

Imitations and Expansions: Some Developmental Aspects of Mother-Child Communications

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It has been reported that mothers systematically alter their language complexity in addressing children, although the determinants of this behavior are unclear. Two groups of children whose mean ages were 23 and 56 months were videotaped in a free-play setting with their mothers. Their interactions were analyzed for relationships between mothers' and children's speech with regard to complexity and usage of selected speech types. Mothers' expansions of child utterances were positively related to the younger, but not the older, children's imitations of mothers' speech. Mothers' sentence complexity was positively related to younger, but not older, children's frequency of responding to questions. Child speech that is responsive to mothers' speech seems to provide a gauge by which mothers tailor their language complexity, allowing the child to exert an influence on his language environment.

Research has shown that the young child hears speech and language that seems tailored to his language learning needs (Baldwin & Baldwin, 1973; Broen, 1972; Nelson, 1973; Snow, 1972; Frank & Seegmiller, Note 1). One way in which mothers alter speech to children is by reducing grammatical complexity as reflected in a reduced mean length of utterance. All investigators find this to be a consistent phenomenon, although there is a great deal of variation reported, as shown in Table 1. Frank and Seegmiller (Note 1) noted differences in the mean length of speech addressed to children 2½ and 5 years old, but did not report these means. Snow's (1972) findings of a relatively long mean utterance length for mothers was obtained in the context of structured tasks, such as story telling. The Baldwins (1973) reported that maternal mean utterance length in speech to 30-month-old children

was significantly shorter than when the same mothers' speech was directed to adults.

Several inferences can be drawn from these data. One is that mothers' shorter utterances to the young child reflect a uniform shortening of all types of utterances. The wide range of such shortened utterances suggests that the simplicity and length of utterance are influenced by a number of different variables, such as setting, age of the child, and context of the mother-child interaction. It is also possible that these variables have an indirect effect by influencing the type of utterance used most frequently and that various types of utterances may show differences in length, a hypothesis also entertained by Broen (1972). Certain aspects of the child's language may influence maternal sentence length by eliciting a higher production of certain types of speech, such as mothers' modifications and expansions of child utterances.

Several authors have reported that mothers tend to expand utterances of the young child, although again the rate at which this occurs varies according to the author. It is conceivable that expansions influence the overall mean length of utterance reported for mothers of 2-year-olds.

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Table 1: Children's Age and Children's and Mothers' Speech Complexity

Children's age in months	Mean length of utterance		Investigator
	Children	Mothers	
13	1.00	3.24	Nelson (1973)
18		3.47	Phillips (1973) ^b
23	1.37	3.62	Seitz & Stewart ^a
24		6.60	Snow (1972) ^b
24	1.90	4.03	Nelson (1973)
28		4.01	Phillips (1973) ^b
30	2.97	4.67	Baldwin & Baldwin (1973)
56	3.84	5.24	Seitz & Stewart ^a
120		9.60	Snow (1972) ^b

^a Present study.^b Children's mean utterance length not reported.

Nelson (1973) reported that mothers' repetitions (expansions and imitations) accounted for 6% of their speech to their 2-year-olds. This figure, however, contrasts sharply with Brown and Bellugi's (1964) report of a 30% rate for expansions alone. Their report is based on data from two children, summed across a year's time, beginning when the subjects' speech averaged 1.84 and 1.4 morphemes. They did not report whether mothers used different rates of expansion as the children's language performance changed. Nelson attributed the difference in her data and the Brown and Bellugi data to the relatively low level of language competence in her children, who were producing average utterances of 1.9 morphemes. She thought that mothers might use more expansions "when the child has begun to make relatively complex statements that need further interpretation" (Nelson, 1973, p. 86). Some variability in the data may be accounted for by the instructions for generating an expansion (Brown & Bellugi, 1964, p. 313): "Retain the words given in the order given and add those functors that will result in a well-formed simple sentence that is appropriate to the circumstances." These instructions generally result in categorizing as an expansion those utterances that extend the child's utterance syntactically and act on the child's apparent meaning. However, as the authors note, maternal expansions may not be completely compatible with the child's utterance. The interpretation of an

expansion as "appropriate" to the circumstances may be indefinite enough to account for some of the variability reported. The variability in mothers' expansions may also be a function of the different language levels of the child subjects, as Nelson suggests.

Thus, it seems that mothers do tailor their language for the language learning child, but that a number of variables may influence the type and complexity of maternal speech.

This study was conducted to examine (a) the influence of different utterance types on the mean length of mothers' utterances; (b) the relationships between mothers' and children's mean utterance length; and (c) the relationships between selected aspects of child speech and mothers' usage of expansions.

Method

Subjects

Eighteen mother-child pairs participated in the study. Two groups of nine each were formed, based on the children's ages. The mean age of the younger group was 22.7 months with a range of 18 to 26 months, $SD = 3.0$. Seven subjects were girls; two were boys. The mean age of the older group was 55.6 months with a range of 48 to 61 months, $SD = 4.8$. Three were girls; six were boys. All mothers were high school graduates; some had attended college.

Procedure

Each mother-child pair was videotaped for 15 minutes in an unfamiliar room in which there was an assortment of toys. Instructions to the mothers were: "I'd like you to play with your child as you would if you had a few minutes to spend with her (him) at home."

Each tape was transcribed verbatim by at least two observers. An utterance was marked as such when indicated by intonation and pauses within the speech pattern. A run-on or compound sentence was scored as one utterance according to intonation pattern and pause location. A phrase or sentence fragment was scored as an utterance if it was characterized by a complete intonation pattern (Snow, 1972). Mean length of utterance was computed by dividing total words by total utterances. Any utterance not fully understood by all observers was scored as an unintelligible vocalization and omitted from computation.

All intelligible child utterances were coded as elicited, imitative, or spontaneous. An elicited response was one that followed a question and was an attempt to answer that question. However, not all utterances that followed questions were categorized as elicited. An imitative response was defined as one that contained at least one content word from the immediately preceding utterance

and was of the same grammatical type (i.e., question or statement). All other child utterances were coded as spontaneous. Mean utterance lengths were computed using words, not morphemes. Morpheme counts are highly comparable to word counts, however. Significant correlations were obtained between the number of morphemes and number of words for subsamples of five children in each age group. For the younger group, $r(7) = .99, p < .01$; for the older children, $r(7) = .89, p < .01$.

Mothers' utterances were coded into the following mutually exclusive categories:

Questions were scored if the utterance was spoken with a rising intonation or if the grammatical structure designated it as a question. Questions were subdivided into two types: (a) The yes/no category contained all questions that could be answered by yes or no, including tag questions (Broen, 1972, p. 32). (b) The wh- category included all questions that began with what, who, where, whose, which, how, why, or when. Occasional questions, such as "You did what?" were omitted from computations. (Thirteen such utterances were found.)

Exact repetitions were scored if the mother repeated exactly the child's utterance within the mother's three immediately subsequent utterances.

Modifications were mothers' utterances that amplified and/or modified a child's utterance and that occurred within three utterances of the child's utterance. This category includes expansions, contradictions, and reductions. It also includes utterances that would not be definable as expansions by Brown and Bellugi's (1964) definition because they are not well-formed simple sentences. For example, the child may name an object (ball) and the mother respond by adding an article (a ball).

Expansions were defined by the original Brown and Bellugi instructions amended to require that the expansion occur within three utterances immediately following the child utterance and that the expansion make the child's utterance more explicit in meaning and/or correct the grammar.

Contradictions were a form of modification that corrected or contradicted usage of a word. For example, Child: a deer.

Mother: That's not a deer.

These criteria avoid inclusion of the following type of maternal speech as a modification:

Child: It is raining on the mailman.

Mother: I don't imagine the mailman enjoys that.

The mother's sentence is not classified as a modification because it does not make the child's *meaning* more explicit. Here the mother's utterance is seen as a comment on the child's utterance rather than a modification of it.

Reductions were exact and immediate repetitions of a portion of a child utterance.

Affirmatives and negatives consisted entirely of the following one-word utterances: yes, yeah, good, right, okay, and no. However, if these words were contained within another utterance, they were scored as part of that utterance.

Statements included all utterances that were not questions, exact repetitions, modifications, affirmatives, or negatives. Only those utterances for which there was complete observer agreement are included in these data. This resulted in discarding 11 utterances.

Results

Mothers of the older children had a significantly longer mean utterance length than mothers of the younger children, $F(1, 16) = 40.53, p < .001$, with respective means of 5.2, $SD = .44$, and 3.6, $SD = .62$. The modal sentence length was three words for mothers of 2-year-olds, four words for mothers of the older children.

Mean length of utterance by types was computed for a subsample of five mothers in each group. Except for modifications, the mean length of each utterance type was significantly longer for mothers of older children, with significantly longer wh- questions, $t(8) = 4.19, p < .005$; yes/no questions, $t(8) = 1.96, p < .05$; and statements, $t(8) = 4.62, p < .005$. Modifications were significantly longer for mothers of 2-year-olds, $t(8) = 3.00, p < .01$. No utterance type differentially influenced the overall difference in mean utterance length between the two groups of mothers. An analysis of variance was conducted using utterance-type mean length differences as the source of variation to compute a numerator sum of squares with 3 degrees of freedom. The denominator was calculated by averaging the pooled variance of each of the difference scores, with the degrees of freedom conservatively set at 16. The resulting F ratio (2.49) was not significant.

Except for modifications, there were no significant differences in frequency of utterance types between the two groups. Mothers used 53% of their utterances as statements; 33% as questions, with 11% being wh- questions; and 8% as affirmatives and negatives. Mothers of 2-year-olds used a mean of 5.33% (82) of their utterances as modifications and 3.6% as exact repetitions in contrast to a mean of 1.8% modifications and 1.1% exact repetitions for mothers of the older children. This difference was significant at the .05 level, $t(16) = 2.78$. The mean frequency for modifications made by mothers of younger children was 9.4, $SD = 7.56$; for mothers of older children, $M = 1.88, SD = 1.36$. The range of modifications by mothers of younger children, when viewed as a percentage of mother's utterances, was 1%-15%; as a percentage of children's ut-

terances expanded, the range was 2.5%–19.6%. Mothers of older children produced only 17 modifications of their children's utterances, with one mother responsible for 5 of these.

Expansions accounted for 52% of the modifications produced by mothers of younger children. The percentage of mothers' utterances used as expansions ranged from .3%–6.5% with a mean of 2.8%. The percentage of child utterances expanded ranged from 1.5%–10.3%. Only seven of the modifications by mothers of older children were expansions, resulting in a significant difference in the production of this utterance type by the two groups of mothers, $t(16) = 3.19, p < .005$.

Children's Speech

Both groups of children were equally talkative, with totals of 987 and 974 utterances for the younger and older groups, respectively. Means and *SDs* for children's speech types and mean utterance length are presented in Table 2. Neither group used significantly more spontaneous or elicited utterances; however, the younger children produced significantly more imitative utterances, $F(1, 16) = 19.87, p < .01$.

The mean utterance length, computed on spontaneous and elicited utterances, was significantly longer for older children, $F(1,$

16) = 85.71, $p < .001$. Mean length correlated with frequency of elicited utterances for the younger children, $r(7) = .81, p < .01$, and with the frequency of spontaneous utterances for the older children, $r(7) = .78, p < .02$.

Imitations, expressed as a percentage of child utterances, were significantly and negatively related to the younger children's mean utterance length, $r(7) = -.71, p < .05$, but unrelated to the older children's mean utterance length.

Frequency of elicited (but not spontaneous) utterances was negatively correlated, $r(7) = -.71, p < .05$, with frequency of imitative utterances by the younger children.

Relationships Between Mothers' and Children's Speech

Although mothers' and children's mean utterance length was significantly correlated for the total sample, $r(16) = .83, p < .01$, no such correlations were observed for the individual groups. Table 3 shows some correlations between mothers' mean utterance length, expansions, wh- questions, and children's speech.

Expansions were not found to be related to the frequency of mothers' utterances for younger children, $r(7) = .06$, but were significantly related to number of utterances produced by mothers of older children, $r(7) = .80, p < .01$.

As shown in Table 3, mothers' usage of wh- questions was positively related to children's frequency of responding for both age groups. A similar correlation was found for the mothers' production of yes/no questions and responding by the 4-year-olds, $r(7) = .77, p < .02$, but not for the 2-year-olds.

Discussion

No particular utterance type differentially influenced the mean utterance length for either group of mothers. Except for modifications, all utterance types were significantly shorter for mothers of younger children. Their longer modifications are attributable to these mothers' use of more expansions.

Although the mean utterance length for

Table 2: Children's Speech Characteristics by Age Groups

Speech type	23-month-olds (mean age)	56-month-olds (mean age)
Total utterances		
<i>M</i>	110.00	108.11
<i>SD</i>	62.38	20.82
Imitative		
<i>M</i>	12.11	1.33
<i>SD</i>	7.20	.86
Spontaneous		
<i>M</i>	78.78	80.22
<i>SD</i>	42.99	18.29
Elicited		
<i>M</i>	18.77	26.66
<i>SD</i>	18.44	13.51
Mean utterance length		
<i>M</i>	1.37	3.84
<i>SD</i>	.36	.71

Table 3: Some Correlations Between Mothers' and Children's Utterances

Children's speech	Mothers' speech			
	Mean length	Frequency	Expansions Percent ^a	Wh- questions
23-month-old				
Mean length	.53	-.23	-.71*	.84**
Frequency spontaneous	.49	.53	-.53	.43
Frequency elicited	.66*	.13	-.66*	.81**
Percent elicited	.62	-.08	-.70*	.76*
Frequency imitative	.29	.73*	-.12	.03
Percent imitative	-.36	.21	.61	-.51
56-month-old				
Mean length	.14	-.48	-.49	-.22
Frequency spontaneous	.07	-.67*	-.69*	-.46
Frequency elicited	.35	.55	.49	.74*
Percent elicited	.25	.72*	.68*	.81**
Frequency imitative	-.27	.29	.27	.15
Percent imitative	-.38	.39	.39	.13

^a Mothers' expansions expressed as a percentage of child utterances expanded.

* $p < .05$

** $p < .01$

mothers and children was positively correlated across the total sample, no correlations were found for these measures for the individual age groups. Mothers' mean utterance length was correlated with the frequency of the younger children's elicited utterances, indicating that mothers may be gauging the young child's understanding of language by his responsiveness to their questions, an inference also supported by the positive correlations between mothers' wh-questions and children's responses. The lack of such a relationship between yes/no questions and children's responses may indicate that mothers use these questions as redundant conversational fillers, rather than true questions, when addressing young children.

The correlation between mothers' expansions and the younger children's imitations suggests that mothers are also attentive to this utterance type, which again is closely tied to their own utterances. The mean rate of expansions produced by mothers of younger children was 2.8%, which, when added to the rate of exact repetitions (3.6%), is in agreement with the 6% rate Nelson (1973) reports for repetitions and expansions combined.

The variability among mothers of the younger children can be traced in part to the variability of their offspring, with mothers'

expansions correlated with the children's imitative utterances. However, as Nelson (1973) has demonstrated, mothers are highly variable in the way in which they respond to children's language. Two children in the younger group, comparable in language performance, received quite different reactions from their mothers in terms of accepting or contradicting their speech. Still another source of variation with regard to expansion rates may be the method of reporting: whether it is based on frequency or percentage of mothers' utterances, or percentage of children's utterances. These data indicate that expansions are closely related to children's imitations, and that mothers' expansion rates are not easy to compare or interpret unless reported in relationship to children's language performance.

Imitations have been regarded as indicative of the child's level of language competence (McNeil, 1970; Slobin, 1968). Mothers also may interpret imitations as marking a new level of language mastery. Imitations should provide an especially salient signal of changing competence, since they are tied to mothers' speech. Mothers of several of the younger children in this study made a clear distinction between their child's "having a few words" at about 1 year and "trying to talk," which they indicated had just begun.

When mothers perceive a child as "trying to talk," they respond with modifications, especially expansions, designed to help him say what he is trying to say. Thus, imitations allow the child with limited language to engage his mother in conversation. The fortuitous by-products of this reciprocity include maternal language that is tied to the young speaker's interests and language level.

Because some of these correlations are based on small percentages, caution must be used in attributing importance to them individually regardless of their level of statistical significance. For example, the negative correlation between mothers' expansions and older children's spontaneous utterances may be spurious since only seven such utterances were used by these mothers. **It is the pattern of results, more than any single correlation, that suggests that as children become more proficient at speaking for themselves, mothers expand proportionately fewer utterances.** Support for this notion is provided by negative correlations between the percentage of child utterances expanded and (a) the young child's increasing mean length of utterance and (b) the frequency of elicited utterances.

From these data we propose that child speech that is responsive to mother's speech provides a gauge whereby mothers monitor their language to the child. This enables the child to exert an active influence on his

language environment so that it changes with his increasing competence.

REFERENCE NOTE

1. Frank, S. M., & Seegmiller, M. S. *Children's language environment in free play situation*. Paper presented at the meeting of the Society for Research in Child Development, Philadelphia, March 1973.

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