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TEACHER SYNTAX ADDRESSED TO DEVELOPMENTALLY DISABLED
AND NONDISABLED PRESCHOOL CHILDREN

by

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A MASTER'S THESIS

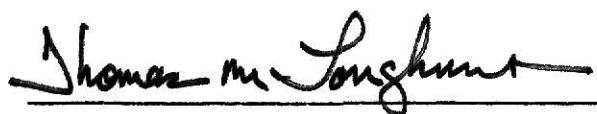submitted in partial fulfillment of the

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Every theory of language acquisition assumes that there must be linguistic input (Broen, 1972). The child listens to the language encountered in the environment and makes hypotheses regarding its usage. The child's productions represent one method of testing of these hypotheses (Muma, 1978).

Research has focused on language hypothesis-testing behaviors. Several researchers have provided a great deal of descriptive information regarding the productions of normally developing children (Bloom, 1973; Brown and Bellugi, 1964; Slobin, 1971; and many others).

The fact that the productions of language disabled children consistently do not conform to the "norm" indicates that there may be something wrong with their innate predisposition for language, their hypothesis-formation processes, or possibly their hypothesis-testing processes. Since the hypothesis is based on the linguistic environment to which the child is exposed, a number of researchers have chosen to study the linguistic environment in greater depth. Research on the linguistic environment has gone through several stages.

Mothers' speech addressed to children has been shown to differ from speech addressed to other adults. In general, mothers' speech to children is characterized as being of a slower rate, containing shorter and simpler sentences, fewer fragments and more linguistically appropriate pauses (Broen, 1972; Phillips, 1973).

Snow (1972) compared mothers' speech to their two-year- and ten-year-old children. Speech to the two-year-olds was found to be simpler and more redundant than speech to the

ten-year-olds. This study and others demonstrated that mothers were sensitive to the increasing linguistic skills of their children, and that they adjusted their speech accordingly. Mothers' linguistic patterns became more adult-like as the children's linguistic capabilities increased (Fraser and Roberts, 1975; Leach, 1973; Moerk, 1974; Phillips, 1973; Snow, 1972).

Studies which focus on the modifications adults make in speech to language disabled children are less numerous. The linguistic environment of retarded children was first studied by Siegel, followed by others. In comparisons of speech addressed to high level and low level retardates, the lower level children were found to receive more questions, less diverse vocabulary, fewer responses to child verbalizations, and shorter mean length of response (MLR) (Siegel, 1963a, 1963b; Siegel and Harkins, 1963; Spradlin and Rosenberg, 1964).

A few researchers have compared adult speech to normally developing children with adult speech to language disabled children. Again, the lower the language level, the more children were exposed to lower MLR, greater number of overall utterances, less diverse vocabulary, and more fluent discourse (Buckhalt et al, 1978; Cramblit and Siegel, 1977).

Relatively little research has been done concerning teacher speech addressed to normal and/or language disabled children. In light of the increasing number of working mothers and utilization of day care centers and pre-schools for progressively younger children, it appears that the

speech of teachers to children is of increasing significance in the overall language-learning process. Analysis of teacher speech is therefore not only relevant but warranted if an accurate picture of the linguistic environment is to be gained.

Granowsky and Krossner (1970) studied the speech of kindergarten teachers to normally developing children and arrived at results similar to those in studies of mothers' speech. In other studies of teachers, however, subtle differences from mothers' speech were suggested, though these are not conclusive. Olswang and Carpenter (1978) found that mothers, compared to their teacher counterparts, made fewer imitations of children's utterances, fewer declaratives about items in the environment, and they asked more questions about items in the environment. Snow (1972) found that non-mothers' speech was less repetitive and somewhat more complex, but not significantly so. In terms of speech elicited by teachers and mothers, there was no qualitative difference (Olswang and Carpenter, 1978).

Study of teacher speech to disabled versus nondisabled children has indicated that the same trends are present as those found in mothers' speech. Elmore (Note 2) found that the quantity and quality of teacher speech was lower with disabled children. Schraeder (Note 4) investigated the questioning behavior of teachers to disabled and nondisabled children. She found that disabled children received more requests for behavior, fewer requests for information, and fewer noun phrase questions. She felt that the majority of teachers' questions were not appropriate to the disabled

children's level of language comprehension. In a study of the interaction patterns between teachers and disabled versus nondisabled children, Livingston (Note 3) found that the nondisabled group received more total utterances, requests for verbal responses, and spontaneous conversation. Lower level children, on the other hand, were found to receive more behavior requests, directives, and instructions.

The relevancy of consistent differences in speech to language disabled children must be considered. It is clear that low level children must learn language based on a verbal environment that is different from that which high level children are provided (Buium et al, 1974). Interpretation of this fact has followed two schools of thought. Because the input to low level children is different from that to higher level children, some researchers consider it to be "inferior" and perhaps stifling to the language learning child (Granowsky and Krossner, 1970). According to Siegel and Harkins (1963, p.45) "...lack of adequate speech stimulation and motivation are often cited by speech pathologists as primary causes of improper or delayed language development."

The idea that "inferior" verbal stimulation may be a secondary phenomenon rather than a primary causative factor was considered by Siegel (1963a). It is possible that the quality of verbal stimulation a child receives is related to the kinds of verbal or nonverbal cues he or she presents to the environment. Therefore, a severely limited verbal behavior may evoke responses from the environment which

discourage the child from improving linguistic performance.

The inevitable question which arises is whether the practice of "talking down" to low level children is appropriate or whether is constitutes verbal deprivation (Siegel, 1963a). Before this question can be resolved, the differences between speech to normally developing children and speech to language disabled children must be described specifically and in greater detail. Ultimately, the detailed analysis of adult speech to different levels of children could lead to development of intervention programs for the language delayed child (Longhurst and Stepanich, 1975).

In investigation of the linguistic environment, there are a number of parameters which have been described. Reference has already been made to most of these. Some researchers have chosen to describe the vocabulary addressed to children (Broen, 1972; Elmore, Note 2; Fraser and Roberts, 1975; Longhurst and Stepanich, 1975; Siegel and Harkins, 1963). Other researchers have concentrated on the amount and quality of interaction between adults and children (Broen, 1972; Holzman, 1974; Livingston, Note 3; McLaughlin et al, 1980; Moerk,1974). Interrogative behavior of adults has also been investigated (Broen, 1972; Holzman, 1972; Leach, 1973; Longhurst and Stepanich, 1975; Schraeder, Note 4; Toler and Bankson, 1976).

Syntax is still another area which has been described. Researchers have utilized quite a variety of ways of analyzing syntax. Word order was considered by Buium (1974) and Wetstone and Friedlander (1973). Mean length of utterance

(MLU) has been used in numerous studies based on the assumption that greater length corresponds to greater complexity. While this may be true, MLU alone is not sufficient to describe which structures within the longer sentence make it more complex. In order to provide a more detailed analysis of syntax, several investigators have attempted to measure grammatical complexity per utterance. This has involved a variety of formulae, ranging from counts of a given structure per utterance (Phillips, 1973; Snow, 1972) to equations in which counts of subordinate clauses, dependent and independent clauses and/or compound verbs were manipulated in order to arrive at some type of complexity per utterance score (Fraser and Roberts, 1975; Granowsky and Krossner, 1970; Snow, 1972). The bulk of this type of analysis has served to establish that syntactic complexity is indeed greater when adults address nondisabled children. However, specifics regarding which structures contribute to the higher complexity scores are not provided.

Buium et al.(1974) completed a more exhaustive study in which greater detail in syntactic description was initiated. A portion of their analysis was based on the work of Lee and Canter (1971) which evolved into the Developmental Sentence Scoring (DSS) system (Lee, 1974). Within this system, eight syntactic categories are presented; these categories include those structures which typically present difficulty to language disabled children. The rationale behind examining these eight structures in the speech of adults is that it seems reasonable that children

are likely to learn those structures to which they are exposed. The eight structures examined in the Buium et al. study were: indefinite pronouns-noun modifiers, personal pronouns, main verbs, secondary verbs, negatives, conjunctions, interrogative reversals, and wh-questions.

All of the studies mentioned thus far have defined syntactic somplexity in terms of the relative frequencies of occurrence of given structures. While this is an important variable, it cannot exclusively describe syntactic complexity. The fact that one incidence within a given category may be more complex than another incidence must not be overlooked. For instance, "think" and "had been thinking" are both main verbs, yet the latter is considerably more complex. The child learns language based not only on the frequency of occurrence of given structures, but also on the complexity of each incidence of the structure. Therefore, quality as well as quantity of structures must be accounted for in syntactic analysis.

The present study is an attempt to describe, not only quantitatively, but qualitatively, the syntax of teachers addresses to disabled and nondisabled preschool children. Four variables will be measured:

1. MLU,

2. overall syntactic complexity based on a modified DSS procedure,

3. frequency of occurrence of structures for each of the eight DSS categories, and

4. average complexity per incidence of structures

for each of the eight DSS categories.

## Method

### Subjects

Subjects were eight children, four of whom were evaluated as developmentally language disabled, and four evaluated as nondisabled. All subjects were native speakers of English.

The developmentally disabled group ranged in age from 2-0 to 4-7 years, with a mean age of 3 years, 0 months. This group consisted of three males and one female. Depending upon their chronological age, either the Receptive-Expressive Emergent Language Scale (Bzoch & League, 1971) or the Verbal Language Development Scale (Mecham, 1971) was administered. Language equivalents for these children ranged from nine to eighteen months. Mean length of utterance for this group did not exceed 1.5 morphemes.

The nondisabled group ranged in age from 2-0 to 5-8, with a mean age of 3 years, 3 months. There were two males and two females in this group. Language development was assessed by the Peabody Picture Vocabulary Test (Dunn, 1965) and via subjective evaluation by teachers and parents. These four children were judged to be normal or slightly advanced in their language development. MLU for this group ranged from 2.9 to 4.3 morphemes, with an average of 3.6 morphemes per utterance.

No standardized test could be established to assess the verbal developmental level that was appropriate to

both groups of children. MLU was the only measure which could be taken that was appropriate to both groups.

No control measures were taken for age and sex of subjects, nor were measures taken to control for number of siblings or birth order.

Teacher subjects were two females with educational backgrounds in early childhood education. Each had at least two years experience as a preschool teacher. Each was a full-time teacher at the preschool for the developmentally disabled at which the data were collected. Both teachers were in their mid-twenties, and both were native speakers of English.

## Setting

All observation and recording of the subjects was done at the preschool. The facility consisted of an entrance vestibule, a small therapy room, a kitchen, and an open play area adjacent to an area containing tables used for pre-academic teaching.

## Procedure

Teachers followed their normal routine. They were informed only that they would be participating in a study dealing with adult speech to children, and that this would involve observation and recording of their interaction with the children. The experimant lasted for a period of five weeks; the first week served as an orientation period and during the latter four weeks the data were collected.

Teacher speech was monitored and recorded via an FM

telemetry system. A dual channel cassette tape recorder
(Wollensak, Model 2516 AV) and two receivers (Vega, Model
58) were operated from the entrance area of the school. The
teacher under observation and the experimenter wore denim
vests equipped with a concealed condenser microphone (Sony,
ECM-16) and a transmitter (Vega, Model 77). On the first
channel, teacher speech was recorded, and on the second chan-
nel contextual cues and any non-verbal responses from the
children were recorded by the data collector. This served
to decrease contextual ambiguity and facilitate later tran-
scription.

Observation and recording were conducted during the
first two hours of the three hour morning session, four
days a week for four weeks. Each teacher was observed and
recorded for one hour, and the order in which the teachers
were observed was reversed each day. The recording con-
tinued, uninterrupted, for one full hour regardless of the
activities engaged in by the teacher. Routine activities
included a morning greeting and a free play during which
teachers interacted with children individually and in small
groups. The children were taught specific pre-academic
skills during "tablework". "Circle" was a discussion time
in which all children were included. The mid-morning snack
time was a popular activity in which all adults and children
gathered around one table to eat.

Protocol Preparation and Segmentation

A verbatim typewritten transcription of both the
teachers' and children's speech was made from channel one

of the recordings, by a trained typist who used modified
instructions outlined by Siegel (1963c). From channel two
of the recordings notations of contextual and non-verbal
cues were written adjacent to the teachers' utterances. In-
cluded in this contextual information were indications as to
which child was being addressed by which teacher. These
verbatim transcriptions were then segmented into sentences
using procedures described by Miner (1969). The criterion
for segmentation was the "thought unit sentence" rather than
the traditional "per breath utterance". This was so becouse
the interaction behaviors being examined often did not con-
form to the "breath unit" concept; this concept was there-
fore considered inappropriate. The corrected and segmented
protocols were then retyped  as a set of clean transcripts
for each teacher-child pair. Thus, for each child there
were two sets of daily transcripts, one corresponding to
each teacher.

Reliability for transcript preparation was established
by having a second experienced typist retype and resegment
four of the hour long tapes. Percentage of agreement for
protocol preparation ranged from 90 to 97 percent; for
segmentation the range was from 89 to 95 percent.

Analysis of Data

A modified DSS procedure (Lee, 1974) was used to
evaluate syntactic complexity of teacher utterances. The
DSS procedure was chosen because it provides a variety of
specific structures to be evaluated; also there are clearly
delineated levels of complexity within each syntactic

category. The DSS procedure was one in which numerical
scores could be used to quantify syntactic information.
Ordinarily the DSS is performed upon samples of children's
speech. Recognizing that use of the DSS on teacher utterances
is a misapplication of its intended use, the need for certain
modifications became apparent.

The DSS analyzes only those utterances which qualify
as sentences - that is, "a noun and a verb in subject -
predicate relationship" (Lee 1974, p. 66). Children evalu-
ated by the DSS are usually involved in the acquisition
process at the time and it is therefore appropriate to
score a higher level structure such as a sentence and omit
incomplete sentences. Teachers, on the other hand, are not
going through the acquisition process. As persons who have
mastered syntax, it can be argued that every utterance they
emit should be considered significant. Valuable syntactic
information can be conveyed within incomplete clauses,
phrases and fragments. It was therefore felt that teacher
utterances need not qualify as "sentences" in order to be
scored. The original DSS allots "sentence points" to the
child for completing a sentence which is grammatically and
semantically correct. Since structures other than sentences
were analyzed in the adult sample, usage of the sentence
point was omitted.

In order to account for the inclusion of non-sentences
in the sample to be analyzed, an addition was made within
the indefinite pronoun - noun modifier category. This ad-
dition allowed for incorporation of adjectival phrases.

They were analyzed as noun modifiers according to the criteria described in Appendix A.

The types of teacher utterances that were not included in the analysis were typically one or two word utterances. Criteria for the inclusion of utterances are outlined in Appendix B.

The 50 utterance sample required for the DSS was taken from the second and third weeks of data collection, during the unstructured play activity. Date were used from the first and fourth weeks only when necessary to complete the 50 utterance sample.

A 100 utterance sample was used for MLU computation. This sample started at the same midpoint as the DSS sample but it included single words and repetitions, which were excluded in the DSS analysis. MLU scores were derived using procedures outlined in Appendix C. It was decided that this method was more appropriate for adult speakers than procedures recommended by Brown (1973). Brown's procedure is designed for children and contains allowances that are not relevant to adult speech. For example, he argues that "gonna" is learned and interpreted as a single unit and therefore should receive only one point. A word like "gonna", in this study would receive three points because it is assumed that the adult uses it as three morphemes, (go + ing + to).

Reliability for the DSS and MLU analyses was established by having a second experimenter score six samples, selected at random. Percentage of agreement for DSS scoring ranged

from 80 to 91 percent. For MLU scoring the range was from
98 to 99 percent.

## Statistical Analysis

The data were analyzed in a series of one-way analysis
of variance tests (Snedecor and Cochran, 1972, p. 258) at
the .05 and .10 levels of significance. Each analysis of
variance compared the two teacher means, the disabled versus
nondisabled group means, and the teacher by group interaction
means. Significant interaction effect F ratios were further
analyzed using a least significant difference procedure
(Fryer, 1966).

## Results

In a number of ways, the conditions under which data
were obtained do not comform to the traditional research
model. In a study designed to describe the natural language
learning environment, such as this one, the researcher is
required to work with the situation as it arises. Manipula-
tion of the environment it not easily facilitated, nor is
it desirable. One must remember that in human interaction
there are extraneous variables which cannot be controlled.
Often, in attempting to control them, the essence of communi-
cation is lost. With this in mind, it was decided to inter-
pret the data using the .10 level as the criterion for
statistical significance. Some might question the appli-
cability of statistics to a descriptive study such as this,
but it was felt this analysis aided in describing the im-

Table 1

Average Category Scores per Occurrence, DSS and MLU Values for the Teachers' Speech Directed to Nondisabled (High) and Disabled (Low) Groups of Children

| | DSS | MLU | Noun Mod Indef PN | Personal Pronoun | Main Verb | Secondary Verb | Negative | Conjunct. | Interrog. Reversal | Wh-Quest. |
|---|---|---|---|---|---|---|---|---|---|---|
| Teacher 1 - High | 8.88 | 5.55 | 1.77 | 1.64 | 2.41 | 3.56 | 5.58 | 4.63 | 4.24 | 2.79 |
| - Low | 7.63 | 5.09 | 1.63 | 1.66 | 2.28 | 3.13 | 3.56 | 5.15 | 5.36 | 2.00 |
| Teacher 2 - High | 10.22 | 5.62 | 2.19 | 1.49 | 2.80 | 3.54 | 4.50 | 4.34 | 4.82 | 2.88 |
| - Low | 7.56 | 3.19 | 2.46 | 1.54 | 2.26 | 3.08 | 4.38 | 4.62 | 5.14 | 2.33 |

Table 2

Average Frequency of Occurrence per Sample for the Teachers' Speech
Directed to Nondisabled (High) and Disabled (Low) Groups of Children

| | Noun Mod Indef PN | Personal Pronoun | Main Verb | Secondary Verb | Negative | Conjunct. | Interrog. Reversal | Wh-Quest. |
|---|---|---|---|---|---|---|---|---|
| Teacher 1 - High | 27.5 | 50.8 | 56.0 | 16.5 | 2.3 | 6.3 | 14.0 | 5.5 |
| - Low | 24.8 | 47.5 | 52.3 | 14.8 | 3.3 | 4.8 | 10.3 | 3.0 |
| Teacher 2 - High | 26.0 | 55.5 | 57.0 | 19.8 | 2.8 | 6.3 | 18.3 | 3.3 |
| - Low | 14.8 | 39.8 | 52.0 | 14.3 | 2.8 | 1.3 | 17.5 | 4.5 |

portant interactions.

As seen in Table 1, DSS values for teacher speech directed to nondisabled children were higher than those for speech directed to the disabled group, and this difference was significant (see Table 3).

MLU values for teacher speech directed to nondisabled and disabled groups are also shown in Table 1. Again, the values are higher for the nondisabled group, and the difference is significant (see Table 3). There was a significant difference in MLU values for Teacher 1 as compared to Teacher 2 (see Table 3) and this difference was primarily attributable to the shorter length of utterances addressed to the disabled group by Teacher 2 (see Tables 1 and 3).

Frequency of occurrence within each of the eight categories was generally higher for teacher speech addressed to the nondisabled children (see Table 2). The difference in frequency of occurrence between teacher speech to the nondisabled and disabled groups was significant in the noun modifier and conjunction categories, as shown in Table 4. Although these were the only two categories that were significantly different statistically, two other categories approached significance - personal pronouns and main verbs. With respect to personal pronouns, Teacher 2 used fewer personal pronouns to disabled children than Teacher 1 used (see Table 2). This difference was significant (see Table 4).

Teacher 2 directed a greater number of interrogative reversals to all children than Teacher 1, and this was significant (see Table 4). As can be seen in Table 2, though

Table 3

Analysis of Variance for the Average Category Scores, DSS, and
MLU of Teachers' Speech Directed to the Two Groups of Children

| Source: | df: | Noun Mod. Indef. PN | Personal Pronoun | Main Verb | Secondary Verb | Negative | Conjunct. | Interrog. Reversal | Wh-Quest. | DSS | MLU |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Mean Squares: | | | | | | | | | |
| Group | 1 | .02 | .01 | .46** | .79 | 3.95 | .53 | 2.09* | 1.78* | 14.93* | 8.44*** |
| Child Within Group | 6 | 1.26 | .34 | .32 | 1.44 | 8.13 | 7.74** | 3.34 | 2.50 | 17.65 | 3.17 |
| Teacher | 1 | 1.54** | .07 | .14 | .00 | .06 | .58 | .13 | .17 | 1.47 | 3.37* |
| Teacher X Group | 1 | .17 | .00 | .17 | .00 | 3.08 | .05 | .65 | .06 | 2.12 | 3.86** |
| Error | 6 | .24 | .04 | .09 | .29 | 1.35 | .17 | .54 | .40 | 3.76 | .63 |

*** significant p<.01
** significant p<.05
* significant p<.10

Table 4

Analysis of Variance for the Frequency of Occurrence of the Eight
Categories of Teachers' Speech Directed to Two Groups of Children

| Source: | df: | Noun Mod. Indef. PN | Personal Pronoun | Main Verb | Secondary Verb | Negative | Conjunct. | Interrog. Reversal | Wh-Quest. |
|---|---|---|---|---|---|---|---|---|---|
| | | Mean Squares: | | | | | | | |
| Group | 1 | 196.0* | 361.0 | 76.6 | 52.6 | 1.0 | 42.3** | 20.3 | 1.6 |
| Child Within Group | 6 | 43.2 | 634.8* | 132.4 | 113.4 | 20.0 | 39.5 | 179.8 | 19.9 |
| Teacher | 1 | 132.3 | 9.0 | .6 | 7.6 | 0.0 | 12.3 | 132.3** | .6 |
| Teacher X Group | 1 | 72.3 | 156.3* | 1.6 | 14.1 | 1.0 | 12.3 | 9.0 | 14.1 |
| Error | 6 | 59.9 | 33.1 | 15.4 | 42.0 | 1.2 | 6.9 | 20.1 | 5.5 |

** significant $p < .05$
* significant $p < .10$

it was not statistically significant, there was still a
trend toward more frequent usage with the nondisabled
children.

Average category scores per occurrence were computed
and are revealed in Table 2. The general trend was for there
to be higher scores in speech directed to nondisabled child-
ren. These differences in scores were significant in the
main verb and wh-question categories (see Table 3). Sig-
nificant difference was approached in the secondary verb
category also. In the case of noun modifiers, it was found
that Teacher 2 obtained higher average scores in her speech
to disabled children than Teacher 1 did, and this was sig-
nificant (see Table 3). In fact, her average score for
disabled children was higher than the score for nondisabled
children (see Table 1).

In contrast to the trend for speech to the nondisabled
group to obtain higher scores, the data reveal that teachers
utilized higher scoring interrogative reversals to the dis-
abled group, and this difference was significant (see Tables
1 and 3).

## Discussion

The present investigation revealed that there were syn-
tactic differences in the speech of teachers addressed to
nondisabled and disabled children. DSS and MLU scores were
higher in teacher speech addressed to nondisabled children.
Based on these measures, one may conclude that teacher speech
is longer (MLU) and more complex (DSS) when addressed to

higher level children. These findings correspond favorably
to findings for parental speech to children described in
the literature (Broen, 1972; Phillips, 1973; Snow, 1972).

An advantage of the DSS type analysis employed in this
study was that it allowed for description of the syntactic
environment, beyond the distinction of simple versus complex.
In examination of the frequency of occurrence of the eight
given DSS structures, indefinite pronouns-noun modifiers
and conjunctions were found to be used less frequently with
disabled children. These same two categories were reported
to be used less frequently in parental speech to Down's
Syndrome children in a study by Buium et al. (1974). Snow
(1972) reported that fewer modifiers were used by parents to
younger children. It is conceivable that indefinite pro-
nouns-noun modifiers were used less frequently because they
require more abstract thinking. For instance, a concrete
noun such as "ball" is semantically simpler than an indefi-
nite pronoun such as "this". In the latter case, the child
is required not only to decide what "this" refers to, but
variables such as proximity and number are considered as
well.

The fact that fewer conjunctions were used with disabled
children is substantiated by the shorter MLU. It would fol-
low that since fewer sentences were long, fewer sentences
were joined together, and therefore fewer conjunctions
were necessary.

Although the difference was not statistically sig-
nificant, the teachers' usage of main verbs was notably less

frequent with the disabled children. There are basically
two types of utterances which do not cintain a main verb,
those in which no verb is included at all, and fragmentary
phrases in which a secondary verb is included. Verbless
utterances typically are one or two word utterances. That
disabled children received shorter utterances has been es-
tablished; this may account in part for fewer main verbs
being used. Fragmentary phrases with secondary verbs only
often occurred within the context of "teaching routines",
in which the teacher would repeat, rearrange, expand, or
reduce parts of previously uttered sentences. Ir appeared
that teachers assumed disabled children understood the
main verb and proceeded to "teach" the part of the sentence
they perceived to cause difficulty in comprehension. This
assumption may or may not be correct in the case of the
disabled dhild.

Fewer personal pronouns were used by teachers to dis-
abled children. For Teacher 2 this difference was signifi-
cant, and Teacher 1 demonstrated a difference in the same
direction. Similar findings were reported by Snow (1972).
In a study of parental speech to young versus older children,
fewer third person pronouns were used. Use of fewer personal
pronouns served to simplify the noun reference, since the
child was not required to decide to what or to whom the pro-
noun referred.

Buium et al. (1974) reported that fewer wh-questions
were posed to lower level children. The present study did
not reveal such a relationship. In fact, one teacher used

more wh-questions with the disabled group.

Averaging category scores provided an insight into the quality of constructions used. As expected, the higher level children received more complex wh-questions, presumably because these children better understand complex forms. Leach (1973) did an analysis of interrogation by parents. Included among the 15 question forms studied were seven wh-question types. If these, he cited two which he said were used with younger children to a greater extent. (These were nominal segment questions "who", and verbal segment questions "what (doing)"). He reported that more complex forms were added as the child grew older. He also made the observation that the simpler forms could be responded to by naming an action or a noun. Forms used with older children required more complex answers such as: spatial location (where?), adjectival segments (what kind?), and elaborations (why? how?). The present findings lead this investigator to concur with Leach's conclusions.

Nondisabled children received higher level main verbs. There was also a tendency for secondary verbs to be more complex, though it was not statistically significant. There appear to be no studies of verb complexity with which to compare these results. However, as verbs become more complex, they typically contain a greater number of morphemes. Therefore, complex verbs are reflected in higher MLU scores. MLU scores were indeed higher with the nondisabled group, as previously mentioned.

Teacher 2 utilized more complex indefinite pronouns-

noun modifiers with the disabled children. It is hard to say why the disabled children were exposed to more complex forms than their nondisabled counterparts. It certainly was not expected. Perhaps Teacher 2 perceived a greater need for disabled children within this category. She may have proceeded to subconsciously "teach" forms of greater complexity. However, if this were the case, one would expect a similar trend to have appeared in other categories. This did not occur.

Another possible explanation is that Teacher 2 simply responded to the disabled children according to her own personal style. This particular style could be characterized as one in which most syntactic forms are simplified when addressing disabled children with the exception of indefinite pronouns-noun modifiers. For example, this teacher was noted to use "everybody", a high-scoring indefinite pronoun, four times more often with the disabled children than the nondisabled group. There is no readily apparent rationale for development of such a style.

Interactional variables could also have affected Teacher 2's responses within this category. Livingston (Note 3) reported that disabled children received a greater number of "descriptions of response" than nondisabled. For example, a typical descriptive response to a child utterance such as "ba" might be: "Yes that's Andy's ball". Note that this response not only contains the indefinite pronoun "that", but also a possessive adjective "Andy's", which is included in the revised DSS as a noun modifier. The majority of items

in this general category receive a subcategory score of one.
Those additional items which score more than one point can be
viewed as contributing to a higher complexity score. Descrip-
tive responses are likely to contain the kind of noun modi-
fiers which receive more than one point, such as possessives,
adjectival phrases, etc. If Teacher 2 was indeed using this
"descriptive response" strategy, the increased complexity
within the indefinite pronoun-noun modifier category might
partially be explained.

Both teachers utilized interrogative reversals of greater
complexity with the disabled children. A closer look at the
varoius types of interrogative reversals revealed that the
disabled children were exposed to a greater number of ques-
tions involving the modal "can". In fact, 40% of the ques-
tions addressed to the disabled children were of this form,
compared to 23% for nondisabled. An interrogative reversal
with this modal receives a high score. This probably con-
tributed greatly to the higher overall complexity score.
Interestingly, the great majority of questions using "can"
were behavior requests rather than requests for information.
This usage of "can" is therefore rhetorical in nature. The
use of a question to elicit a nonverbal response does not
appear to be appropriate for disabled children. Schraeder
(Note 4) reported that disabled children responded to be-
havior requests only 13.5 percent of the time. She sugges-
ted that it was perhaps more appropriate to give behavior
requests in imperative form.

"Teaching routines" in which teachers repeat, with

revision, their own utterances have been previously mentioned. While detailed description of these routines was not the purpose of this investigation, a few observations were made. These are felt to be relevant to the results already discussed.

Teaching routines generally occurred when the child had not responded to the teacher. Routines with nondisabled children were typically rephrasings with an emphasis on teaching a semantic or syntactic point. They were usually two or three utterances in length. In contrast, teaching routines to disabled children occurred more often and were more lengthy. Typically the teacher would make a statement or request, and the child would not respond. She would rephrase the utterance, often reducing it eventually to telegraphic speech. In no cases were utterances reduced to the telegraphic level with nondisabled children. Clearly, increased use of telegraphic speech has affected MLU for the disabled group. Often the routine would start with a question, which is relatively complex, and be reduced through a series of increasingly less complex utterances. Following is an example:

1. Are you looking at a book?

2. Eric, no, you look at book.

3. Look at book.

4. Can you look at book?

5. Yes, look at book.

6. You look at book.

7. Look at book.

It appears that the teachers were attempting to repeat and rephrase their utterances until the child appeared to understand. The above sample is an example of moving from complex to simple. This pattern was prevalent. In fact, Schraeder (Note 4) reported that interrogative routines did indeed tend to progress toward more simple forms.

With respect to behavior requests utilizing "can", the above sample is also exemplary of the manner in which they were often used. The teacher probably rephrased her thought into this form in an attempt to make her utterance more understandable. Since few, if any routines ended with this construction, it does not appear that this strategy was particularly useful. Most often, routines ended with an imperative and/or telegraphic construction.

Using the DSS type analysis, it was possible to detect specific differences in the teaching styles of the two teachers. Teacher 2 addressed a greater number of questions to all children, yet disabled/nondisabled differences were still maintained. Also, Teacher 2 typically made more pronounced distinctions between the two groups. Although Teacher 2's disabled/nondisabled differences were of a greater magnitude, Teacher 1 almost always had scores which differed in the same direction. In fact, of the three cases in which the teachers differed in opposite directions, only one was significant. This was the average category score for indefinite pronouns-noun modifiers, which has already been discussed. This consistency between teachers makes it possible to discuss trends of teachers as a group,

rather than as separate individuals.

In summary, the present investigation revealed that teacher utterances to the disabled children were shorter and less complex, as measured by the DSS and MLU. Specifically, teachers' speech to disabled children could be characterized as conatining fewer indefinite pronouns-noun modifiers, personal pronouns, and conjunctions. Main verbs were less numerous and less complex. Wh-questions and secondary verbs were also of decreased complexity. Conversely, interrogative reversals to the disabled children were more complex, as were indefinite pronouns-noun modifiers in the speech of one of the teachers. Teaching routines were noted and described to be more numerous and of greater length with this group.

Siegel and Harkins (1963) stated that the effective language instructor structures interaction with a child in such a way that child verbalization is encouraged. It was not believed by this investigator that the teachers' use of questions to request behavior encouraged such verbalization. It appeared that questions of such complex forms were above the children's level of comprehension, since their percent of compliance was low (Schraeder, Note 4).

The presence of teaching routines, on the other hand, indicated that teachers were sometimes sensitive to comprehension levels of the disabled children. When a child did not respond to a teacher utterance, the teachers sometimes proceeded to systematically present the child with successively less complex forms. Within the context of these teaching routines, decreased use of all types of pro-

nouns, noun modifiers, and conjunctions can be explained.
It is also clear that verb forms and other structures would
be less complex as utterances became more telegraphic. It is
believed, however, that omission of main verbs is not an ef-
fective technique. Even the most basic of sentences contains
a verb, by definition. It follows that a disabled child
(who may not have mastered the use of verbs) should be pro-
vided with an appropriate madel, containing a verb.

Cheseldine and McConkey (1979) submitted that parents
depend of the verbal level of the child in order to determine
the verbal level to use with the child. In the case of lan-
guage disabled children, they suggested the possibility that
parents do not expect progress and therefore intuitively
fo not advance the linguistic models they provide. This
could be equally possible in teacher speech.

The teachers in this study generally started routines
at a relatively higher level of complexity and proceeded
downward. In this way the child was not deprived of ex-
posure to advanced linguistic forms, yet the utterance was
adjusted in an effort to meet the comprehension level of
the child. This strategy appeared to be an appropriate one.
However, it was felt that main verbs should not be omitted,
although simplification might aid comprehension.

In a study by Andersen (Note 1), teachers were success-
fully trained to utilize peer modeling with nondisabled
classmates serving as models. Although teachers sometimes
possess set stylistic patterns, her study showed that it
is possible to train teachers to be more effective language

trainers.

Some of the syntactic patterns revealed in the present investigation should be considered in development of intervention techniques. The traditional intervention model is based on the assumption that simple forms are trained first. Complex forms are successively added as simple forms are mastered. It appears that teachers would be well advised to address disabled children with short, simple forms to which they can respond appropriately. Teachers could then proceed to introduce more complex forms within the framework of a teaching routine. They could be trained to follow the child's (or their own) utterances with a sentence in which the same meaning was expressed using slightly more complex syntactic structures. In fact, this type of intervention was shown to be successful in selective training of verb or question forms by Nelson (1977). It is believed that a variety of syntactic structures could be trained utilizing similar procedures.

The literature reviewed as well as the results of the present investigation have established that disabled children are exposed to a different linguistic environment than non-disabled children. This pattern exists not only in parental speech to their children, but also in the speech of teachers to their language learning students. The pattern of syntactic usage employed by teachers was considered appropriate in some cases and inappropriate in others. It is hoped that the results of this study can be considered in intervention planning.

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Notes

1. Andersen, D. Incorporating usage of nondisabled peer modeling in teachers' interactions with developmentally disabled preschool children. Unpublished Master's Thesis, Kansas State University, 1980.

2. Elmore, J. Quantity and quality of teachers' vocabularies addressed to developmentally disabled and nondisabled preschool children. Unpublished Master's Thesis, Kansas State University, 1979.

3. Livingston, R. Teacher verbal interactions with developmentally disabled and nondisabled preschool children. Unpublished Master's Thesis, Kansas State University, 1979.

4. Schraeder, J. Teacher's interrogations to developmentally disabled and nondisabled preschool children. Unpublished Master's Thesis, Kansas State University, 1978.

## References

Bloom, L. One word at a time. The Hague: Mouton. 1973.

Broen, P. The verbal environment of the language learning child. American Speech and Hearing Association Monograph, 1972, 17.

Brown, R. A First Language. Cambridge, Mass.: Harvard University Press, 1973.

Brown, R., & Bellugi, U. Three processes in the child's acquisition of syntax. Harvard Educational Review. 1964, 34, 133-151.

Buckhalt, J., Rutherford, R., & Goldberg, K. Verbal and non-verbal interaction of mothers with their Down's syndrome and non-retarded infants. American Journal of Mental Deficiency, 1978, 82, 337-343.

Buium, N. An investigation of the word order parameter of a parent - child verbal interaction in a relatively free order language. Language and Speech, 1974, 17, 182-186.

Buium, N., Rynders, J., & Turnure, J. Early maternal linguistic environment of normal and Down's syndrome language learning children. American Journal of Mental Deficiency, 1974, 79, 52-58.

Bzoch, K., & League, R. Receptive Expressive Emergent Language Scale. Gainesville, Florida: The Tree of Life Press, Inc., 1971.

Cheseldine, S., & McConkey, R. Parental speech to young Down's syndrome children: an intervention study. American Journal of Mental Deficiency, 1979, 83, 612-620.

Cramblit, N., & Siegel, G. The verbal environment of a language impaired child. Journal of Speech and Hearing Disorders, 1977, 42, 474-482.

Dunn, L. Peabody Picture Vocabulary Test. Circle Pines, Minn.: American Guidance Service, 1965.

Falk, J. Linguistics and Language. Lexington, Mass.: Xerox College Publishing, 1973.

Fraser, C., & Roberts, N. Mothers' speech to children of four different ages. Journal of Psycholinguistic Research, 1975, 4, 9-16.

Fryer, H. Concepts and Methods of Experimental Statistics. New York: Allyn and Bacon, Inc., 1966.

Granowsky, S., & Krossner, W. Kindergarten teachers as models for children's speech. The Journal of Experimental Education, 1970, 38, 23-28.

Holzman, M.  The use of interrogative forms in the verbal in-
    teraction of three mothers and their children.  Journal
    of Psycholinguistic Research, 1972, 1, 311-355.

Holzman, M.  The verbal environment provided by mothers for
    their very young children.  Merrill - Palmer Quarterly,
    1974, 20, 31-42.

Leach, E.  Interrogation: a model and some implications.
    Journal of Speech and Hearing Disorders, 1973, 37, 33-46.

Lee, L.  Developmental Sentence Analysis.  Evanston: North-
    western University Press, 1974.

Longhurst, T., & Stepanich, L.  Mothers' speech addressed to
    one-, two-, and three-year-old children.  Child Study
    Journal, 1975, 5, 3-11.

McLaughlin, B., Schutz, C., & White, D.  Parental speech to five
    year-old children in a game playing situation.  Child
    Development, 1980, 51, 580-583.

Mecham, M.  Verbal Language Development Scale. Circle Pines,
    Minn.: American Guidance Service, 1959.

Miner, L.  Scoring procedures for the length-complexity index:
    A preliminary report.  Journal of Communication Disorders,
    1969, 2, 224-240.

Moerk, E.  Changes in verbal child-mother interactions with in-
    creasing language skills of the child.  Journal of Psycho-
    linguistic Research, 1974, 3, 101-115.

Muma, J.  Language Handbook. Englewood Cliffs, N.J.: Prentice -
    Hall, Inc., 1978.

Nelson, K.  Facilitating children's syntax acquisition. Deve-
    lopmental Psychology, 1977, 13, 101-107.

Olswang, L., & Carpenter, R.  Elicitor effects on the language
    obtained from young language impaired children.  Journal
    of Speech and Hearing Disorders, 1978, 43, 76-88.

Phillips, J.  Syntax and vocabulary of mothers' speech to
    young children: age and sex comparisons.  Child Develop-
    ment, 1973, 44, 182-185.

Siegel, G.  Adult verbal behavior in "play therapy" sessions
    with retarded children.  Journal of Speech and Hearing
    Disorders, 1963a, Monograph 10, 34-38.

Siegel. G.  Adult verbal behavior with retarded children labeled
    as "high" or "low" in verbal ability.  American Journal of
    Mental Deficiency, 1963b, 68, 417-424.

Siegel, G.  Appendix H: Prototypes for instructions to typists. Journal of Speech and Hearing Disorders, 1963c, Monograph 10.

Siegel, G., & Harkins, J.  Verbal behavior of adults in two conditions with institutionalized retarded children. Journal of Speech and Hearing Disorders, 1963, Monograph 10, 39-46.

Slobin, D.  The ontogenesis of grammar: A theoretical symposium. New York: Academic Press, 1971.
Snow, C.  Mothers' speech to children learning language. Child Development, 1972, 43, 549-565.

Snedecor, G., & Cochran, W.  Statistical Methods. Ames, Iowa: The Iowa State University Press, 1972.

Spradlin, J., & Rosenberg, S.  Complexity of adult verbal behavior in a dyadic situation with retarded children. Journal of Abnormal and Social Psychology, 1964, 68, 694-698.

Toler, S., & Bankson, N.  Utilization of an interrogative model to evaluate mothers' use and children's comprehension of question forms.  Journal of Speech and Hearing Disorders, 1976, 41, 301-314.

Wetstone, H., & Friedlander, B.  The effect of word order on young children's responses to simple questions and commands. Child Development, 1973, 44, 734-740.

## Appendix A

<u>Scoring of Adjectives Within the Noun Modifier Category</u>

1 point........... Simple one word adjectives of the form:
                   adj. + noun
                   "<u>good</u> boy", "<u>red</u> ball"

2 points.......... Possessives:
                   "<u>Andy's</u> car"

3 points.......... adj. + adj, also copula + adv. + adj.:
                   "<u>nice cool</u> day",
                   "He is <u>very happy</u>"

4 points.......... Participles:
                   "the <u>broken</u> toy",
                   "the <u>running</u> boy"

5 points.......... Comparatives:
                   "a <u>taller</u> boy",
                   "the <u>oldest</u> one"

7 points.......... Multiple combinations:
                   "<u>broken-down red</u> house",
                   "<u>Johnny's old yellow</u> truck"

## Appendix B

Criteria for the Inclusion of Utterances in the Speech Sample

1.  No one word utterances were included except imperatives,
    "Go!", "Look!".

2.  The following types of two word utterances were excluded:
    a.  affirmation/negation + statement,
        "yes, truck", "no, running".
    b.  name + statement
        "Deena, no", "Good, Scotty"
        "(bye-bye, thank-you, oh-oh, hi, etc.) + name

3.  Repetitions of previous utterances were not included.

## Appendix C

<u>Counting of Morphemes for MLU Computation</u>

1. All surface morphemes were counted, including prefixes, suffixes, and infixes.

2. Contracted utterances were counted as if the whole words were there:

    let's = let us

    don't = do not

    gonna = going to

TEACHER SYNTAX ADDRESSED TO DEVELOPMENTALLY DISABLED
AND NONDISABLED PRESCHOOL CHILDREN

by

JULIET CLAIRE BOEGE

B.A., University of California, Los Angeles, 1978

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AN ABSTRACT OF A MASTER'S THESIS

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requirements for the degree

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In recent years the influence of the linguistic environment has been considered in the acquisition of language. Most studies have focused on the speech of mothers to their language learning children. Relatively few have considered the speech of teachers to their language learning students. The syntax of adults had been described in a variety of ways. However, most syntactic measures are restricted to measurement of sentence length, or a general, overall syntactic complexity score. The purpose of the present investigation was to describe the syntax of teachers addressed to developmentally disabled and nondisabled preschool children, in a quantitative and qualitative manner.

The subjects were two preschool teachers and eight children. Four of the children were classified as disabled (MLU < 1.5); the remaining four were classified as nondisabled (MLU = 2.9 - 4.3). Mean age for the disabled group was 3-0, and for the nondisabled group it was 3-3.

FM telemetry was used to record teacher speech. From the recordings, verbatim transcripts were prepared. Syntax was analyzed along four parameters: (1) sentence length, (2) overall syntactic complexity, (3) frequency of occurrence of eight syntactic categories, (4) average complexity per incidence within the eight categories. A modified Developmental Sentence Scoring (DSS) procedure was utilized to provide qualitative description.

Results indicated that teacher utterances to disabled children were shorter and less complex. Disabled children received fewer indefinite pronouns, noun modifiers, personal pro-

nouns, conjunctions and main verbs. Main verbs, secondary verbs and wh-questions were less complex. Interrogative reversals were found to be more complex with the disabled group. The pattern of usage of the structures was discussed within the context of verbal teaching routines. These routines were employed by teachers in an apparent attempt to simplify speech to disabled children.

In ensuing discussion it was suggested that the teachers were using some strategies which appeared to facilitate language learning. Other strategies were employed which appeared not to be especially facilitative. Adaptations to intervention techniques were suggested.