's utterances decreased in number.

It is possible that there is a certain period in a child's linguistic development when such maternal expansions and repetitions are used most frequently to correct, revise, and/or confirm the child's linguistic productions.

This conclusion is consistent with Snow's findings, (1972), that the maternal repetitions are more frequent when speaking to two-year-olds than when speaking to ten-year-olds. Mothers of older language-deficient children may continue to use these helping language devices in talking with their children as a means of helping them solve the language code.
Communicative Intent

The maternal language samples spoken to the linguistically-advanced group contained more informative remarks and fewer supervisory remarks than the maternal language sampler spoken to the language-deficient group of subjects.

Tizard, et al., thought that informative remarks provided the child with knowledge of his past, present, and/or future environments. Supervisory talk, on the other hand, was seen as communicative filler, offering less new or useful information or knowledge to the child about his environment.

The greater oral language skills of the linguistically advanced children in this study may have acted to convince their mothers that these children were able to process maternal remarks furnishing new information about the environment; whereas the simpler oral language behavior of the linguistically-deficient children may have influenced their mothers to introduce new information via oral language less often and at a simpler level.

Implications For Future Research

Structured vs. Free-play situations

The results of this study suggest that adult language samples obtained from a structured situation yields information comparable to a free-play situation for measurements of MLU and total number of words spoken. Future
investigations are needed to validate these results and to determine effects of various other kinds of structured situations when compared with non-structured interactions. Comparisons of the two types of situation for measurements of syntax, morphology, sentence types, communicative intent, intonation, fluency, etc., are needed to determine what measurements could be assessed via a structured situation to reliably represent a non-structured language interaction. If valid, reliable samples are attainable by way of a structured situation it is foreseeable that more efficient language sampling techniques could be utilized in diagnostic, therapeutic, and research settings.

Vocabulary, grammatical and semantic complexity

Maternal speech addressed to language-deficient subjects in this study was shorter in length, more grammatically incomplete, more redundant, and less informative than the maternal speech addressed to language-advanced subjects.

It would be of interest to determine the effects of specific linguistic cues on adult child-directed productions. A number of techniques could be utilized to examine this area. For example, a language sample containing utterances of adequate lexicon and correct syntactical form but an abundance of morphological errors could be prepared. Another such sample could be made in which the lexicon and the morphology is intact but the syntax
of the child is in disarray. Adult subjects could listen to tape-recordings of such language-samples and respond appropriately to the child's productions. The utterances of the adults could then be analyzed to determine if the responses to the child were altered according to the specific presented language deficiencies.

To determine the effect of non-verbal behavioral and pragmatic cues on the part of the listener, adult subjects could respond to a video-taped presentation of the same productions presented earlier via the audio-tape recording. The adults' responses of the audio-only and the audio-video taped recordings could then be compared to assess the effect of the additional non-verbal cues received from the child and/or the situation.
CHAPTER 5
SUMMARY

Samples of mothers' language addressed to five 4-year-old language-deficient children were compared with mothers' language addressed to five 4-year-old children of advanced linguistic competency.

Results indicated the existence of the following differences between the maternal speech input to the two groups; speech addressed to language-deficient subject was shorter, contained more repetitions and expansions of the child's own previous utterances, contained more grammatically incomplete utterances, included fewer complete active-declarative sentences, and fewer informative remarks than the maternal language samples spoken to the linguistically-advanced subjects.

Because these differences occurred in the absence of differences in the children's chronological ages, and because the children were considered by the day care center instructor and the examiner not to have significant non-verbal intellectual, social, or motoric deficits, it was concluded that the differences in the linguistic productions between mothers of the two language groups were determined predominately by the level of the child's linguistic abilities.

It was hypothesized that the parent-child verbal inter-
action of the subjects in this study was controlled by the combined linguistic behaviors of the mother and the child. The mother may have been influencing the linguistic behavior of the child by her use of revision, expansions, informative remarks, and the complexity level of her child-directed utterances. At the same time, cues based upon the linguistic competency level of the child may have influenced the amount of syntactic and semantic complexity the mother utilized in his speech addressed to the child.
APPENDIX 1

The following definitions were used in the determination of what constituted an utterance (Johnson, Darley, Spriestersback, 1963):

1. An utterance was considered a separate unit if it was marked off from the proceeding and succeeding remarks by pauses.

2. An utterance was considered finished if the speaker came to a full stop, either letting the voice fall, giving interrogatory or exclamatory inflection, or indicating clearly that he did not intend to complete the sentence.

3. When one simple sentence was followed immediately by another simple sentence with no pause for breath, the two were considered to comprise one utterance if the second statement was clearly subordinate to the first.

4. Remarks connected by interjections and conjunctions, such as "and," "um," "er," etc. were considered as separate utterances if the remarks appeared to be clearly enumerative.
APPENDIX 2

The following rules were used to identify separate morphemes (Brown, 1973):

1. Only fully transcribed utterances were used—none with blanks.

2. All exact utterance repetitions were included. Disfluencies were marked as repeated efforts at a single word; the word was counted once in the most complete form it was produced. In the few cases where a word was produced for emphasis or the like (no, no, no) each occurrence of the word was counted.

3. Fillers such as "mm" or "oh" were not counted; "yeah" and "hi" were counted.

4. All compound words (two or more free morphemes), proper names, and ritualized reduplications ("night-night") were counted as single words.

5. All irregular verbs of the past tense were counted as one morpheme.

6. All diminutives ("doggie") were counted as one morpheme.

7. All auxiliaries were counted as separate morphemes.

8. Possessive (s), plural (s), third-person singular (s), regular past (d), and progressive (ing) tenses were counted as separate morphemes.
APPENDIX 3

TRANSCRIBED MATERNAL UTTERANCES

STRUCTURED SITUATION

DEFICIENT-LANGUAGE GROUP:

1. What do we see?
   A seal*
   Is that a tiger?
   That's a lion.
   The lion's going to pop the girl's balloon.**
   He's flying in the sky.**
   The clown and dogs.**
   Do you known what this is called?
   The Holland Tulip Festival.
   A what?
   Uh huh.
   A policeman.*
   Where's the robber?
   Him?
   Okay.
   Uh huh.
   What's in the tree?
   Who's in that tree?
   This man.
   He's falling out of the tree.

2. What do you see?
   Oh look.
   What happened here?
   That little boy got lifted off the ground.
   And what's this?
   A penguin.
   That's a seal.
   Hey, what's this?
   Can you tell me about that roller?
   Did you see a roller this morning?
   Did you?
   Did you see a loader, too?
   They're fixing the street.
   Oh, look that's lightning.
   They must be having a storm.
   And what's this?
   What's happening here?
   Is that paint?
   And that man's going to go right into it.**
   This says the Annual Holland Tulip Festival.

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* - repetition of child's previous utterance
** - revision of child's previous utterance

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3. Does it have a stand?
   Looks like a sailor by a ladder.
   Now that's a seal.
   That's kind of a funny picture isn't it.
   Yea, it's lightning.
   A jet.*
   A castle.*
   Looks like a parade doesn't it.
   Oh, it is.
   Yea, take them away.
   What's that?
   Who's that beside the policy?
   That's kind of a different fellow, isn't it.
   Well he probably climbed up there and fell out.
   He didn't hold on very good, did he.
   Elephant.*
   That's a steam-roller.
   It's a cute little dog.
   Tulips.
   Well, he's probably holding on real good.

4. I don't see a tiger.
   I see a dog.
   Collie dog.
   Look at that guys dark glasses.
   What's that?
   Balloons, look.
   He's getting carried away by his balloons.
   I don't know.
   See, his feet are going.
   I'm going to have the steam-roller.
   He's the best with his sucker.
   What's this?
   Yea, it looks like it doesn't it.
   He looks like Alli-Babba.
   It looks like the same guy alright.
   Uh huh.
   Okay.
   He's had a busy day.
   He's getting milk.
   Think they'll keep him alive that way?

5. What's in the picture?
   What's the lion doing?
   Who's that?
   That's not a spider.
   What is it?
   A sucker.*
   Who's holding the sucker?
   Uh huh.
   What else do you see?
   Where?
What's he doing?
What's he doing?
Who's that?
He is.
Who else do you see?
What's the clown doing?
Where is he taking them?
What's he got?
How many?
Let's count.

ADVANCED-LANGUAGE GROUP:

1. What's he doing?
   Lunch.*
   Looks like he's climbing a mountain.
   That's in the picture.
   Yea, I think that's a really funny picture she brought.
   Let's look some more.
   He's taking his seal for a walk.
   And what's that guy doing?
   What's that guy doing?
   What is it you told me?
   A flag.*
   What is he doing?
   Well, what's he got in his hand?
   You mean that guy?
   That's a flashlight.
   That's a street gutter.
   You know, like those grates you walk under sometimes
   that they used to have on the street.
   They make bicycles like that you know.
   That make bicycles like that.
   You're silly.

2. That's right.
   There's white tulips and yellow tulips.
   No, this says the Annual Holland Tulip Festival.
   It looks like they're walking just down the street.
   What kind of man is he?
   These are children in their old-fashioned Dutch
   costumes.
   That almost looks like Jeanie in "I Dream of Jeannie."
   Isn't that kind of silly delivering milk into a man hole
   cover?
   Look at the squirrel playing with the ball.
   There's a clown leading the parade.
   That's a good place tp sleep because it would be cool
   and shady under there.
   Ther's a steam shovel.
   It looks like it's going to run over the policeman.
   That's what we need only we need that with two seats
   on the back.
It's called a tandem bike.
It's a bicycle built for two.
I wouldn't be surprised if somebody built one.
How are they going to rescue him?
May be that's what the ladder is for.
Do you know that they have boats that sail on ice so you can have ice on the lake and have a boat that goes across it.

3. You know what this says—Annual, which means yearly, Holland Tulip Festival.
These are yellow.
These are large.
Look at that lady with the seal on the leash.
Most people have dogs on leashes.
Wait a minute and we'll play with those in a little while, okay.
I wonder what happened to him?
You know something that's interesting is that this man's falling out of the tree.
Spain, actually that's more Indian than Spain.
Indians as in India wear turbans on their heads.
Okay.
You know what that reminds me of?
You know that book Curious George that we read about the monkeys?
The elephants remind me of that.
Look at how they're mixing them up.
Remember, that's the part in Curious George.
He carried away by a bunch of balloons.
I'm surprised you don't remember.
You know what I see?
I see an owl.

4. You're supposed to look in this picture and tell me what you see.
You know what this is called?
This going up there?
This is called a chair lift.
And that guy fell down into the snowbank, right.
Look at this.
What's this man doing?
You know what this is called?
These are called snow shoes.
What's he doing?
What is it?
That's what you call a snow-shoe rabbit.
Did you see this man?
Did you see this man?
What are these?
That's an elephant.
Do you think it would be fun to go skiing on a mountain like that?
Oh I guess it is, isn't it.
How about if you had a flying carpet?
That looks like a little dragon or something.

5. What do you see?
Does the picture look silly to you?
What's he doing?
Do you know what the sign says?
It says Annual Holland Tulip Festival.
See all these—you know what those are, don't you.
He's from a different country, isn't he.
He looks like he might be from India just by that turban he's got on his head.
What else do you see?
Yea, you did.
You saw kids riding a double bike called a tandem bike.
You saw that somewhere.
Let's look at the picture for a minute and then we'll get back to the toys.
Look at this fella and what's happening to him.
Remember, what's put in the balloons to make them go that high?
That's right, helium.*
Look at the little girl's friend.
She's got a friend--she is it.
He likes a sucker, doesn't he.
What do you suppose that guy's doing?
FREE-PLAY SITUATION

DEFICIENT-LANGUAGE GROUP:

1. Do you want to play with the blocks now?
   Do I want to play with you?**
   Sure I'll play with you.
   What shall we build?
   I don't know.
   Houses.*
   I can try.
   Do you know how to make houses?
   Sure you do?
   Do you want to try?
   Okay.
   That's a boat.
   That's an ark.
   Okay.
   Look.
   Look at all those animals.
   Noah would like that.
   Do you want to play with this or do you want to play
   with the blocks?
   With this?
   Got to put the blocks away first.
   Okay, punkie-pie.
   There.
   Of course, I'll play with you.
   What are we going to play?
   We got a couple.
   Hey, a camel.
   What's this?
   A what?
   A lady lion.*
   A lady lion.
   Is that a lady lion?
   He's licking a lollipop in our picture over there.
   Okay.
   Is he licking a lollipop?
   Giraffe.
   It's kind of a little giraffe.
   Yea.
   Do you know what this is?
   Buffalo.*
   Uh-huh.
   Let me see.
   That looks like a boar.
   A wild boar.
   A wild pig?
   What's this?
   It's a tiger?
   Yea.
Noah's Ark.
Do you know what Noah's Ark is?
Did you learn that yet?

2. A zebra.*
A zebra.
You're building a really tall one, huh.
Uh huh.
Oh, pretty soon honey.
Let's play awhile.
Okay, sure.
If you want to you can play with the blocks.
Do you want me to help pick it up?
Okay, let's share.
Did you do a project today?
What did you do?
Is it in your box?
In school.
Good.
Was Beth there today?
Oh, she's sick again?
Too bad.
Should we take this down?
Oh, I don't know.
Yes, there's so many.
A bunch.
Okay?
Are you going to cook?
You can play with anything you want to.
Who's that?
Yea.
And what's that?
Okay.
What are you going to make?
A cake.*
What kind is it?
MY birthday.*
A strawberry cake, huh?*
My favorite.
How did you know?
Okay.
What are you going to put your in your cake?
And vanilla.*
Flour and eggs and what else?
And here's the sink.
I guess we need some water.
Put it in the oven.
Did you turn it on?
It's one of those buttons.
Let's see.
This one here.
I think it's this one.
Is there anything for a dish?
Okay.
3. Oh it's the switches, isn't it.
   It the cooker--the stove.
   That's a neat stove and oven.
   That's nice.
   Okay.
   He's kind of rough.
   He's having a hard time staying up there.
   He's really tough.*
   Poor monkey.
   Did he get hurt?
   You hope so.*
   Do you want to play with anything else?
   That justs sets in there.
   That's supposed to do that.
   Cupboard.*
   Looks like Mother Hubbard's cupboard, doesn't it?
   Are you going to put them back?
   Wow, look at all those.
   Uh huh.
   You're making a store.*
   A money store.*
   He eats his banbas right off the tree, doesn't he.
   Does he have time?
   Be awful tippy.
   Little blocks are kind of tippy sometimes.
   That's the store now, huh.
   The moneykeys can buy grocieries.
   Got alot of money?
   Does he have a lot of money?
   You going to build a house now.
   That's paint.
   Like that monkey?
   Pretty house.*
   What's that?
   Oh, I thought the monkey was living in that other thing.
   That brown thing.
   He moved into that house, huh.
   Is this another house or is this the same house?
   Oh.
   Whoops.
   Put another block down on the bottom.
   We've gota door.
   Are your legs getting tired?
   It's kind of tippy though.
   Are you sleepy?
   Are you about ready for a nap?
   Yea, it is.
   Wow, that's tall.
   Yes, it looks like a castle.
   It is a castle, huh.*
4. That's a seven green.
Seven everything.
I think.
I see.
No, six everything.
I'm sorry.
I got carried away.
I know I'm not.
Wait a second.
Is that your cage?
Let's make a path.
I need a door.
I'm going to make a path to your cage.
Don't take any of your animals.**
I'm going to be a tamer.
A lion tamer like one in a circus.
Can I have an animal?
Who's going to live in my cage?
Monkeys.*
My money's name is Alfred.
Which ones can I have?
I'm going to have the rhino.
A tiger.
This is a rhino.
That's a hippo.
You need a tiger.**
What'd you have for lunch?
That's good.
Oh, really.
How can you tell?
They are?
Uh huh.
You'll have two monkeys.**
Right here.
This one's got teeth.
Look.
Big hippo.
Like this?
Put the same color on the same color.
Green and yellow.
And here's some green.
We need more yellows.
We need some orange.
More yellows.
We're getting higher and higher aren't we.
Want to make it higher?
Okay, let's make a castle.
You make a blue castle.
Wait a second.
I'm trying to make my yellows stand up.
5. Let's both build blocks. Let's see if I can build a higher one than you do. What you want to do? Let's see if you can. I'll put that over here. What color's that? Tell me the colors to put in. Uh huh. Uh huh. Put this color. Uh huh. She'll be back in a little while. You tell me the colors. Oh goodness. How many do you have? Okay. You know what? You know who would blow that over if he came? Little boy. That's right He would, wouldn't he. Yes, in a while. Count with me. You count. Ten. You have ten of them. Eleven. Do you think you can stack one more? Can you do one more? This is number twelve. I bet one more. What do you think? Oh, thirteen. It's going to fall. You're good. It's going to fall over now. What do you want to make now? Okay. Can I help? How about if I hand them to you? What kind of house you building? Okay. You're going to.** How many blocks? Just one.* What's you have for lunch today? Macaroni and cheese.* Yummee.
ADVANCED-LANGUAGE GROUP:

1. Do you want to play with the toys?
   It look like maybe that's all there was though.
   Do you want me to get one line out?
   I won't.
   Right.
   Yea.
   If I had yours out it would work better.
   Can I have some more?
   Which ones can I take?
   A bridge.*
   That's a good idea.
   I'll try to build it together.
   Can I have some more blocks?
   Okay.
   It's going to fall right over.
   Do you want me to show you again?
   Do you you like those jewels?
   I'm sorry.
   I think maybe with one this high it's going to be difficult.
   Uh huh.
   This monkey looks like him.
   Okay.
   I'll be the wife.
   I'll be the father.
   Oh, so you gave me purple, huh.
   Okay.
   They're to do the dishes with.
   You're goofy.
   Can't they have high chimneys?
   That's pretty.
   Do you remember what we're supposed to do after we play with the toys?
   We'll just play.
   Now what are they doing up there?
   It looks like they're ready for a big show.
   Oh.
   What kind is that?
   I am.
   I think these blocks are really pretty.
   You seem to know just what you want to do.
   Uh huh.
   Right.
   She will.
   Oh really, huh.
   Do you need any help?
   Okay.
   We've got lots of blocks,
   Oh, we're not ready to dismantle.
   This block goes here and this block goes there.
   I think you can because dog paddling is when you're moving along but you're not kicking when you're supposed to.

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But you're still going.

2. There should be always two of everything because Noah had two of everything.
No, that looks like a tiger.
This is a lion.
Here's a female lion.
See female lions don't have the big manes like the male lions.
Here's the female tiger.
Oh here, cause she's smaller.
See, the male tiger is bigger than the female.
And she's smaller.
But the male lions have the big mane and the females don't have any.
They look a lot like cougars, and jaguars, and other cats because they don't have the big manes.
This is a hippopotamus.
Is that your wart hog?
What about this one—it would be a good one, too.
I don't think we can really tell.
A lot of animals the mommies and the daddies are the same size.
You can't really tell the difference like in these we can really tell which one's which because the mommy look different from the daddy.
She doesn't have the big, bushy mane.
Uh huh.
Probably they're going to get in that way.
They have to climb in.
We have to set up a ramp for them so they can get from the ground.
Maybe you can set one up here.
Well, they have to have some way of climbing down there.
Maybe they have one of those slings like they load stuff on docks.
Upside down?*
Oh, that's the only curve that they have.
Okay, if you say so.
Think of the poor hippopotamus.
Think of the poor hippopotamus.
They spray them all the time because their skin has to stay wet.
So when you put them down inside the ship you got to put them in water once in awhile.
He wants a hand-out.
He's holding his hand out for peanuts or something good to eat.
No, rhinosauruses aren't vicious.
No, hippopotamuses.
Yes, they are but they don't have good eye-sight.
They can't see very well.
It's kind of like mommy with her glasses off. Your mommy can't see very good without her glasses so that's kind of how the rhinosaurus are. Have to watch out for them because they can be dangerous too.

Well, during certain times of the year during the mating season the bull buffalo get very ornery. No, actually they're the males. I don't think buffaloes mate for life. Other animals do. Might be a fight.

Shall I feed you raw fish? Open up, you got another raw fish coming down. That's what seals like is raw fish. Yes, but when you do your tricks then your tricks I'll give you a piece of raw fish for being a good seal.

3. I would expect that you'd know what that is. You should know what that is. Look at the side. It looks pretty much like this one. I think the little one is the baby tiger. Who do you think would win the fight; the monkey or the tiger? The monkey would run away from the tiger. What's this one? It looks like a wild boar to me. I've never seen one with a wild board but that's what it looks like. I don't know what it is. I thought it was like this one which you said was a hog. Feel the skin on that one. It looks like these are sort of brissly. Oh, great. Are those the same kind? Oh the elephant, I couldn't see what was in the other hand. Why are they fighting. Oh, boy. Well, chances are they'd never make it up because the roof is too steep. I'd hate to see buffaloes not make it up because they're one of my favorite animals. I hope he doesn't climb out of this window. I bet the monkey could make it up because he's such a good climber. Oh yes, they're really fast at it. Do you remember those big baboons we saw? Yes, they were pretty spooky, weren't they? Did you?
I think I liked the elephants and giraffes the best. Maybe we can go again this year if you'd like to. You would, huh.

Did you notice that we have two animals of every kind here?

That's because it's going to rain for a long, long time and Noah is going to save the animals by putting two of every kind in this big boat called an ark.

Do you remember when we talked about Noah and his Ark?

It rained for forty days and forty nights. No, I don't think I'd like it either.

Did you see these puppets over here? He kind of looks like Rudolph the Red-Nose Raindeer, doesn't he.

That's true.

No, I think they'll be alright where they are. Yes, I noticed that too.

Do you suppose it hurts?

If I had a big hole in my mouth it would sure hurt me a lot.

Let's play with the blocks for awhile. What shall we build?

Hey, that's a good idea. We could make it real tall so the giraffes can keep their long necks dry in the rain.

Let's make it like a rectangle, okay. I see you're making your part lots of different colors. That's really pretty.

4. Maybe you better put the buffalo in first. They're pretty big.

Carabou look like reindeer.

Do you know where the buffalo live?

Where?

Have you ever seen a buffalo?

How about on our way to Flathead Lake?

Haven't you seen them?

What's this?

Is he going to go for a ride too?

Will they fit in?

She'll come and tell us how many minutes.

Why don't you build something with the blocks?

What did you say?

Oh you want to make a tower.

Then they would have some way of getting up there.

Put a bunch up to here and them put only less here.

Go like this.

Watch, I'll show you.

Give me some more.

Honey, put only three on the next one and them you make a stairs.
Get three now.
Get three.
And then get two.
And then get one.
Oh, that makes a nice stairs.
Now watch this.
A dock.*
Okay, a dock.
Oh, I see, yea.
Do they go in their house first?
And then the house falls down, huh?
Who's fighting?
It's kind of hard to do.
How come you got those others over here, do you know?
Can the lion jump up there by itself.
What's he saying.
Are you building a tower?
Oh, yes.
What is this?
You going to make a house out of that?
That'll be a good house for them.
I don't know what that thing is but I think it goes
with the lion.
It's a hippopotamus or something I think.
What's this?
Okay.
How about putting the monkey right here?
He can climb around in our tower.
What do you think his name is?
I think his name is probably Bronwie because he's
brown you see.

5. The elephant over here looks about like the elephant
in the picture, doesn't it?
What you say we build a house here for the animals.
Where we going to put it?
Uh huh.
Just like you do with your blocks at home.
I'll help you.
Just make them all in a row.
Remember when you got your Fisher-Price ones all put
out?
Just make kind of a rectangle or a square here.
Do you want a bog one or a little one?
Why don't you help me out here?
That's kind of a bog one to put in the little one at
the side.
They're all falling over.
We'll have to make little tooms for the separate
animals.
Are we building a zoo or somethin?
This part is for the big animals.
The big ones could crawl right over the wall.
How many more rooms do you want?
You can help me make them.
Five, wow.
You build off that many and I'll finish three more
on the other side here.
The hearing lady.**
Not earring, sweethear.
She said about fifteen minutes.
She said about fifteen minutes.
Did you have a good day today?
Okay.
Here's a pretty good one to put in this room.
That's a pretty big room.
I think maybe you want the bigger animals in that one.
Just take one of the blocks away and we have a door here.
Oh, we'd put the door back in.
The elephant's going to be the boss of the zoo.
Did you have a good day today at nursery school?
Did you?
Maybe he'd like a friend to go in with him.
We could put him over here with these two and they
could be friends.
He wants out.
He's been in there long enough.
Let's push it out like this at the door so the house
won't fall over.
That one doesn't want to leave.
The monkey.
Uh huh.
They can't come around this way.
I've got it blocked off.
The lions are over here.
I was ready for you.
If he wants to go over there and visit he can just
poke his head through there to see what's going on.
Go back where you came from.
Mine's leaving.
That's a pretty fancy building that you got there.
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