

## Maternal Communication Style With Mentally Retarded Children

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*Mothers' style of communicating with 1- to 3-year-old mentally retarded children was related to children's communication. Mother-child communication was coded to characterize maternal communicative functions, the relationship of mother and child communication to the topic of conversation, the modality and meaningfulness of children's communication, and the manner that mothers and children reciprocate to each others' communication. Six maternal style factors were identified: attentiveness, responsiveness, persistent requesting, child-orientation, quality of requests, and quality of information. The regression of communication style factors on children's communication indicated that children were more verbal and communicatively responsive when their mothers were responsive to children's communication and focused on child-oriented topics.*

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Since the discovery that mothers tune their speech to the language level of their nonretarded children (cf. Snow, 1977), there have been numerous investigations of the language of mothers speaking to their organically impaired, mentally retarded children. The structural and semantic features of these mothers' speech also appears to be tuned to children's language level and to their mental functioning (Cunningham, Reuler, Blackwell, & Deck, 1981; Rondal, 1978). Compared to mothers of nonretarded children, however, mothers of retarded children are more dominant conversational partners, and they use more language that is directive or controlling of the child's behavior and less that is responsive to child-initiated communication and actions (Buium, Rynders, & Turnure, 1974; Cunningham et al., 1981; Mahoney & Robenalt, 1986; Petersen & Sherrod, 1982).

The more dominant, directive, and less responsive communicative style of mothers of

retarded children seems to be a reaction to the passivity and communicative unresponsiveness of their children (Mahoney & Robenalt, 1986; Maurer & Sherrod, 1987). This style appears to be a rational means of prodding children into more active communication, and it is similar to educational and clinical procedures used to promote communication skills (Bailey & Wolery, 1984; Hanson, 1977). Nevertheless, it is unclear whether this style actually encourages more communication or promotes language development of retarded children. Several investigators have speculated that a dominant, directive style may impede the communication development of nonretarded children, but there is only indirect empirical support for this position (Hoff-Ginsberg, 1986; MacDonald & Pien, 1982; Olson-Fulero, 1982).

In this investigation, we studied mothers' speech to young retarded children, the manner that mothers' speech related to the topic of conversation, and mother-child reciprocity. Chil-

dren's communications were classified by modality, meaningfulness, and relationship to the conversation. Our first purpose was to describe the communication style of mothers while playing with their retarded children, who ranged in age from 1 to 3 years. Our second was to determine how maternal style relates to formal measures of children's concurrent communication and mental ability. We used factor analysis to describe mother's communication style and multiple regression to assess the relationships among various maternal and child characteristics.

## Method

### *Subjects*

The sample included 60 mother-child dyads, including 20 1-, 2-, and 3-year-old children who had biological conditions associated with mental retardation (Grossman, 1973), but who did not have other major physical or sensory impairments. Ninety percent of the children had various forms of Down syndrome (42 children had Trisomy 21, 8 had Trisomy 18, and 2 had mosaic Down syndrome), and the others had conditions such as William syndrome and hydrocephaly. Subjects were recruited through parent groups, newborn clinics, and infant intervention programs. Approximately 70% of the sample came from Los Angeles, and the remainder, from Chicago.

The sample consisted of 13 boys and 7 girls (mean chronological age [CA] = 12.6 months), 12 boys and 8 girls (mean CA = 24.5 months), and 8 boys and 12 girls (mean CA = 36.9 months). The mean Bayley mental development ages (in months) for the three groups were 7.3, 15.1, and 19.3, respectively. The Receptive Expressive Emergent Language Scale (Bzoch & League, 1970) indicated mean receptive language ages (in months) of 8.7, 15.3, and 19.4, respectively, and mean expressive language ages (in months) of 7.3, 13.1, and 19.4, respectively. The comparison of children's developmental and language ages with their CAs indicated that all three groups were substantially developmentally delayed.

The average educational level of the mothers was over 13 years. Sixty percent of the mothers were Caucasian, 95% were married, and 68% were homemakers. The mothers of the 3-year-old children were an average of 37 years of age, whereas the mothers of the 1- and 2-year-old children were an average of 31 years of age,  $ps < .05$ .

## Procedure

Data were collected in the subjects' home in a morning and afternoon session. In the morning, the Bayley Mental Development Scale (Bayley, 1969), the Receptive Expressive Emergent Language Scale, and a demographic survey were administered. In the afternoon, mother-child play was videotaped for 20 minutes and the Ordinal Scales of Mental Development (Uzgiris & Hunt, 1975) were administered. For the play sessions, dyads were provided with a set of toys, including a bus with moveable figures, wooden blocks, stove, stacking rings, nesting cubes, xylophone, and picture books. Mothers were not restricted to playing only with toys or to remaining in any position. The sessions were videotaped with a hand-held camera.

Each videotape was transcribed, including phonetic approximations of nonverbal vocalizations and notations of obvious nonvocal signals. Transcriptions were segmented at points where either "sentence length" pauses occurred or there was a repetition or change of the conversational topic. On a random sample of 15 videotapes, two independent transcribers achieved 94% agreement on the number of communicative behaviors observed. Transcripts were then coded by observers who had been trained to achieve at least 85% agreement for each of the categories. Coding was conducted with the observers using the transcript and video recordings simultaneously.

### *Maternal Communication*

Each maternal communicative behavior was classified according to three schemes. First, the primary interactional function of each communicative behavior was classified into one of eight mutually exclusive categories: action request (request the child to perform a physical act); information request (request the child to provide verbal information); give information (provide information relevant to the context or to the personal-social relationship); label (provide the name of a specific person, object, attribute, or event); direct attention (guide the child's attention to a specific aspect of the perceptual field); play speech (language that is primarily focused on fun and enjoyment and is targeted on the social relationship between the mother and child); motivate (praise or commend the child for what he or she has done and/or elicit interest and encourage the child); and directed at child communication (respond directly to the specific

form or content of a preceding child utterance). Second, the relationship of each communicative behavior to the topic of conversation was identified as one of four categories: topic change (initiate a new topic); topic continuation (elaborate on a topic that the speaker had initiated previously); respond to other's topic (comment or elaborate upon a topic initiated by the other person); and self-repetition (repeat or rephrase either partially or completely an immediate preceding utterance). Utterances that did not seem to be directed at the other person were classified as not related to the topic. Third, the general syntactic complexity of maternal utterances was estimated by determining the length of utterances in morphemes (Brown, 1973).

#### *Child Vocal and/or Communicative Behavior*

Two schemes were used to classify children's vocal and communicative behavior. First, the relationship of each behavior to the conversational topic was classified according to the topic scheme used for maternal communication. Second, children's communication was classified along the two dimensions of verbal or nonverbal and meaningful or meaningless. Because all verbal utterances were judged to be meaningful, there were three mutually exclusive categories of child communication: verbal, nonverbal, and meaningless.

#### *Mother-Child Reciprocity*

The response of each partner to the other person's vocal and communicative behavior was coded to identify how mothers and children reciprocated to each other's communication. The immediate response of the other person to each vocal or communicative behavior was classified into one of four categories: communicative response (respond to the behavior by transmitting information either verbally or nonverbally); behavioral response (respond to the behavior by performing an appropriate action); attend (no overt response to the behavior even though attention was given to that behavior); ignore (the partner does not appear to have noticed the behavior).

Agreement between two raters was calculated for each classification scheme on a random sample of 15 subjects. Interrater reliabilities, as estimated by Cohen's (1960) Kappa, were .84 for maternal interactive function, .87 for maternal

topic, .91 for child communication, .92 for child topic, .94 for maternal reciprocity, and .89 for child reciprocity.

## Results

Most of the following results are proportional data because these scores yield results that parallel those obtained with absolute frequencies. Proportions were calculated separately for mothers and children based upon the total number of communicative or reciprocal behaviors observed for each person. Means and standard deviations (*SDs*) for each of the three age groups on the maternal and child communication variables are reported in Table 1. More than 22,000 communicative behaviors were analyzed for the entire sample. A series of one-way analyses of variance indicated that the three groups of mothers differed significantly on 6 of the 17 categories, including mean length of utterance (*MLU*), give information, direct attention, play speech, directed at child communication, and self-repetition. Mothers of older children had a higher proportion of give information and directed at child communication, whereas mothers of younger children had a higher proportion of direct attention and self-repetition. There was a curvilinear relationship between *MLU* and age, with mothers of 1- and 3-year-olds having higher *MLUs* than did mothers of 2-year-olds.

The analyses of children's communication indicated significant group differences on the frequency of utterances and proportion of utterances classified as verbal, nonverbal, meaningless, and communicative response. Compared to younger children older children communicated more frequently and had a greater percentage of utterances classified as verbal and communicative response and a lower percentage classified as nonverbal or meaningless communication.

In general, group differences in maternal communication seemed to parallel age differences in children's communication. For example, the decrease in maternal *MLU* between the 1- and 2-year-old age groups paralleled the emergence of verbal utterances among the 2-year-old children, whereas the relative decrease in play speech and increase in give information and directed at child communication among mothers of older children paralleled the increased ability of their children to communicate meaningfully.

Communication data for both mothers and children were standardized within each of the three

**Table 1**  
**Group Comparisons of Maternal and Child Communication Variables**

Communication variables	1 year		2 years		3 years		F
	Mean	SD	Mean	SD	Mean	SD	
<b>Maternal communication</b>							
No. of maternal utterances <sup>a</sup>	310.90	105.64	279.75	104.13	324.10	88.51	1.04
Mean length of utterances <sup>b</sup>	3.55	.65	3.17	.54	3.56	.48	3.20*
<b>Interactive function<sup>c</sup></b>							
Action request	.19	.09	.19	.08	.17	.08	.43
Information request	.21	.08	.20	.07	.23	.06	.68
Give information	.15	.06	.15	.06	.20	.05	4.35*
Label	.05	.03	.08	.07	.07	.05	2.45
Direct attention	.15	.06	.12	.06	.09	.04	6.24**
Play speech	.05	.03	.03	.03	.02	.02	4.07*
Motivate	.07	.05	.06	.04	.08	.05	.56
Directed at child communication	.03	.02	.05	.04	.06	.04	3.72*
<b>Topic<sup>c</sup></b>							
Topic change	.46	.07	.50	.09	.49	.09	.89
Topic continuation	.31	.08	.26	.11	.32	.09	1.90
Self-repetition	.18	.08	.16	.08	.11	.05	4.69*
Respond to child's topic vocalization	.05	.04	.08	.07	.08	.05	2.33
<b>Reciprocity to child's communication<sup>c</sup></b>							
Communicative response	.31	.19	.30	.16	.31	.13	.05
Attend	.37	.36	.52	.34	.39	.35	1.13
Ignore	.31	.35	.18	.31	.30	.38	.89
<b>Child communication</b>							
No. of child utterances <sup>a</sup>	43.85	23.01	61.05	30.20	87.15	47.97	7.62**
<b>Modality<sup>d</sup></b>							
Verbal	.04	.05	.05	.06	.23	.21	13.57**
Nonverbal	.23	.26	.36	.19	.17	.15	4.58*
Meaningless	.76	.24	.60	.18	.61	.18	3.74*
<b>Topic<sup>d</sup></b>							
Topic change	.05	.13	.07	.10	.07	.11	.23
Topic continuation	.03	.06	.03	.04	.03	.04	.02
Self-repetition	.09	.08	.09	.14	.09	.05	.00
<b>Reciprocity to mother's communication<sup>d</sup></b>							
Communicative response	.01	.01	.03	.04	.05	.06	5.00**
Behavioral response	.03	.04	.05	.06	.04	.04	1.36
Attend	.50	.47	.65	.40	.53	.45	.69
Ignore	.45	.48	.26	.42	.38	.48	.89

<sup>a</sup> Frequency of communicative behaviors observed. <sup>b</sup> Average number of morphemes in all utterances. <sup>c</sup> Proportions are based on total number of maternal communicative behaviors or responses. <sup>d</sup> Proportions are based on total number of child communicative behaviors or responses.

\*  $p < .05$ . \*\*  $p < .01$ .

age groups. This procedure allowed the group data to be combined so that maternal and child communication variables did not reflect differences related to children's age. Maternal communication was then factor analyzed to identify parameters of style that were independent of children's developmental level. A principle axis procedure was used for extracting the factors, and the solution was rotated using the varimax procedure. This analysis had a Kaiser's statistic of .99 and accounted for 77% of the variance. As indicated in Table 2, there were six components of maternal style. Factor 1 loaded positively on attend and negatively on ignore and self-repetition. This factor, which primarily included items that assessed mothers' attentiveness to children's communication to which they did not respond, was labeled "Attentive." Factor 2 loaded positively on directed at child's communication,

respond to child's topic, and communicative response. Because these items reflected mothers' responsiveness to their children's communication, this factor was labeled "Responsive." Factor 3, which loaded positively on action request and self-repetition and negatively on topic change and give information, reflected mothers' persistence at asking their children to perform an action and was thus labeled "Persistence." Factor 4 loaded positively on label and play speech and negatively on reinforce-motivate and topic continuation. On the positive dimension this factor reflected mothers' orientation to more child-centered topics, whereas on the negative dimension, this factor reflected mothers' orientation toward topics that they themselves had initiated. This factor was labeled "Child Oriented." Factor 5 loaded positively on action request and negatively on information request and

**Table 2**  
**Factor Analysis of Maternal Communication**

Maternal behavior	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Action request	-.09	-.52	.52	-.14	.48	-.05
Information request	-.16	-.13	.09	.15	-.89	.05
Give information	-.08	.19	-.63	-.31	.11	.47
Label	.00	.01	-.02	.78	-.19	.30
Direct attention	-.03	-.03	.03	-.18	.05	-.94
Play speech	-.04	.00	-.30	.51	.38	.07
Motivate	.03	-.03	.01	-.66	.24	.05
Directed at communication	.10	.89	.08	.00	-.04	-.05
Topic change	-.04	-.16	-.88	.27	.09	-.04
Topic continuation	.48	-.15	.33	-.60	-.16	.02
Self-repetition	-.68	-.23	.51	.14	.07	.05
Respond to child's topic	.13	.82	.07	.37	.06	-.01
Communicative response	-.07	.80	-.16	-.11	.15	.16
Attend	.94	-.11	.13	-.04	.07	-.03
Ignore	-.91	-.23	-.03	.06	-.14	-.05
Mean length of utterance	.42	-.22	-.23	-.61	-.34	.10

Note. Factor 1 = Attentiveness, Factor 2 = Responsiveness, Factor 3 = Persistence, Factor 4 = Child Oriented, Factor 5 = Quality of Request, and Factor 6 = Quality of Information.

was labeled "Quality of Request." Factor 6 loaded positively on give information and negatively on direct attention. This factor reflected whether mothers primarily described or denoted information and was labeled "Quality of Information."

Children's communication variables were also factor analyzed to extract the dimension of communication that these variables measured (Table 3). This solution had a Kaiser statistic of .99 and yielded three factors that accounted for 69% of the variance. Factor 1 loaded positively on nonverbal communication, attend, and topic continuation and negatively on ignore and meaningless communication. This factor, which reflected both the relative meaningfulness of children's nonverbal communication and children's attentiveness to their mothers' communication, was labeled "Nonverbal Communication." Factor 2, which loaded positively on verbal communication, communicative response, and number of child utterances, was labeled "Verbal Communication."

**Table 3**  
**Factor Analysis of Child Communication**

Child behavior	Factor 1	Factor 2	Factor 3
No. of child utterances	.10	.73	.25
Verbal	-.18	.87	-.21
Meaningless	-.75	-.42	.19
Nonverbal	.88	-.23	-.08
Topic change	.58	.31	-.06
Topic continuation	.69	-.02	-.19
Self-imitation	-.41	-.03	.62
Communicative response	.21	.83	.20
Behavioral response	.20	.17	.76
Attend	.86	.03	.23
Ignore	-.86	-.12	-.32

Note. Factor 1 = Meaningful Nonverbal Communication, Factor 2 = Verbal Communication, and Factor 3 = Behavioral Responsiveness.

Factor 3, which loaded positively on behavioral response and self-imitation, was labeled "Behavioral Response."

For each dyad scores were derived for the six maternal factors and three child factors. These scores reflected the six parameters of maternal communication style and three components of children's communication. A series of least square regression equations was then computed to estimate the relationship of maternal communication style with the three components of child communication. These analyses (Table 4) indicated that there were statistically significant relationships between the maternal factors and each of the child communication factors. Maternal style accounted for 73% of the variance in children's nonverbal communication. Factors 1 (Attentive) and 5 (Quality of Request) were related positively, whereas Factor 4 (Child Oriented) was related negatively to the amount of children's nonverbal communication. Maternal style accounted for 53% of the variance in children's verbal communication. Factors 2 (Responsive) and 4 (Child Oriented) were related positively, whereas Factor 5 (Quality of Request) was related negatively to children's verbal communication. Maternal style accounted for 27% of the variance in children's behavioral responsiveness. Only Factor 4 (Child Oriented) was related positively to the amount that children responded behaviorally.

Regression equations were computed to determine the relationship of maternal communication style to measures of children's language (Receptive Expressive Emergent Language Scale) and mental functioning (Mental Development Scale, Ordinal Scales of Mental Development).

**Table 4**  
**Multiple Regression Analyses of Maternal Communication Factors**

Dependent variable <sup>a</sup>	R	R <sup>2</sup>	Partial correlation of maternal factors <sup>b</sup>					
			Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Factor 1	.86	.73**	.83**	.27	.18	-.36*	.33*	.11
Factor 2	.73	.53**	-.02	.48*	-.01	.58**	-.41**	.06
Factor 3	.52	.27**	.21	-.13	.08	.44**	.16	.14
ELA <sup>c</sup>	.57	.33**	.29**	.33*	-.15	.26	-.35*	-.26
SES	.52	.27*	-.05	-.13	-.21	.07	-.10	.46**

<sup>a</sup> Child factors: Factor 1 = Meaningful Nonverbal Communication, Factor 2 = Verbal Communication, and Factor 3 = Behavioral Responsiveness. <sup>b</sup> Factor 1 = Attentiveness, Factor 2 = Responsiveness, Factor 3 = Persistence, Factor 4 = Child-Oriented, Factor 5 = Quality of Request, and Factor 6 = Quality of Information. <sup>c</sup> Expressive language age.  
<sup>\*</sup>  $p < .05$ . <sup>\*\*</sup>  $p < .01$ .

Only one of these equations was statistically significant. Maternal communication style accounted for 33% of the variance in children's expressive language age,  $p < .01$ . Factors 1 (Attentive) and 2 (Responsive) were related positively and Factor 5 (Quality of Request) was related negatively to expressive language age.

Maternal communication style was also regressed on several demographic and health indices. Only the relationship between SES and maternal communication was significant. The maternal factors accounted for 27% of the variance in SES, with Factor 6 (Quality of Information) being related positively to SES,  $p < .05$ . Maternal style was unrelated to several variables including the child's sex, current health status, and months of intervention.

Pearson correlation coefficients were computed to determine the relationship of cognitive, demographic, and health variables to the three child language factors and expressive language age. Only children's current health status related significantly to the child language measures. Health status correlated with child Factor 2,  $r = -.29$ ,  $p < .05$ , and expressive language age,  $r = -.33$ ,  $p < .05$ .

The combined relationship of maternal communication style and child health status to the measures of children's communication was analyzed using multiple regression procedures. Child health status did not contribute significantly to child language measures when maternal communication factors were partialled out. The correlation between child health status and language thus appears to be attributable to the covariation of these variables with maternal style.

## Discussion

In this, as in most other studies of maternal communication, the unique characteristics of

maternal speech seemed to result from mothers adjusting to the communicative and cognitive competence of their young children (Nelson, Denninger, Bonvillian, Kaplan, & Baker, 1983; Newport, Gleitman, & Gleitman, 1977). Differences across age groups in maternal communication appeared to reflect mothers' accommodations to children's emerging communication skills. In addition to these modifications, however, there were differences among mothers in the manner that they communicated with their children. These differences were independent of mothers' accommodations to children's developmental level and occurred within each of the three age groups.

These findings indicate that there is considerable variability in the manner in which mothers and their retarded children communicate. Previous research has tended to characterize mothers of retarded children as having uniform styles of interaction, for the most part ignoring the wide range of differences among this group. Furthermore, although we did not address the question of whether these mothers were more or less directive and responsive than are mothers of nonhandicapped children, there was a wide range of directiveness and communicative responsiveness among them. These characteristics alone, however, were not sufficient for characterizing the complexity of their communication style.

Perhaps our most striking finding was the magnitude of the relationship between the manner in which mothers and children communicated. Children were much more likely to communicate verbally when their mothers' communication was highly responsive to their verbal and nonverbal communication, when mothers' conversational topic was more child-oriented than mother-oriented, and when mothers requested children to engage in conversation rather than perform actions. When children seldom communicated verbally but produced meaningful nonverbal communication, their mothers were atten-

tive but not actively engaged with their children; they tended to converse about topics that they selected, and they frequently requested their children to engage in activities.

There was also a relationship between mothers' style of communication and children's level of language development. At all three age levels, children with the highest expressive language scores had mothers who were responsive, attentive, and child-oriented and who requested their children to engage in conversation. Children's level of language functioning, however, was unrelated to other variables that have been postulated to influence development, including children's cognitive and sensorimotor functioning, health status, sex, and time in intervention.

These data do not allow tests of hypotheses regarding the causal relationship between maternal style and children's level of communicative functioning. There are, however, at least three alternative causal explanations for the reported findings. First, mothers may have developed their style of communication as a reaction to their children's level of involvement in the communication. In this case, how mothers communicated with their children may have had no impact on children's level of language functioning. Second, the level of communication that children had attained may have been influenced partly by the way that their mothers communicated with them. The different styles of maternal communication may thus vary in their effectiveness in both encouraging children to communicate and promoting higher levels of communicative competence. Third, the way that children engaged in communication with their mothers may have elicited elements of maternal style that, in turn, affected both the level that children participated in communication and their rate of communication development. Active and socially responsive children might have elicited a maternal style that was optimally suited for promoting communication, whereas inactive and socially unresponsive children might have elicited a maternal style that was relatively ineffective.

The third hypothesis, postulating a reciprocal relationship between maternal and child behavior, appears to be the most reasonable interpretation of the findings from this study. Because mothers are more adaptive and proficient communicators than are their children, it is highly probable that the high degree of dependency between maternal style and child communication reflected their accommodations to their children's level of social

and communicative responsiveness. On the other hand, because there were no factors that related to the variability in children's level of language functioning other than maternal style, a logical inference from these data is that maternal style accounted for some of the differences in children's rate of communication development.

There are at least two major implications of this interpretation. First, the models of communication development that have recently been postulated for normally developing children also account for the development of organically impaired, mentally retarded children. That is, the findings from this study are compatible with recent developmental theories postulating that children acquire their early communication and language skills as a result of the quality of their experience at engaging in more basic forms of communication (Kaye & Charney, 1980; Murray & Trevarthen, 1986; Snow, Dubber, & deBlauw, 1982).

Second, the unique characteristics of communication style that distinguish parents of retarded from parents of nonretarded children result partly from the natural and spontaneous accommodations that parents make to the social communicative behaviors of their children (Maurer & Sherrod, 1987). Given the pattern of results from this study, however, it is questionable whether all of these natural accommodations are optimally suited to promoting the development of retarded children.

Future investigators of maternal style not only need to determine how features of style vary across communicative contexts, but also how assessments of style at one time point relate to children's development at later ages. In spite of the limitations of this study, however, our findings have important implications regarding communication style with retarded children. First, they raise concern about the long-term impact that a directive/nonresponsive style has on the development of children's communication competence. Second, they provide support for the practice of structuring language intervention procedures around responsive and child-focused communication strategies. Because these issues are both directly related to decisions that interventionists must make in working with young retarded children and their families, the results of future research will have a significant impact on the manner in which intervention is conducted.

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