

Parent-Child Interaction and the Acquisition of Lexical Information During Play

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Individual play interactions of parents with their preschool-aged boys and girls were examined to determine the ways mothers and fathers provided and elicited lexical information about the names and functions of the parts of a complex toy car. Parents' and children's speech was analyzed for utterances that provided or requested the name (label) or purpose (function) of a car part and for nonlabeling utterances that mentioned the part (term). Analyses revealed significant contrasts between fathers and mothers in their interactive styles and in the amounts and kinds of lexical information they provided and elicited. Fathers' speech contained more different terms than did mothers', and more fathers than mothers described the functions of the car parts. Fathers were also more cognitively and linguistically demanding: More fathers than mothers requested labels and functions from their children. Children, in turn, produced more total vocabulary to fathers than to mothers. These parent-child interaction patterns suggest that fathers as well as mothers may exert an active influence on children's language development.

The influence of parent-child interaction styles on young children's language and cognitive development has increasingly become a focus of research attention (Clarke-Stewart, 1978; Gleason & Weintraub, 1978). After first establishing that mothers provide special modifications in their speech to young children (Snow, 1977), a number of researchers have attempted to distinguish those features of mothers' speech that may advance children's language acquisition. For example, Newport, Gleitman, and Gleitman (1977) found a statistically significant positive relationship between the frequency of maternal labeling utterances (e.g., "That's an apple") and the size of children's vocabularies.

The role fathers may play in language and cognitive development is now also capturing attention. Clarke-Stewart (1978) recently presented evidence of contrasts in the influences of mothers and fathers on the cognitive development of 14 children aged 15-30 months. Her analyses of parent-child social interactions suggested that mothers play a direct role in promoting children's cognitive abilities, whereas the fathers' role is only indirect. Results from cross-lagged correlational analyses indicated that certain maternal behaviors, including verbal behaviors, stimulated and accelerated the children's intellectual development. Paternal behaviors, however, were interpreted more as responses to the children's already established levels of performance.

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This study examines the play interactions of parents with their preschool-aged girls and boys as language-teaching and language-learning experiences. It focuses on similarities and contrasts in mothers' and fathers' speech to boys and girls while providing and eliciting lexical information about the labels and functions of the parts of a complex toy.

Method

Subjects

The subjects were 14 pairs of parents and their firstborn, preschool-aged children, seven boys and seven girls. The children ranged in age from 2 years 6 months to 4 years 11 months, with a mean of 3 years 8 months for the boys and 3 years 9 months for the girls.

The families were white, middle- to upper-middle-class. Ten of the 14 mothers were either full-time housewives or were employed fewer than 20 hours a week outside the home; the mothers of three boys and one girl were employed 30-40 hours a week outside the home. The families were recruited through the nursery schools their children attended.

Procedure

The children interacted individually with each of their parents in laboratory playroom sessions that took place about 3 weeks apart. During the sessions, in addition to other activities, they played with a large wooden Playskool toy car that could be taken apart with accompanying tools. The play interactions with the car lasted approximately 10 minutes, with a mean of 9.5 minutes for sessions with mothers and 11.8 minutes for sessions with fathers, a difference that was not statistically significant, $t(13) = 1.08$.

The children were participants in a larger study of parent-child interaction and the development of communicative competence. This subsample was selected because videotapes of the car-play episodes with each parent were available for analysis. Because of these selection limitations, it happened that most of the children, five boys and five girls, interacted first with their mothers.

Analyses

From the videotapes and transcripts made from them, two researchers coded the parents' and children's speech for lexical information relating to the 13 major parts of the car and its operation: wheel, spare tire, screwdriver, wrench, jack, engine, steering wheel, bumper, windshield, bolt (screw), nut, tools, and mechanic.

The following speech categories were employed to examine the frequencies of specific naming or labeling utterances, of references to car parts embedded in other kinds of utterances, and of descriptions of the functions of the parts:

Label. An utterance in which the name of an item was specifically provided, for example, "This is a screwdriver."

Label request. An utterance in which the name of an item was specifically requested, for example, "What is that?"

Term. Mention of the name of a part in a non-labeling utterance, for example, "You wanna put the steering wheel back on?"

Function. An utterance that specifically provided a description of the purpose or use of an item, whether

Table 1
Proportion of Parents Providing Each Category of Lexical Information

Category of lexical information	Fathers	Mothers	p^a
Terms	1.00	1.00	—
Labels	.93	.78	—
Label requests	.93	.50	.03
Functions	.93	.43	.02
Function requests	.50	.14	.06

Note. $n = 14$ for mothers and for fathers.

^a By McNemar tests.

or not the item was mentioned by name, for example, "I think that's supposed to be for holding the car up while you fix the tires."

Function request. An utterance that specifically requested a description of the purpose or use of an item, whether or not the item was mentioned by name, for example, "What is this for?"

Intercoder reliability was at least 93% for each category.

For each parent and child, separate tallies were then made of the parts for which labels or functions had been requested or provided or terms had been mentioned. Parts that had been labeled and mentioned as terms were counted only under labels.

Results

Although mothers and fathers did not differ significantly in either the total numbers of utterances they produced ($M_s = 169$ and 196, respectively) or in the mean lengths of their five longest utterances ($M_s = 14.5$ and 14.2, respectively), $t_s(13) < 1.0$, there were marked contrasts between mothers and fathers in their production and elicitation of lexical information.

Parents' and children's production of each category of lexical information was evaluated by a separate 2 (child sex) \times 2 (parent sex) analysis of variance for correlated samples. Table 1 presents the proportions of mothers and fathers providing and requesting each category of lexical information, and Table 2 displays the mean numbers of utterances from each category that parents addressed to their children. As Table 1 shows, large majorities of both mothers (78%) and fathers (93%) provided labels to their children, and all parents provided terms. There was no difference in the numbers of labels mothers and fathers provided; however, as illustrated in Table 2,

Table 2
Mean Numbers of Each Category of Lexical Information in Parents' Speech to Children

Category of lexical information	Parents' speech					
	To all children		To girls		To boys	
	Mothers	Fathers	Mothers	Fathers	Mothers	Fathers
Label requests	1.71	2.28	1.43	2.71	2.00	1.86
Labels	2.50	2.50	2.71	3.00	2.29	2.00
Terms	3.93	*	5.28	4.29	5.14	5.43
Functions	.86	1.64	.43	*	1.71	1.29
Function requests	.21	.50	.14	*	.71	.29

* $p < .05$ for difference in adjacent entries.

fathers produced a significantly greater number of terms, $F(1, 12) = 5.98, p < .05$. There were no significant differences in production to girls versus to boys, nor were there significant correlations between mothers' and fathers' production of labels or of terms.

Fathers were also more likely to produce label requests, functions, and function requests to their children than were mothers, as shown in Table 1. McNemar tests revealed significant differences in the numbers of fathers and mothers producing label requests ($p = .03$) and functions ($p = .02$), and the difference in the numbers of fathers and mothers requesting functions from their children approached significance ($p = .06$). Examination of patterns of production in mother-father pairs revealed that in all cases in which mothers provided label re-

quests, functions, or function requests the corresponding fathers also produced the same categories of lexical information.

There was also a tendency for fathers to produce a greater number of functions, $F(1, 12) = 4.17, p = .06$, and function requests, $F(1, 12) = 3.69, p < .08$, to all children than mothers. Further inspection of parents' speech to girls and boys disclosed that fathers provided significantly more function utterances, $t(6) = 2.46, p < .05$, and produced significantly more function requests, $t(6) = 2.82, p < .05$, to daughters than did mothers, but the differences in production to sons were not significant.

Fathers also elicited significantly greater lexical production from their children. As Table 3 shows, the children addressed more terms, $F(1, 12) = 6.56, p < .05$, and more total car vocabulary (labels plus terms),

Table 3
Mean Number of Each Category of Lexical Information in Children's Speech to Parents

Category of lexical information	Children's speech					
	All children		Girls		Boys	
	To mothers	To fathers	To mothers	To fathers	To mothers	To fathers
Label requests	.28	.64	.43	.86	.14	.43
Labels	.86	1.36	.86	1.71	.86	1.00
Terms	2.43	*	3.86	2.43	4.58	2.43
Total vocabulary (Labels + Terms)	3.29	**	5.21	3.29	6.29	3.29
Functions	.07	.36	.00	.57	.14	.14
Function requests	.43	.36	.43	.29	.43	.43

* $p < .05$ and ** $p < .01$ for differences in adjacent entries.

$F(1, 12) = 10.27, p < .01$, to their fathers than to their mothers. There were no significant differences in the children's production of other categories of utterances.

Overall, the girls' total vocabulary significantly surpassed the boys', $F(1, 12) = 5.15, p < .05$. Inspection of Table 3 suggests that this finding was attributable to the daughters' greater production to fathers: The girls addressed nearly twice as many different labels and terms to their fathers as to their mothers.

To investigate further the pattern of differences in the children's lexical production to fathers and mothers, we examined more closely the parents' interactions with their daughters and with their sons. A number of factors could be identified that influenced the girls' greater lexical production to their fathers. First, the girls were significantly more likely to repeat novel lexical items (i.e., ones not heard or spoken before) produced by their fathers ($M = 45\%$) than by their mothers ($M = 15\%$), $t(6) = 2.59, p < .05$, although there was no significant difference in the numbers of novel items fathers and mothers produced.

There were also distinct contrasts in parents' strategies of requesting labels that favored lexical production to fathers. The mothers tended to request, then provide labels only when the girls indicated uncertainty or ignorance; 70% of the mothers' label requests followed some indication that their daughters did not know or were unsure about the correct name of an item. Thus, only two of the mothers' label requests elicited labels from the girls. The fathers, on the contrary, frequently requested labels after they or their daughters had already mentioned the term. Only 26% of their requests for labels followed indications of the girls' errors or uncertainties, whereas 42% followed a previously correct term or label of a part. The fathers' greater employment of label requests following previously correct mention of an item was statistically significant, $t(6) = 2.73, p < .05$. The fathers' label requests elicited nine labels from their daughters, eight of them correct.

In addition, fathers requested more labels from younger girls. The numbers of labels the fathers requested were significantly

and negatively correlated with their daughters' ages ($r_s = -.80, p < .05$). Together these interactional strategies combined to elicit higher and more uniform levels of lexical production from the girls to their fathers than to their mothers (range of total vocabulary output to fathers, 5-7, to mothers, 1-5).

The girls' lexical production to their mothers, on the other hand, was significantly related to aspects of the mothers' speech. Mothers who produced longer utterances, as measured by the mean lengths of their five longest utterances, and more lexical items elicited more total vocabulary from their daughters ($r_{ss} = .78$ and $.74$, respectively, $ps < .05$). These measures were unrelated to the girls' ages. Because of the uniformity of the girls' lexical production to their fathers, there were no significant relationships between the daughters' lexical output and these aspects of their fathers' speech.

Mothers' and fathers' interactional styles with their sons were more similar to each other. Twenty-two percent of the mothers' and 31% of the fathers' label requests were responses to indications of their sons' ignorance or uncertainty about the name of an item, with the remainder being spontaneous test questions. Very few label requests by either mothers or fathers (7% and 15%, respectively) followed a previously correct term or label of a part.

For boys as well, however, the numbers of label requests fathers produced were negatively correlated with their children's ages ($r_s = -.79, p < .05$). The boys' lexical production to their fathers was also more uniform than to their mothers (range of total vocabulary output to fathers, 3-5, to mothers, 1-6; $p < .02$ by a sign test on differences in variability of scores from the means).

Again paralleling the pattern found for girls, the boys' total lexical production was significantly correlated with both their mothers' total numbers of labels and terms and the mean lengths of their mothers' five longest utterances ($r_{ss} = .77$ and $.83$, respectively, $ps < .05$). The boys' total vocabulary was also significantly related to the mean lengths of their fathers' five longest

utterances ($r_s = .78, p < .05$) but not to the fathers' lexical production. All of these measures were independent of the boys' ages.

Discussion

These analyses of parent-child conversations during play revealed distinct contrasts between fathers and mothers in their interactive styles and in the amounts and kinds of lexical information they conveyed to and elicited from their children.

Fathers both provided and elicited significantly more information than mothers. The fathers' speech contained a greater number of different lexical terms designating the parts of the car than did the mothers'. In addition, the information fathers conveyed was more diverse. More fathers than mothers described the functions of the various car parts, thus extending and elaborating their children's lexical knowledge. The fathers in this study were also more linguistically and cognitively demanding of their children than were the mothers. Fathers were more likely than mothers to ask their children about the functions of the car parts and to request lexical labels from them. In turn, the children produced more total vocabulary, both terms and labels, to their fathers than to their mothers.

Many differences between mothers and fathers in their patterns of interaction were equally evident in parents of girls and boys. For example, greater lexical variety and syntactic complexity in mothers' speech was associated with greater lexical production from both daughters and sons. These results are consistent with others' findings of stimulatory relationships in mother-child interactions (Clarke-Stewart, 1978; Newport et al., 1977), indicating that mothers who provide a richer verbal model have children who exhibit higher language performance. However, some contrasts between mothers' and fathers' speech—for instance, the numbers of function utterances and requests they produced—were more pronounced in the interactions with daughters than with sons.

It is possible that the marked differences we found between mothers' and fathers'

speech reflect, at least in part, the fact that the automobile represents a traditionally masculine domain; fathers may be more comfortable than mothers as the explicators of car parts and functions. Though some of our findings relate indirectly to this question, for example, the absence of significant differences between mothers and fathers in the amount of time they spent interacting with their children and in either the total amount or complexity of their speech, similar studies with more neutral but equally complex toys would be useful in determining the generality of our results.

Although it may be true that the nature of the toy in some way accentuated the difference between fathers and mothers in the way they interacted with their children, it is also clear that the parents had very different interactional styles. Mothers who requested labels from their daughters, for instance, tended to do so when they suspected that the girls did not actually know what the vocabulary item was. When the children proved not to know the label, the mothers provided it for them. The mothers were monitoring the daughters' states of knowledge and supplying basic vocabulary information, labels of items, when the girls indicated ignorance of the appropriate terms.

The fathers' behavior with the girls, on the other hand, presented a different picture. Since their requests for labels so often followed their own or the girls' previously correct terms or labels of the same items, the fathers appeared to be testing, confirming, and displaying their daughters' knowledge. This was characteristic of the two fathers who interacted with their daughters first as well as of the five who interacted second and thus may reflect their usual roles in these families. There were several instances when fathers seemed to be deliberately displaying their daughters' knowledge, as illustrated by one father who picked up the wrench his daughter had previously mentioned correctly and asked, "What did you say this was before?"

This paternal pattern of testing, confirming, and displaying children's knowledge is also shown in the finding that fathers of both girls and boys directed more re-

quests for labels to younger children. The fathers' behavior suggests a strategy of attempting to maximize the language performance of all children, and particularly of the younger ones who might require more direct prompting.

The effectiveness of the fathers' behavior is demonstrated by the children's higher and more uniform levels of linguistic production to them than to their mothers. These findings are in keeping with those from naturalistic, longitudinal studies of parental socialization patterns reported by Baumrind (Note 1). She found that parents', and especially fathers', demandingness facilitated independence and intellectual achievement, especially in girls.

In conclusion, these patterns of parent-child interaction during play suggest that fathers as well as mothers may exert an active and direct influence on the language development of preschool-aged girls and boys.

Reference Note

1. Baumrind, D. *New directions in socialization research*. Invited address presented at the biennial meeting of the Society for Research in Child Development, San Francisco, California, March 1979.

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