

SPEECH OF TRAINED AND UNTRAINED ADULTS ASSEMBLED WITH  
HIGH AND LOW LINGUISTIC LEVEL NORMAL CHILDREN

by

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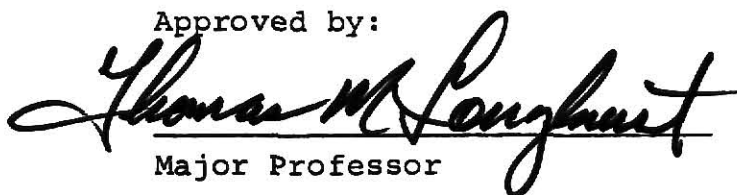
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Language acquisition in young children has received a great deal of attention in the literature in recent years (see review by, Rebelsky, Starr, and Luria 1967). Researchers have focused mainly on language acquisition in young children from an intrapersonal viewpoint, investigating how language develops within the individual child. Such work is exemplified by investigations of the development of vocabulary (Berko, 1958), sentence structure (Menyuk, 1969), and articulation (Templin, 1957). A recent research trend has begun to focus on how language develops within an interpersonal or two-person context, e.g. how adults or older siblings influence the development of language in young children.

Some authors (Chomsky, 1957; McNeill, 1966, 1971; Bullowa, cited in Bever et. al ., 1965) have attempted to discount the notion that adult speech serves as an adequate model for children's language development because it is often ungrammatical. Other authors, (Braine, 1963; Brown and Bellugi, 1964; Granowsky and Krossner, 1970; Phillips 1970; Gleason, 1971; and Broen, 1971) have suggested, on the other hand, that adult speech addressed to children is highly grammatical and displays lesser syntactic and semantic complexity than adult speech addressed to other adults. Further, these authors, suggest that complexity of adult language varies directly with the age of the child addressed. These studies show that kindergarten teachers

and mothers are sensitively tuned to their children's needs and regulate their speech accordingly. Friedlander (1969) suggests that few people beside good parents, good primary school teachers, and good children's entertainers use this type of control over their language output.

One of the objectives of the present investigation was to see if persons who were inexperienced and not specifically trained in working with young children would modify their language interaction patterns with young children less than would persons who were more experienced and have been specifically trained to interact with young children.

A second objective of the present study was to see if untrained and trained adults would show differential language interaction patterns depending on whether they were assembled with a child with high linguistic ability as apposed to an equal-aged child of relatively lower linguistic ability. Subjects in the present investigation were normal nursery-school children chosen from a single class. Siegel (1967), in a series of studies of adult language interaction with institutionalized mentally retarded children of high and low language abilities, found that adults differentially modified their language depending on whether they are conversing with high-level in contrast to low-level retarded children.

The purpose of the present study was to investigate the speech of trained and untrained adults addressed to high and relatively low linguistic-level normal children.

## METHOD

### Adult Subjects

Eight, native English speaking, university students served as subjects. Two of the subjects were married, but none had children. Four of the subjects were labeled trained because they were pursuing "social service" degrees such as speech pathology, elementary education, or child development that would prepare them to work with children and because they had extensive experience interacting with young children. The four remaining subjects were labeled untrained because they were pursuing degrees such as architecture, biology or business that would not specifically prepare them to work with children and because they had minimal experience interacting with young children. The mean chronological age of the trained group was 22.6 and the mean age of the untrained group was 21.4.

### Child Subjects

Eight, native English speaking, children from a university nursery school class, ranked as the four highest and four lowest in linguistic skills in a class of sixteen served as subjects. The mean chronological age for the high group was 4.9 and 4.5 for the low group. Teachers ranked the children on their articulatory skill, general intelligibility, and sentence length and complexity.

As a check on the teacher's rankings, a 50-utterance speech sample (Templin, 1957) was elicited and tape recorded from each child using the W-series Peabody Pictures (level 2) as stimulus material. Following established procedures (Siegel, 1963), verbatim, typewritten protocols were transcribed from the tapes. Linguistic analyses used to assess the children's language performances were; mean length of response (Templin, 1957), type-token ratio (Carroll, 1964) and a length-complexity index score (Miner, 1969). Table 1 shows the results of these analyses.

Table 1

Comparison of the High and Low Child Groups  
on Mean Length of Utterance (MLU),  
Carroll Type-Token Ratio (CTTR) and Length-Complexity Index (LCI).

ANALYSIS	HIGH	LOW	VARIATION
MLU	4.89	4.39	.50
CTTR	4.98	4.78	.20
LCI	5.38	4.78	.60

### Experimental Facility

All sessions were recorded on a high fidelity tape recorder (TEAC, TCA40). Sessions were conducted in a two-room suite of the Language Acquisition Laboratory located in the University Speech and Hearing Clinic. The subject

room contained two chairs, a table, and a microphone. The experimenter observed from a control room which also contained the recording equipment.

### Procedure

Each adult was informed that he was participating in an experiment in children's language development and was not told that his own speech was under scrutiny. Prior to the experiment the adult subjects were mailed instructions explaining their various responsibilities in the experiment (Appendix F). Each adult participated in three twenty-minute sessions with a child ranked low in verbal skills. The sessions were separated by one to three days.

Each twenty-minute session was divided into four, five-minute tasks. The first and last task of each session was labeled "free talk". Adults were instructed simply to talk with the children about any topic they wished. No toys or props were to be taken into the room to be used during free talk. The second task was labeled "guessing game" in which the adult described one of six ambiguous, line drawings from each of ten pages in a loose-leaf notebook (Longhurst, 1971). Adults were instructed to work at their own pace and need not cover all the pages. After the adults described a design, the child attempted to pick the design from the array. The third task was labeled "storytelling" in which the adults were asked to tell a story from one of a series of Little Golden Books (No. 471, 504, 569, 582, 585, and 596).

The works in the books had been covered so the adults could not simply read the story. After all sessions were finished, the adults completed a short questionnaire concerning their perceptions of the experiment.

Protocol Preparation. A typist, trained in protocol preparation, typed verbatim transcriptions from the tape recordings following established procedures (Siegel, 1967). After the protocols were prepared, while listening to the tape recordings and following along on the protocol, the experimenter corrected the protocols and then segmented the protocols into utterances or macro-segments (Hockett, 1958). The last seventy-five utterances from each five-minute task were then re-typed for further analysis. A sample size of seventy-five utterances was chosen after considering the sample size used for analysis by Templin (1957), Darley and Moll (1960) and Siegel (1963).

To assess reliability of protocol preparation and segmenting, another experienced typist re-typed a protocol for one of the tape recordings and another graduate student, experienced in segmenting, segmented one of the protocols.

Performance Measures. The verbal behavior of the trained and untrained adults was assessed on two levels; the utterance or syntactic level and the word or lexical level. Analysis used to assess the adults' lexical choice were the Carroll type-token ratio and a comparison of the adults' unique words with the Thorndike-Lorge list of most frequently



1,000 words. Carroll type-token ratio was used to assess the diversity of the adult's expressive vocabulary and a comparison of the adult's words with the Thorndike-Lorge list of most frequent 1,000 words served as an assessment of the adult's lexical choice.

Mean Length of Utterance (MLU). One commonly used measure of the length of utterances is MLU (see review by Shriner, 1969). The average length of utterances is computed by dividing the total number of words in a specific sample of words in a specific sample by the number of utterances (Templin, 1957).

Classification by Type of Utterance. After segmentation was complete, each utterance was classified into one of Dever's (1971) clause types. The clause types were declarative, interrogative (both wh- and yes/no), imperative, and exclamatory, with an additional miscellaneous category for non-classifiable utterances such as fragments, stereotypes and repetitions.

Utterance Complexity. By applying the linguistic procedures of conjoining, expanding, embedding and transformation, a simple construction can be made more complex. For the purposes of the present study, complexity was determined by categorizing the utterances as simple in construction or belonging to a more complex category containing conjoined, expanded, embedded and transformed utterances.

Carroll Type-Token Ratio (CTTR). For the words in each seventy-five utterance sample, a CTTR was computed by dividing the number of different words(types) by the square root of twice the total number of words(tokens) (Carroll, 1964). This formula is expresses,  $CTTR = \text{types} / \sqrt{2 \times \text{tokens}}$ . CTTR is approximately independent of sample size, therefore, it is possible to compare CTTR's computed from different sample sizes. Siegel(1967) showed that adults used a less diverse speech with low linguistic level retarded children than with relatively higher linguistic level retardates.

Word Choice. Each unique word in each seventy-five utterance sample was compared with the Thorndike-Lorge(1944) list of the first 1,000 most frequently used words. These procedures have been used as an assessment of the "everydayness" of the adult's word choice(Krauss and Gluckberg, 1969). Words found on this list are simple and very concrete. The percentage of words an adult uses that occur on this list is an indication of the complexity and concreteness of his vocabulary choice.

Statistical Analysis. A three- way analysis of variance (Winer, 1962) ( $2 \times 3 \times 4$ ) in which the main effects were: (1) Treatment (Trained vs. Untrained), (2) Session (1,2,3), and (3) Task (Free Talk I, Guessing Game, Story-book and Free Talk II) was designed to answer the first

question of whether there were overall differences in the interaction patterns of trained and untrained adults. For this analysis the scores for each adult when interacting with the high and low child were summed and then the means for each treatment group were compared. This analysis also compared the means of these pooled scores across sessions and tasks. This first analysis was not designed to describe differences between high and low children within each adult group.

A true measure of the differences between the interaction patterns of the adults with high vs. low linguistic level children was obtained by computing the high-low difference for each adult subject. A three-way analysis of variance (Winer, 1962) ( $2 \times 3 \times 4$ ) in which the main efforts were: (1) Treatment (Trained vs. Untrained), (2) Session (1,2,3), and (3) Task (Free Talk I, Gussing Game, Storybook, or Free Talk II) was used to compare these different scores.

A series of one-sample  $t$  tests (Winer, 1962) were then used to test the hypothesis that the mean high-low differences for the two treatments (Trained vs. Untrained, the three sessions, and the four tasks for each linguistic measure were significantly different from zero.

## RESULTS

### Reliability

A graduate student, experienced in protocol segmentation, resegmented a protocol of one session that had been previously segmented by the experimenter. The number of segments in nine descriptions of the guessing game and in the storybook, and free talk tasks was compared and the correlation coefficient for segmentation was .94. The graduate student also recategorized the utterances from the same protocol according to Dever and Bauman's (1971) clause types (declarative, imperative, exclamatory, interrogatives and miscellaneous). Correlation coefficients for clause type categorization ranged between .93 and .99. Correlation coefficients for classifying utterances as simple or more complex were .99 and .96 respectively.

The graduate student also recounted the number of words, number of unique words, and the number of unique words on the Thorndike-Lorge list of 1,000 most frequent words list. Correlation coefficients for these word counts ranged from .95 to .99. Since reliability for counting words had already been established, the experimenter retyped and counted the number of words in a protocol that had been previously typed to establish reliability for protocol typing. The word counts from the original

and retyped protocols were compared and the correlation coefficient for protocol typing was .88.

#### Children's Guessing Game Scores

As shown in Table 2, Guessing Game scores of both high and low children were highest when interacting with the trained adults. The low linguistic level children scored considerably lower (45%) overall than the high linguistic level children (66%). These results suggest, at least in this task, that high children do perform differently from low children.

Table 2  
Mean Percent Correct Scores Obtained by  
Children on the Guessing Game Task.

	With Trained	With Untrained	Mean
High-level Children	71	60	66
Low-level Children	45	44	45
Total Children	58	52	

#### Questionnaire

All adults reported that they noticed a difference in language ability of the two children with which they interacted.

All correctly identified the child high in linguistic ability and low in linguistic ability and were able to describe specific skills which reinforced their perceptions of the children's different linguistic rankings.

### Statistical Analyses

Trained vs. Untrained. The main Treatment effect in the first series of analyses of variance (Table 3 and 4) was significant only on the total number of miscellaneous and repetitious utterances (Table 4,d,f). Session was not a significant main effect on any of the linguistic measures, however, a significant Treatment X Session interaction was observed on Declarative utterances (Table 3,d). Task was a significant main effect for MLU, CTTR, Declarative utterances, and the Complexity measure (Table 3, a,c,d,g). The Task main effect was also significant for Total Miscellaneous and Total Interrogatives (Table 4, d,a). Significant Treatment X Task interactions were obtained on Yes-No Interrogatives, and Fragments and Stereotypes under the miscellaneous category (Table 4, c,e,g). Total Miscellaneous utterance was the only significant Treatment X Session X task interaction (Table 4, d).

High-Low Difference. The main Treatment effect in the second series of analyses of variance (Table 5 and 6) suggests that there were no significant differences between the mean High-Low differences of trained vs. untrained

Table 3.  
Mean Squares from the Analysis of Variance of the Effects of Treatment  
(Sum of High-Low Trained vs. Sum of High-Low Untrained)  
Session (1, 2, 3), Task (Freetalk I and II, Guessing Game, Storybook)  
on the Various Linguistic Measures

Source	df	a MLU	b T-L	c CTTR	d DEC	e IMP	f EXC	g Complex
Treatment (T)	1	7.002	.1886	3.7719	.3471	.0008	.0001	.1166
Error	6	33.8672	.1243	9.9610	.0781	.0077	.0029	.0602
Session (S)	2	.2244	.0051	3.5303	.0366	.0249	.0003	.0609
T x S	2	.4469	.0033	.1919	.0776*	.0073	.0001	.0366
Error (b)	12	6.0136	.0467	1.4234	.0135	.0085	.0002	.0598
Task (A)	3	29.1721*	.0020	16.8128*	.8030*	.0104	.0004	.0901*
T x A	3	.2521	.0074	.3878	.0567	.0182	.0001	.0169
S x A	6	.4159	.0157	.7172	.0115	.0117	.0003	.0167
T x S x A	6	.6829	.0074	.5401	.0148	.0176	.0001	.0174
Error (c)	54	1.2992	.0101	.7834	.0239	.0081	.0003	.0181
Total	95							

\* Indicate mean squares which were significant at the .05 level of significance.

Table 4.  
Mean Squares from the Analysis of Variance of the Effects of Treatment  
(Sum of High-Low Trained vs. Sum of High-Low Untrained)  
Session (1, 2, 3), Task (Freetalk I and II, Guessing Game, Storybook)  
on the Various Linguistic Measures

Source	df	I N T E R R O G A T I V E		M I S C E L L A N E O U S		
		Total	Wh- Yes/No	Total	Frag.	Repe. Stereo-
Treatment (T)	1	.1860	.0165	.0171	.0896*	.1033 .1598* .0233
Error	6	.0897	.0605	.0620	.0124	.1515 .0278 .2110
Session (S)	2	.0231	.0590	.0647	.0032	.0166 .0124 .0030
T x S	2	.0148	.1085	.0680	.0008	.0425 .0043 .0039
Error (b)	12	.0067	.0288	.0209	.0056	.0800 .0279 .0636
Task (A)	3	.7706*	.0302	.0437	.0324*	.0182 .0102 .0441
T x A	3	.0145	.0779	.1108*	.0007	.1757* .0001 .1061*
S x A	6	.0456	.0137	.0140	.0044	.0380 .0073 .0219
T x S x A	6	.0277	.0291	.0262	.0101*	.0048 .0098 .0195
Error (c)	54	.0297	.0379	.0397	.0041	.0269 .0075 .0347
Total	95					

\* Indicate mean squares which were significant at the .05 level of significance.



Table 5.  
Mean Squares from the Analysis of Variance of the Effects of Treatment  
(High-Low Difference for Trained and Untrained)  
Session (1, 2, 3), Task (Freetalk I and II, Guessing Game, Storybook)  
on the Various Linguistic Measures

Source	df	a MLU	b T-L	c CTTR	d DEC	e IMP	f EXC	g Complex
Treatment (T)	1	12.0841	.0091	3.2994	.0064	.0003	.0004	.0073
Error (a)	6	2.4277	.0587	1.6951	.0388	.0152	.0004	.1041
Session (S)	2	.1312	.0458	.2231	.0395*	.0003	.0009	.0342
T x S	2	2.3053	.0246	5.4543	.0630*	.0031	.0009	.0222
Error (b)	12	1.0115	.0207	1.2024	.0091	.0113	.0005	.0481
Task (A)	3	.2801	.0061	5.4548*	.0394	.0041	.0001	.0112
T x A	3	1.8301	.0285	3.3269*	.0026	.0023	.0002	.0110
S x A	6	1.5267	.0273	.9428	.0275	.0030	.0003	.0176
T x S x A	6	.7822	.0088	1.2796	.0244	.0023	.0002	.0147
Error (c)	54	.9305	.0138	1.2585	.0164	.0106	.0003	.0153
Total	95							

\* Indicate mean squares which were significant at the .05 level of significance.

Table 6.  
Mean Squares from the Analysis of Variance of the Effects of Treatment  
(Sum of High-Low Trained vs. Sum of High-Low Untrained)  
Session (1, 2, 3), Task (Freetalk I and II, Guessing Game, Storybook)  
on the Various Linguistic Measures

Source	df	I N T E R R O G A T I V E			M I S C E L L A N E O U S		
		Total	Wh-	Yes/No	Total	Frag.	Repe. Stereo-
Treatment (T)	1	.0020	.0009	.0076	.0234	.0001	.0093
Error (a)	6	.0480	.0719	.0806	.0293	.0548	.1148
Session (S)	2	.0308	.0132	.0102	.0028	.0421	.1019*
T x S	2	.0224	.0201	.0257	.0023	.1075*	.0413
Error (b)	12	.0148	.0475	.0475	.0078	.0276	.0261
Task (A)	3	.0153	.0248	.0521	.0060	.0342	.1035
T x A	3	.0116	.0147	.0037	.0011	.0350	.0386
S x A	6	.0141	.0061	.0105	.0079	.0182	.0277
T x S x A	6	.0220	.0159	.0035	.0025	.0049	.0086
Error (c)	54	.0234	.0279	.0261	.0059	.0207	.0398
Total	95						

\* Indicate mean squares which were significant at the .05 level of significance.

groups on any linguistic measure. Further, the Session main effect in these analyses suggests that only on Declarative (Table 5,d) and Stereo-typed (Table 6,g) utterances was there a significant difference among the three sessions. There was also a significant Treatment X Session interaction on Declarative (Table 5,d) utterances and Fragments (Table 6, e). The main Task effect from these analyses also reveals that there was a significant difference among the four tasks on only CTTR (Table 5,c). There was also a significant Treatment X Task interaction on CTTR. The results of this second series of analyses of variance were not of particular interest because they merely compared the High-Low linguistic differences of the Trained and Untrained groups. The present study was actually interested in whether trained and untrained adults would interact differently with high verses low linguistic level children. The significance of the mean High-Low differences generated in this second series of analyses of variance were assessed by a series of one-sample t tests.

Trained vs. Untrained. The mean High-Low differences for the trained and untrained groups are presented in Table 7. Both the Trained and Untrained adults used higher CTTR's, Total and Wh-Interrogatives, and Repetitions with High children. Only the mean differences for CTTR and

Table 7.  
Mean High-Low Difference  
for the Trained and Untrained Groups  
for the Various Linguistic Measures

Source	Trained	Untrained
MLU	0.3854	-0.3241
Thorndike-Lorge	0.0034	-0.01612
CTTR	0.0625 *	0.4332 *
Declarative	0.0130	0.0033
Imperative	0.0002	0.0033
Exclamatory	-0.0011 *	0.0033*
Complexity	-0.0033	0.0141
Interrogative		
Total	0.0363	0.0272
Wh-	0.0102	0.0165
Yes/No	-0.0091	-0.0269 *
Miscellaneous		
Total	0.0088	-0.0261
Fragments	-0.0570	-0.0545
Stereo-type	-0.0250	-0.0053
Repetition	0.0891*	0.0762 *

\* Indicate significant differences at the .05 level of significance. The formula used to calculate the confidence intervals was:

$CI = t_{.025(df)} \sqrt{\frac{MS_{error}}{n}} \pm \text{mean difference}$ , where n= number of observation in the tested mean.

Note: Positive values indicate higher means for the interaction with the high child and negative values indicate higher means for interaction with the low child.

Repetitions were significant at the .05 level. Untrained adults used more Declarative, Imperative, Exclamatory, and complex utterances with High children although only Exclamatory was significant.

Both Trained and Untrained adults used more Yes-No Interrogative, Fragments, and Stereo-types with the Low children. Only the mean difference for Yes-No Interrogative for Untrained adults was significant at the .05 level. Trained adults used more Declarative, Imperative, Exclamatory, and Complex utterances with Low children with only Exclamatory significant. Untrained adults used higher MLU, Thorndike-Lorge, and Total Miscellaneous with Low children and none of these mean differences were significant at the .05 level of significance.

Session. The mean High-Low differences for the three sessions are presented in Table 8. For all sessions, adults used higher CTTR's, Total Interrogatives, Wh-Interrogative during the third session and Repetitions during the second and third sessions were significant.

Adults used more Yes-No interrogatives, Total Miscellaneous, Fragments, and Stereo-types in all three sessions when interacting with Low children. Total Miscellaneous was significant in the second and Fragments in the third session were significant at the .05 level. Linguistic measures which were not consistent over all sessions can be seen in Table 8.

Table 8.  
Mean High-Low Differences for the Three Sessions

Source	S E S S I O N		
	1	2	3
MLU	0.0171	-0.0256	0.1003
Thorndike-Lorge	-0.0008	0.0326	-0.0429
CTTR	0.1643	0.3313	0.2479
Declarative	0.0141	0.0166	-0.0454 *
Imperative	0.0054	0.0000	-0.0008
Exclamatory	-0.0032 *	0.0066	0.0004
Complexity	0.0041	0.0387	-0.0266
Interrogative			
Total	0.0170	0.0108	0.0674
Wh-	0.0368	0.0025	0.0007
Yes/No	-0.0386	-0.0066	-0.0089
Miscellaneous			
Total	-0.0070	-0.0187*	-0.0000
Fragments	-0.0216	-0.0518	-0.0939*
Stereo-type	-0.0058	-0.0188	-0.0208
Repetition	0.0289	0.0776*	0.1414 *

\* Indicates significant differences at the .05 level of significance. The formula used to calculate the confidence intervals was:

$CI = \pm t_{.025(df)} \frac{MS_{error}}{n} \pm \text{mean difference}$ , where n = number of observation in the tested mean.

Note: Positive values indicate higher means for the interaction with the high child and negative values indicate higher means for interaction with the low child.

Task. The mean High-Low differences for the four tasks are presented in Table 9. For all Tasks adults used more Total Interrogatives and Repetitions with High children across all four tasks. Only the Free Talk II for both of these measures was significant.

Adults used more Fragments and Stereo-types in all four tasks when assembled with Low children. Fragments were significant on all tasks except Storybook. Linguistic measures which are not consistent over all tasks can be seen in Table 9.

Table 9.  
Mean High-Low Difference for the Four Tasks

Source	TASK			
	Free Talk	Guessing	Storybook	Free Talk
MLU	-0.0329	0.0816	0.1588	-0.0820
Thorndike-Lorge	-0.0250	-0.0136	-0.0028	0.0104
CTTR	0.4038	0.3497	-0.4350	0.6730 *
Declarative	-0.0044	0.0522	-0.0366	-0.0305
Imperative	0.0250	-0.0088	-0.0055	-0.0000
Exclamatory	-0.0011	-0.0005	0.0033	0.0027
Complexity	0.0066	-0.0238	0.0283	0.0105
Interrogative				
Total	0.0188	0.0050	0.0405	0.0628 *
Wh-	0.0220	-0.0068	0.0549	-0.0165
Yes/No	-0.0465	0.0223	-0.0686 *	0.0207
Miscellaneous				
Total	-0.0077	-0.0311 *	0.0044	0.0000
Fragments	-0.0676 *	-0.0026	-0.0917 *	-0.0612 *
Stereo-type	-0.0020	-0.0067	-0.0149	-0.0370
Repetition	0.0066	0.0517	0.1040	0.0983 *

\* Indicate significant differences at the .05 level of significance. The formula used to calculate the confidence intervals was:

$CI = t_{.025(df)} \sqrt{\frac{MS_{error}}{n}} \pm \text{mean difference}$ , where n = number of observation in the tested mean.

Note: Positive values indicate higher means for the interaction with the high child and negative values indicate higher means for interaction with the low child.



## DISCUSSION

The present study was conducted to answer two major questions. Would trained and untrained adults interact differently with young children and further would the adults show differential interaction patterns with normal children who were high and low in linguistic skill?

To answer the second question, it was necessary to assemble the adults with children of different linguistic skill. Children were ranked by their teachers, the experimenter conducted an independent assessment of the children's language abilities, adult subjects ranked the children with which they interacted, and an assessment of the children's performance in the Guessing Game task was made. All four observations show that there were consistent differences between the High and Low groups of children. However, the experimenter's assessment of the children's language performance may suggest that these differences on the experimenter's assessment were quite small. The adult subjects reliably perceived differences in the children and on several measures of their interaction patterns, modified their language significantly depending on whether they were assembled with a High or Low child.

The first major question asked by the present study was, would Trained and Untrained adults interact differently with young children? Trained adults used higher MLU's,

more frequently occurring words (Thorndike-Lorge) and higher percentages of declarative, exclamatory, repetition, and stereo-typed utterances. Their utterances were also more complex. Untrained adults used more diverse vocabularies (CTTR) and a higher percentage of Imperative, Total Miscellaneous, and Fragment utterances. One striking difference was that untrained adults used more Total Interrogative, Wh-Interrogative, and Yes-No interrogatives. However, on only Total Miscellaneous and Repetition utterances were the differences between trained and untrained adults significant at the .05 level (Table 4, d, f).

The second question was whether trained and untrained adults would interact differently depending on whether they were assembled with High or Low children. There are two ways to answer this question. First, do adults, overall, interact differently with High and Low children and secondly is the effect of High and Low children different depending on whether the adult is trained or untrained? Both the trained and untrained groups used higher CTTR, Total Interrogative, Wh-Interrogative, and Repetitions with High children and more Yes-No Interrogatives, Fragments, and Stereo-types with Low children. CTTR and Repetition were the only measure significant at the .05 level. Thus, the adults overall, used significantly more diverse vocabularies

and more Repetitions with the High children.

The results of Table 7 show that high and low children effect trained and untrained adults in opposite ways. Trained adults used higher MLU's, more common words (Thorndike-Lorge), and more Total Miscellaneous utterances with High than with Low children while Untrained adults used higher MLU's, more common words, and more Total Miscellaneous utterances with Low than High children. Also Trained adults used more Declarative, Imperative, Exclamatory, and more Complex utterances with Low than with High while Untrained adults used more Declarative, Imperative Exclamatory, and more Complex utterances with High than when assembled with Low children. However, the only significant difference was on Exclamatory utterances.

Another way of answering the second question, (i.e. Do adults interact differently with High and Low children)? is to observe the adult's behavior in the various tasks of the three sessions (Tables 9, 8).

Each of the three sessions contained four tasks and these tasks were specifically structured to demand different types of verbal behavior from the adult subjects. The Free Talk tasks provided no common subject for the adult to talk to the child about. It was necessary for the

adult to find a common subject to stimulate conversation. The Guessing Game demanded that the adult assess the child's past background and knowledge in order to describe a design so that the child could choose correctly. The Storybook task was the only task where a common subject was provided for conversation.

Results showed that adults used significantly more Total Interrogatives in the third session and Repetition during the second and third session with second sessions and Fragments in the third session with Low children.

Task results showed that adults used significantly more total Interrogative and Repetitions during Free Talk II when assembled with High children. Significantly more Fragments were used in all tasks except storybook when adults were assembled with Low children.

It is interesting to note that had the present study asked the two questions in only one session and particularly in only one task, no significant differences may have been observed. Consistent significant differences were not observed among the three sessions, but some consistent and significant differences were observed for the four tasks. For example Free Talk II showed adults used significantly greater CTTR's, Total Interrogatives and Repetitions with High children than with Low's.

As with retarded children in the Siegel (1967) study, the present investigation found the adults modify differentially their interaction patterns when assembled with High and Low linguistic level normal children. The present investigation also suggests that trained and untrained adults interact differently with young children and that their interaction patterns with high and low children are different.

Possibly more differences that were significant would have been observed if the levels of the children were further apart, but still within the range of normal. Further studies might also compare the interaction pattern of trained and untrained adults with more severe linguistically retarded children.

**THIS BOOK  
CONTAINS  
NUMEROUS PAGES  
THAT WERE  
BOUND WITHOUT  
PAGE NUMBERS.**

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RECEIVED FROM  
CUSTOMER.**

## Appendix A

### Instructions to Typist for Typing Protocols

1. Type the transcripts in the predetermined random order.
2. Do not use capitals (except for proper names or for the pronoun I).
3. Do not use any commas, questions marks or any other forms of punctuation in preparing these protocols. You will use apostrophes, however, to indicate a contraction or to indicate possession.
4. Some remarks made by either the child or the adult will be ompletely or partially incomprehensible. If a response (to be defined later) is either partially or completely incomprehensible, exclude it from the transcript.
5. Interjections such as 'uh', or 'er', should be omitted except when they are used as words.
6. Include all repeated words in the protocol.
7. When a number or letter is included as part of the description. type the number out and capitalize the letter.

## Appendix B

### Instructions for Segmenting the Protocols

1. In general, a vocal utterance unit is a unit of spoken language marked off on either side by a pause or by some change in inflection.
2. A vocal utterance unit is considered finished when the speaker comes to a complete stop and allows his voice to fall.
3. A vocal utterance unit is considered finished when the speaker comes to a complete stop with either a questioning or exclamatory inflection.
4. A vocal utterance unit is considered complete when one speaker terminates and the other begins speaking.
5. A vocal utterance unit may include several simple utterances. If one simple utterance or remark is immediately followed by another with no pause for breath, they are considered only one utterance unit if the second remark is clearly subsidiary to the first.
6. Expressions such as 'aw', 'aah', 'ow', 'uh', when they are not used as either affirmation, negation, or interrogation do not count as utterances and should be omitted from the protocols.
7. Utterances that are not recognizable as a word or words do not count as responses.



## Appendix C

### Instructions for Differentiating Statements from Questions

1. All utterances will be marked as either statements or questions. In normal conversation, questions are typically indicated by the use of particular words, or by the way the words are arranged in the utterance, or simply by the inflection.
2. Occasionally an utterance may start out as a question but end as a statement. When this occurs, mark the utterance a question.
3. An utterance that starts out as a statement but ends as a question is also marked as a question.
4. Indicate the end of an utterance as question with a double slash(//). Other utterances need no marks.

## Appendix D

### Ranking Form for Nursery School Teachers

Please choose the four children who are highest and four that are lowest in these skills:

- the way they speak
- amount of speaking
- size of vocabulary
- complexity of sentences
- articulation

---

HIGHEST
1. _____
2. _____
3. _____
4. _____

LOWEST
1. _____
2. _____
3. _____
4. _____

## Appendix E

### Initial Questionnaire for Adult Subjects

Name \_\_\_\_\_ Age \_\_\_\_\_ Sex \_\_\_\_\_

Address \_\_\_\_\_ Phone number \_\_\_\_\_

Marital Status \_\_\_\_\_ Number of Children \_\_\_\_\_

Major \_\_\_\_\_ Classification \_\_\_\_\_

Do you have brothers or sisters that are presently 1-10  
years old? \_\_\_\_\_

Do you feel at ease working with pre-school children? \_\_\_\_\_

What courses have you had that would prepare you for  
working with children? ( list )

What experience(s) have you had working with children?

(Please include the age of the children.)

What time conflicts do you have on Tuesday and Thursday  
afternoons?

Thank you.

## Appendix F

### Letter and Instructions to Adult Subjects

October 26, 1971

Dear

Enclosed are the instructions for my research in language that I'm doing for my Master's thesis. Please read them thoroughly before coming. If you have any questions feel free to contact me.

Please report to the Speech and Hearing Clinic, room 23 located in the basement of Eisenhower Hall. I will meet you there.

You are scheduled for the following times:

Tuesday\_\_\_\_\_

Thursday\_\_\_\_\_

Tuesday\_\_\_\_\_

Thursday\_\_\_\_\_

Tuesday\_\_\_\_\_

Thursday\_\_\_\_\_

You will be paid \$10.00 for the completion of these six sessions. The check will be mailed to you, so be sure I have your address.

If for some reason you cannot come at the designated time, please contact me as soon as possible at my home 532-9238 or at the Speech and Hearing Clinic 532-6879.

Sincerely,



Susan Cannon

### Pretraining Instructions for Adult Subjects

General Instructions: You will be working with two children. You will see each of the children three separate times. Your total sessions will number six. Each session will be twenty minutes long which will be broken down into four five-minute tasks. These tasks are explained below. The sessions may be scheduled at your convenience over a three week period.

Free Play: The first and last five minutes of each session will be free play. During these five minutes you and the child can talk about anything you like. There will be no toys or props in the room and please do not bring any with you.

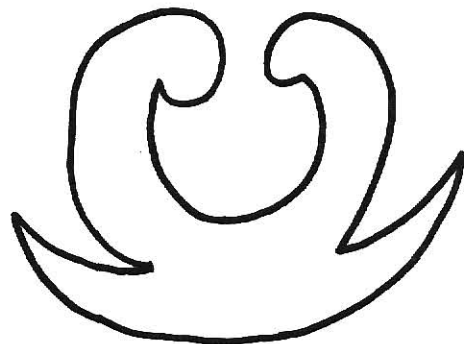
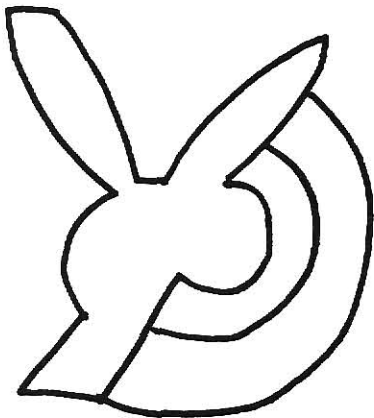
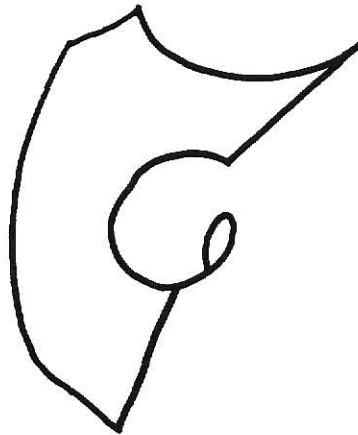
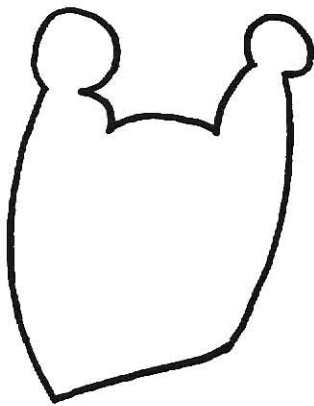
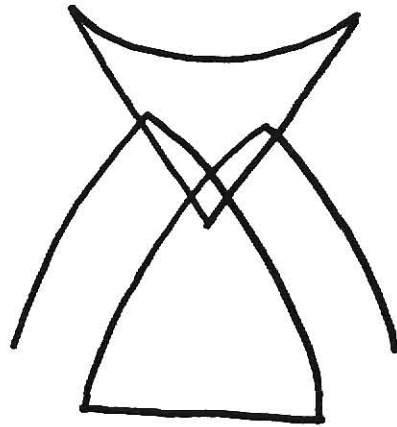
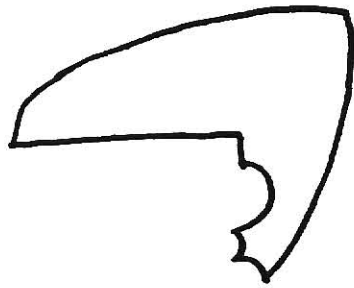
Guessing Game: The second five-minute task will be the guessing game. I will tell you when to begin. A book will be provided containing a number of pages of abstract designs like those on the attached page. On each page, there will be a "key" design. You are to talk about that design in such a way that the child can guess which design it is. Explain to the child that this is a guessing game and he is to guess which picture you are talking about. Even if the child makes an incorrect choice, just say something like, "That's fine" or "You're a good guesser."

Picture Book: The third five-minute task will be a picture book situation. I will tell you when to start. You should then put away the guessing game and take out the storybook. Tell a story about the pictures. Use as many of the pages in the book as you wish; you do not have to use all of the pages during the five minutes. When you feel that you have exhausted a picture, just go on to the next page. When I tell you to put away the storybook, it will signal the beginning of the last free play task. When I come into the room to take the child back to nursery school the session will be over.

**THIS BOOK  
CONTAINS  
NUMEROUS PAGES  
WITH DIAGRAMS  
THAT ARE CROOKED  
COMPARED TO THE  
REST OF THE  
INFORMATION ON  
THE PAGE.**

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## Appendix G

### Letter to Parents



Dear Parent,

I am a graduate student in Speech Pathology working on my Master's thesis on the development of language of normal children. I am interested in comparing how trained people (those majoring in education, speech pathology and family and child development) as opposed to untrained students (those majoring in business, pre-med, and architecture) will interact with pre-school children.

This study will be conducted in the Language Acquisition Lab in Eisenhower Rm. 23 (Speech and Hearing Clinic). I would like to see your child for three twenty-minute sessions during nursery school and three twenty-minute sessions on the dates below.

If for any reason you will not be able to bring your child in, please contact me at the Speech and Hearing Clinic ph. 532-6870 or at home ph. 539-9238. Also if you have any questions please feel free to contact me.

Thank you for your cooperation.

Tuesday \_\_\_\_\_

Thursday \_\_\_\_\_

Tuesday \_\_\_\_\_

Thursday \_\_\_\_\_

Tuesday \_\_\_\_\_

Thursday \_\_\_\_\_

Sincerely,

Susan Cannon

## Appendix H

### Questionnaire for Adults at the End of the Sessions

1. Have you noticed any differences in language abilities among the two children you have been seeing?

Yes \_\_\_\_\_ No \_\_\_\_\_

2. If you answered yes to question 1, which child would you rate highest and lowest in language abilities?

Highest \_\_\_\_\_ Lowest \_\_\_\_\_

3. If you answered yes to question 1, what criterion were you basing your rating on?

## Appendix I

Mean Results for the Sum of High and Low Children  
for  
Trained and Untrained Groups,  
Sessions,  
and  
Tasks

## Means for the Trained and Untrained Groups

Source	Trained	Untrained
MLU	12.2028	11.0149
Thorndike-Lorge	1.5895	1.5009
CTTR	14.0264	14.4228
Declarative	1.0408	0.9205
Imperative	0.0865	0.0644
Exclamatory	0.0427	0.0399
Complexity	0.4127	0.3431
Interrogative		
Total	0.6391	0.7272
Wh-	0.5547	0.5810
Yes/No	1.4217	1.4484
Miscellaneous		
Total	0.2583	0.3194
Fragments	0.3301	0.3157
Stereo-type	0.3261	0.2244
Repetition	1.3746	1.3434

## Means for the Three Sessions

Source	S E S S I O N		
	1	2	3
MLU	11.6927	11.6087	11.5252
Thorndike-Lorge	1.5447	1.5581	1.5329
CTTR	13.8425	14.4447	14.3865
Declarative	0.9416	1.0016	0.9987
Imperative	0.0937	0.0466	0.0441
Exclamatory	0.0379	0.0433	0.0429
Complexity	0.3424	0.3645	0.4266
Interrogative			
Total	0.7104	0.6566	0.6824
Wh-	0.5201	0.6032	0.5802
Yes/No	1.4764	1.3871	1.4417
Miscellaneous			
Total	0.3004	0.2821	0.2841
Fragments	0.3714	0.3371	0.3803
Stereo-type	0.2971	0.3072	0.2693
Repetition	1.3481	1.3625	1.3665

## Means for the Four Tasks

Source	TASK			
	Free Talk	Guessing	Storybook	Free Talk
MLU	10.8545	11.8041	13.0891	10.6879
Thorndike-Lorge	1.5333	1.5470	1.5448	1.5557
CTTR	14.6411	12.9788	14.7662	14.5123
Declarative	0.7455	1.0788	1.1633	0.9349
Imperative	0.0916	0.0588	0.0499	0.0455
Exclamatory	0.0411	0.0361	0.0411	0.0472
Complexity	0.3333	0.4127	0.4461	0.3194
Interrogative				
Total	0.9277	0.5294	0.5716	0.7038
Wh-	0.5674	0.5178	0.5915	0.5946
Yes/No	1.4195	1.4976	1.4221	1.4011
Miscellaneous				
Total	0.2788	0.3266	0.2422	0.3077
Fragment	0.3999	0.3391	0.3677	0.3451
Stereo-type	0.2963	0.2572	0.3045	0.2828
Repetition	1.2967	1.3947	1.3727	1.3719



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SPEECH OF TRAINED AND UNTRAINED ADULTS ASSEMBLED WITH  
HIGH AND LOW LINGUISTIC LEVEL NORMAL CHILDREN

by

Susan Slinkman Cannon

B. S., Kansas State University, 1970

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AN ABSTRACT OF A MASTER'S THESIS

submitted in partial fulfillment of the  
requirements for the degree

MASTER OF ARTS

Department of Speech

KANSAS STATE UNIVERSITY  
Manhattan, Kansas

1972

## ABSTRACT

The present study was designed to investigate how trained and untrained adults interacted with high and low linguistic level normal children. The study was justified by the lack of research concerning the verbal behavior of untrained adults or adults inexperienced in interacting with young children.

Eight adults and eight children served as subjects for this study. The criteria for choosing the four trained adults was their common pursuit of "social service" degrees that would prepare them to work with children and their previous experience working with children. The four untrained adults had minimal experience working with children and were not pursuing "social service" oriented degrees. The children were ranked by their university nursery school teachers as either highest or lowest in linguistic ability out of a class of sixteen children.

Each adult saw a high and low linguistic level child for three, twenty-minute sessions. During each twenty-minute session the subjects participated in four, five-minute tasks. The first and last tasks were free-talk situations in which the adult engaged the child in conversation without the use of toys or props. The second task was a guessing game in which the adult described ambiguous designs in such a way that the child could choose a single design from an array of designs. The third task

was a story-book situation in which a book with sequential pictures but no words provided the conversational stimulus.

From verbatim protocols constructed from each tape recorded session, a number of linguistic analyses were computed.

Statistical analysis of these measures showed that trained adults interacted differently with children than did untrained adults. Both adult groups interacted differently with high versus low linguistic level children. Verbal behavior of the adults changed over the three sessions and was dependent on the task in which they interacted.