

Communication patterns between mothers and mentally retarded infants*

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ABSTRACT

This investigation was conducted to identify patterns of maternal communication with young mentally retarded children and to determine how these patterns relate to children's level of communicative competence. Samples of communication between 60 mother-child dyads were collected. All children were mentally handicapped and were either one, two, or three years of age. Maternal and child vocal and communicative behaviours were analysed for the entire sample according to their communicative function, MLU, grammatical completeness, mood, and relationship to the topic of conversation. The results indicated that distinct patterns of mother-child communication could be differentiated on the basis of how children responded to their mothers' communication. These patterns were related to differences in linguistic and discourse features in mothers' communication and to children's level of communicative functioning, but were generally unrelated to other factors that might influence children's rate of language development.

There has been considerable interest in determining whether the quality of interaction between mothers and their mentally retarded children can account for the excessive language delays associated with this handicapping condition (Mahoney 1975, Mahoney & Seeley 1976). Several studies have attempted to determine whether mothers of mentally retarded children modify their speech in the manner that has been observed among mothers communicating with normally developing children (e.g., Nelson, Denninger, Bonvillian, Kaplan & Baker 1983). Contrary to expectations, data reported to this point suggest that mothers make appropriate modifications in speech directed to mentally retarded children. Comparisons of groups of mothers interacting with children who are at the same stage of language or cognitive

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development have indicated that mothers of mentally retarded and normal children are comparable on a host of syntactic, semantic and pragmatic features (Rondal 1978, Cunningham, Reuler, Blackwell & Deck 1981, Peterson & Sherrod 1982). In addition, longitudinal investigations have demonstrated that the modifications that mothers of the mentally retarded make in their child-directed speech are systematically related to changes that occur in children's language and nonverbal behaviour (Maurer & Sherrod 1987, McConkey & Martin 1984).

In spite of the similarity of these linguistic features, the communication of mothers of mentally retarded children has been reported to be considerably more dominant and directive and less responsive to children's communicative behaviour than that of mothers of normally developing children (Cunningham *et al.* 1981, Mahoney & Robenalt 1986). These findings may be particularly noteworthy in light of some of the recent research related to the roles that mothers play in facilitating children's language development. There is an emerging consensus that mothers' key role in language acquisition is that of establishing early communication by engaging in a variety of responsive behaviours. These include responding communicatively to children's nonverbal behaviour, encouraging children to express their intentions, and negotiating meaning through interactive routines (Bruner 1983, Kaye & Charney 1980, Snow 1977, Wells 1981).

There is some evidence that the conversational characteristics observed among mothers of the mentally retarded are highly correlated with their children's level of participation in communication (Mahoney & Robenalt 1986). Overall, mentally retarded children tend to be less actively engaged in communication with their mothers than developmentally matched samples of normal children (Fischer 1987). However, with mentally retarded children who are communicatively responsive, mothers tend to be responsive and balanced communication partners. When mentally retarded children participate less actively in communication, mothers are relatively unresponsive and highly dominant and directive (Mahoney & Robenalt 1986). Thus mothers' level of responsive or directive behaviour with their mentally retarded children appears to be more an index of the quality of dyadic communication than a characteristic that pertains only to mothers.

It has yet to be determined what factors contribute to the variability in mothers' communicative responsiveness to their mentally retarded children. The correlations between maternal conversational characteristics and indices of children's communication suggest that maternal conversational style may be a direct response to the quality of children's behaviour. However, it is also possible that mothers of mentally retarded children have distinctive attitudes regarding the significance of their children's behaviour and the role that they play in their children's development. These attitudes might

then be manifested by the manner that they communicate with their children which in turn affect children's level of communicative functioning.

Studies of mother-child communication conducted with normal children have attributed variations in maternal communication style to differences among mothers in their attitudes both about child-rearing and the significance of their children's behaviour. Nelson (1973) and MacDonald & Pien (1982) reported that distinct styles of maternal communication could be differentiated along the general conversational parameters of communicative responsiveness and directiveness/control. These investigators proposed that the configuration of the linguistic and discourse features associated with these communication styles reflected underlying differences in mothers' attitudes towards their children and perceptions of their interactive role (Nelson 1973, Olsen-Fulero 1982). Mothers who were more communicatively responsive to their children's communication appeared to treat much of their children's behaviour as if it were meaningful. They interacted with their children as if they perceived their role to be an equal communication partner in which they focused upon and responded to their children's apparent intentions. In contrast, directive/controlling mothers seemed less focused on the underlying meaning of children's behaviour and more concerned about whether their children conformed to specific behavioural norms. They interacted with their children as if they perceived their primary function to be that of coaxing their children to perform more appropriate types of behaviour.

The following is a descriptive analysis of the patterns of communication between mothers and their young mentally retarded children. The sample for this study included mother-child dyads in which the children were between one to three years of age and had organic impairments associated with mental retardation. The analysis focused on the manner in which mothers and children responded to each others' communication as well as on selected discourse, functional and linguistic features. There were three purposes to this study. The first was to determine if there was a systematic relationship between the manner that children and their mothers responded to each others' communication. The second was to determine if distinctive patterns of maternal communication were associated with the predominant manner that children responded to their mothers' communication. The third was to determine if the quality of children's communication was systematically related to their mothers' style of communication.

METHOD

Subjects

The sample included 60 mother-child dyads including 20 one-, two- and

three-year-old children who had biological conditions associated with mental retardation (Grossman 1973), but did not have other major physical or sensory impairments. Ninety percent of the children had Down syndrome, and the others had conditions such as William's syndrome and hydrocephaly. All families were primarily English-speaking, although in some cases a second language was also used in the home. The sample had equal numbers of one-, two- and three-year-old children. Subjects were recruited through parent groups, newborn clinics, and infant intervention programs. Approximately 70% of the sample came from Los Angeles and the remainder came from Chicago.

The sample consisted of 13 boys and 7 girls ($\bar{X}CA=12.6$ months), 12 boys and 8 girls ($\bar{X}CA=24.5$ months), and 8 boys and 12 girls ($\bar{C}A=36.9$ months). The mean Bayley Mental Development ages {DA (months)} for the three groups were 7.3, 15.1, and 19.3. The *Receptive Expressive Emergent Language Scale* (REEL) (Bzoch & League 1970) indicated Mean Receptive Language Ages {RLA (months)} of 8.7, 15.3 and 19.4; and mean Expressive Language Ages {ELA (months)} of 7.3, 13.1 and 19.4. The comparison of children's developmental and language ages with their chronological ages indicated that all three groups were substantially developmentally delayed.

The mothers of the three groups of children were equivalent on years of education, socioeconomic status, ethnicity, and marital status. Most of the sample could be classified as middle class according to the Hollingshead Four Factor Index (1978) with the average educational level of the mothers being more than 13 years. Sixty percent of the mothers were Caucasian, 95% were married and 68% were homemakers. There were significant differences among the ages of the mothers, with the mothers of the three-year-old children having an average age of 37 years, and the mothers of the one- and two-year-old children having average ages of 31 years ($P_s < 0.05$).

Procedures

Data were collected in the subjects' homes in a morning and afternoon session by two of six research assistants. In the morning, the *Bayley Mental Development Scale* (Bayley 1969), the *Receptive Expressive Emergent Language Scale* (REEL) and a demographic survey were administered. In the afternoon, mother-child play was videotape recorded 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 with toys or to remaining in any one position. The sessions were videotape recorded with a handheld camera.

Each videotape was transcribed including phonetic approximations of

nonverbal vocalizations and notations of obvious nonvocal signals. These transcriptions were segmented at points where either 'sentence length' pauses occurred or there was a repetition or change of the conversational topic. Segmented transcripts were coded by trained observers who used both the transcript and videorecording as the basis for their judgments. Interrater agreement was calculated from a random sample of 15 transcripts. There was 94% agreement for the number vocal and/or communicative behaviours, and 83 to 99% agreement for all classification schemes.

A. Response to other's vocalization and/or communication

A classification scheme was developed to identify how mothers and children responded to the other person's vocal and communicative signals. For each vocal or communicative behaviour the immediate response of the other person to that behaviour was classified into one of the four categories: Communicative Response (respond to the behaviour by transmitting information either verbally or nonverbally); Behavioural Response (respond to the behaviour by performing an appropriate action); Attend (no overt response to the behaviour even though attention was given to that behaviour); Ignore (the partner does not appear to have noticed the behaviour). In cases where the response was both a communicative and behavioural response it was coded as a communicative response.

B. Maternal communicative behaviour

Each maternal communicative behaviour was classified according to five schemes that were designed to identify conversational and general syntactic characteristics (see Table 1). The primary interactional function was identified with the Maternal Language Classification Scale (Mahoney & Peterson 1980). Each communicative behaviour was classified into one of five mutually exclusive categories: Behaviour Request, Communication Request, Give Information, Social Speech, or Directed at Child Communication. These general categories were further subdivided into one of twenty other categories to give a more precise depiction of how mothers were attempting to communicate with their children.

The relationship of each communicative behaviour to the topic of conversation was identified with the topic classification scheme which included four categories. These included Topic Change (initiate a new topic); Topic Continuation (elaborate a topic which the speaker had previously initiated); 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 immediately preceding utterance). Utterances that did not seem to be directed at the other person were classified as Not Related to the Topic.

TABLE 1. *Classification schemes for maternal communicative behaviours*

<i>Interaction function</i>	<i>Topic</i>
Behaviour request	Topic change
Prompt	Topic continuation
Command	Respond to other's topic
Mild command	Self repetition
Seek attention	Not related
Communication request	<i>Mood</i>
Request label	Declarative
Request elaborate information	Interrogative
Request nonverbal response	Imperative
	Exclamatory
Give information	<i>Mean Length of Utterance</i>
Simple information	(MLU) (Brown, 1973)
Elaborate information	
Label	
Direct attention	<i>Syntactic integrity</i>
	One word utterance
Social communication	Ungrammatical utterance
Verbal play	Grammatical utterance
Reinforce/Motivate	
Exaggerated facial vocalization	
Smile/Laugh	
Directed at child vocalization or Communication	
Correction	
Imitation	
Elaboration	
Interpretation	
Answer	

The mood of each utterance was identified primarily on the basis of intonation and secondarily on the basis of structural features. For example, declarative sentences which ended in rising intonation were coded as interrogative mood.

Two indices were used to characterize the general syntactic quality of all verbal utterances. First, Mean Length of Utterance (MLU) was the average number of morphemes in all utterances as determined by Brown's (1973) criteria. Second, utterances were identified according to whether they were grammatically well formed according to adult criteria. The categories for Syntactic Integrity included One Word Utterance, Ungrammatical Utterances, and Grammatical Utterance.

C. Child vocal and/or communicative behaviour

Two classification schemes were used to characterize the general parameters

of children's vocal and communicative behaviour. First, the relationship of each behaviour to the conversational topic was classified according to the same topic scheme as used for maternal communication. Second, the Communication Classification Scale was used to identify each behaviour according to three dimensions: spontaneous-elicited (whether the behaviour had been initiated by the child or prompted by the mother); verbal-nonverbal (whether the communicative behaviour reflected a recognizable intention). Since most of the children were nonverbal and none of the children exceeded the one word stage of language development, there were no efforts to identify syntactic characteristics.

RESULTS

Most of the statistical analyses were computed with proportional data because these scores simplify comparisons across groups and yield results which paralleled those obtained with absolute frequencies. Unless otherwise indicated group comparisons were conducted using univariate analyses of variance or covariance. Duncan's Multiple Range Test was used for all planned comparisons.

A. Response to other's vocal and communicative behaviour. For the entire sample mothers responded communicatively to approximately 30%, attended to 42%, and ignored 26% of their children's vocal and communicative behaviour. Children responded communicatively or behaviourally to 6.4%, attended to 65.2% and ignored 38.3% of their mothers' communicative behaviours. Even though older children produced more spontaneous vocalizations and meaningful communicative behaviours than younger children, there were no significant differences in the proportion of maternal responses classified in each of the four categories across the three age groups. There was also little evidence that the quality of children's response to their mother's communication changed across age levels. Older children had more communicative responses to their mothers' communication than younger children ($P < 0.05$), but there were no significant age group differences in the proportion of behavioural, attend, and ignore responses.

Correlations between these maternal and child response categories were examined to determine whether there was a reciprocal relationship between the manner that children and their mothers responded to each others' communication. The results from these correlations are reported in Table 2. As expected, there were highly significant correlations between maternal and child response categories. The data indicated that children who ignored their mother's communication had mothers who ignored their children's vocal and communicative behaviour; while children who attended to their

mothers' communication had mothers who attended to their children's vocal and communicative behaviour. Furthermore, the patterns of intercorrelation among Children's Response to Maternal Communication (Table 2) indicated that attend and ignore were mutually exclusive responses, while communicative response related substantially with both attend and ignore.

TABLE 2. *Correlations for response to other's vocal and/or communicative behaviour*

	Child communi- cate	Child behav- ioural	Child attend	Child ignore	Mother communi- cate	Mother behav- ioural	Mother attend
Child behavioural	0.17	-	-	-	-	-	-
Child attend	0.32*	0.08	-	-	-	-	-
Child ignore	-0.47**	-0.24	-0.98**	-	-	-	-
Mother communicate	0.21	0.19	0.10	-0.13	-	-	-
Mother behavioural	0.01	0.02	0.07	-0.07	-0.01	-	-
Mother attend	0.17	0.22	0.89**	-0.88**	-0.25	-0.02	-
Mother ignore	-0.27*	-0.30*	-0.95**	0.96**	-0.20	-0.03	-0.90**

* $P < 0.05$

** $P < 0.01$

B. Communication patterns. The 60 dyads were classified into three groups based upon the predominant manner that children responded to their mothers' communication. Twenty-one dyads were classified as Responders based upon the criterion that the children responded communicatively to at least 2.5% of their mothers' utterances (note: 2.5% was the 66th percentile for Communicative Response for all 60 children); 21 dyads were identified as Attenders based upon the criteria that they attended to at least 90% of their mothers' utterances, and did not respond to more than 2.5% of their mothers' utterances; and 18 dyads were classified as Ignorers based upon the criteria that the children ignored at least 95% of their mothers' utterances. Each group included children from all three age levels. A chi square analysis indicated that the distribution of dyads from the three age levels to the three communication groups did not differ significantly from chance ($\chi^2 = 4.33, P > 0.10$).

Analyses were conducted to determine how these communication groups differed on response to other's communication, frequency of communicative behaviours, and linguistic and discourse features of both maternal and child communicative behaviour. Children's chronological ages were covaried to control for possible developmental differences associated with these measures.

Response to other's vocal and communicative behaviour. The analysis of

TABLE 3. *Maternal and child communicative behaviours associated with communication types^{a b}*

Variable	Group			<i>F</i> ^b	<i>P</i>
	Respond	Attend	Ignore		
	\bar{X} ^a	\bar{X} ^a	\bar{X} ^a		
A. Response to communication					
<i>Maternal response to child</i>					
Attend	53.2	67.9	1.3	43.74	0.000
Ignore	13.2	1.7	70.5	65.72	0.000
<i>Child response to mother</i>					
Communicative response	5.8	1.0	1.0	16.46	0.000
Behavioural response	5.9	3.8	1.8	3.22	0.047
Attend	70.9	92.5	2.2	103.4	0.000
Ignore	17.1	2.7	95.0	97.2	0.000
B. Frequency					
Total communicative behaviour/ Dyad ^c					
	367.2	384.9	352.4	0.76	0.532
Maternal communicative behaviour/ Dyad ^d					
	76.4	86.3	84.7	9.47	0.001
Child vocal and communicative behaviour/ Dyad ^d					
	23.6	13.7	15.3	9.47	0.001
C. Maternal communicative behaviour					
<i>Interactive function</i>					
Prompt	4.1	7.3	3.0	8.46	0.001
Seek attention	0.6	1.3	0.0	5.17	0.009
Request nonverbal response	0.4	0.3	1.2	4.36	0.017
Label	7.9	3.3	4.5	6.56	0.003
Reinforce/Motivate	5.0	9.2	7.1	5.40	0.007
Exaggerated facial & vocalization	0.4	0.1	0.0	5.53	0.006
Smile/Laugh	1.2	0.4	0.3	3.92	0.025
Imitation	0.8	0.2	0.2	3.55	0.035
<i>Topic</i>					
Topic continuation	26.1	35.4	26.8	7.19	0.002
Respond to child's topic	10.0	4.9	4.9	7.34	0.002
Self repetition	14.3	11.7	19.7	7.15	0.002
<i>Mood</i>					
Exclamatory	7.0	3.8	3.8	3.34	0.043
<i>Mean Length of Utterance</i>	3.25	3.75	3.25	5.85	0.005
<i>Syntax</i>					
One word utterance	33.1	23.3	24.2	7.06	0.002
Ungrammatical utterance	22.6	22.7	27.6	3.90	0.026
Grammatical utterance	44.6	54.0	48.1	5.26	0.008

continued overleaf

TABLE 3 *cont'd*

Variable	Group			<i>F</i> ^b	<i>P</i>
	Respond	Attend	Ignore		
	\bar{X}^a	\bar{X}^a	\bar{X}^a		
<i>D. Child vocal and/or communicative behaviour communication classification</i>					
Spontaneous communication	86.5	97.5	98.3	12.43	0.000
Spontaneous imitation	0.7	0.1	0.1	3.95	0.025
Spontaneous verbal	8.6	3.6	6.4	3.61	0.030
Spontaneous nonverbal	23.7	36.0	4.4	17.93	0.000
Meaningless	53.5	57.7	87.4	26.04	0.000
Elicited imitation	5.9	0.5	0.2	8.10	0.001
Elicited nonverbal	5.3	2.1	0.8	3.58	0.034
<i>Topic</i>					
Topic change	11.2	7.0	0.5	4.31	0.018
Topic continuation	3.3	5.5	0.1	6.67	0.003
Respond to mother's topic	18.1	7.1	3.4	16.43	0.000
Self repetition	10.0	4.2	12.1	4.12	0.021
No relationship to topic	57.4	76.2	83.8	18.23	0.000

a) Means are adjusted according to children's chronological age

b) *F* values for Analyses of Covariance with children's CA as the covariate

c) Absolute frequencies

d) Percentages are based upon total communicative behaviour for each dyad

Response to Other's Vocal and Communicative Behaviour generally confirm the criteria which were used to form the three groups. Children classified as Attenders attended to 92% of their mother's utterances, Ignorers ignored 95% of their mother's utterances, while Responders varied their responses to their mother's communication. All three groups of mothers responded communicatively and behaviourally to approximately the same proportion of their children's vocal and communicative behaviour. However, mothers classified as Attenders attended to and Ignorers ignored their children's behaviour considerably more than the other groups ($P_s < 0.05$).

Frequency. While the number of maternal communicative behaviours did not differ significantly across groups, there were significant group differences in the frequency of children's vocal and communicative behaviours. Responsive children not only produced a larger number of communicative behaviours than the other children ($P < 0.05$), but they also accounted for a significantly higher proportion of total dyadic vocalization and communication ($P < 0.001$). Differences between Attentive and Ignoring children were not significant. These data thus indicate greater conversational balance among Responders than among the other two groups of dyads.

Maternal communicative behaviour. All mothers used language for the

same general interactive functions, except that Responders had a higher percentage of Label, Exaggerated Facial and Vocalization ($P_s < 0.01$), Smile/Laugh, and Imitation of Child ($P_s < 0.05$) than the other two groups; Attenders had a higher proportion of Prompt and Seek Attention ($P_s < 0.05$); while Ignorers had a higher proportion of Request Nonverbal Response ($P_s < 0.05$). The mothers differed somewhat on MLU with Attenders having a higher MLU than the other two groups ($P_s < 0.01$). The relatively low MLU's observed for Responders and Ignorers reflected two different patterns with Responders having a high proportion of one word utterances and Ignorers having a high proportion of ungrammatical utterances. The groups differed very little on mood except that Responders had a higher proportion of exclamatory utterances than the other groups ($P_s < 0.05$).

There were highly significant differences between the three groups of mothers on Topic measures. Responders were more responsive to their children's topic than the other groups ($P_s < 0.01$); Attenders continued their own topics more than the other groups ($P_s < 0.01$); while Ignorers repeated themselves more than the other groups ($P_s < 0.05$).

Child vocal and/or communicative behaviour. The analyses of children's vocal and communicative behaviour indicated that Responders were more proficient than Attenders who in turn were more proficient than Ignorers. Compared to Ignorers, Responders not only had more vocal and communicative behaviours, but also had a higher percentage of Spontaneous and Elicited Imitation, Verbal Communication, and Meaningful Nonverbal Communication ($P_s < 0.01$). Although Attenders and Ignorers produced the same amount of vocal and communicative behaviour, Ignorers had more Spontaneous Meaningless vocalizations than Attenders ($P < 0.01$). There were also differences in the manner that children participated in discourse. Almost 84% of the behaviour of Ignorers was classified Not Related to the Topic, while 76% of the behaviour of Attenders and 57% of the behaviour of Responders were classified in this category. Responders were more responsive to their mothers' conversation than the other groups as indicated by their Response to Mother's Topic ($P_s < 0.01$).

C. Other group comparisons. The comparison of the three groups of children on data from the REEL were generally consistent with the findings regarding their vocal and communicative behaviour. Mean RLA (months) were 15.8 for Responders, 13.5 for Attenders, and 12.5 for Ignorers. Mean ELA (months) for the three groups were 14.7, 11.8, and 10.7 respectively. Comparisons of these scores indicated significant differences in RLA between Responders and Ignorers ($P < 0.05$) and in ELA between Responders and Attenders and Responders and Ignorers ($P_s < 0.01$). However, since

the distribution of REEL scores across the three groups overlapped considerably, the three communication patterns appear to be represented across a broad range of language functioning.

The three communication groups were compared on a set of 16 variables that are potentially related to children's communicative functioning including measures of cognitive functioning (Bayley and Uzgiris & Hunt), health indicators familial characteristics, and months of intervention. Only one of these comparisons yielded significant group differences. There were significant differences on the Bayley Mental Development Scale, with Responsive children having higher DAs than Attenders who had higher DAs than Ignorers ($P_s < 0.05$).

DISCUSSION

Some of the findings from this study can be interpreted as indicating that mothers' style of communication with mentally retarded children is determined primarily by the manner that their children respond to them. The two predominant ways that these children responded to their mothers' communication, Attend and Ignore, were highly predictive of how mothers responded to children's communication. Furthermore, when the dyads were grouped according to the manner that children responded to their mothers, there were a number of linguistic and discourse features that differentiated mothers' style of communication.

However, two of the observations made in this study also provide a basis for challenging the child-directed model of maternal communication style. First, maternal responsiveness to children's communication did not differ across age levels. This finding suggests that as children's communication changed in quantity and content from one age level to the next, mothers' pattern of responding to children's communication remained stable. Second, the linguistic features that differentiated the three patterns of maternal communication seemed to reflect unitary underlying themes. The themes that emerged from these groups are very compatible with the notion that mother's style of communication is influenced by their cognitions.

For example, Responsive mothers' greater use of one word utterances and labels and high frequency of responding to their children's topics indicated that they perceived that their role in communication was to respond actively to their children's communicative interests. Their higher proportion of Smile/Laugh, Exaggerated Facial, and Exclamation suggests that they were more enthusiastic about communicating and experienced greater pleasure with their children than the other mothers. Attenders were distinguished by a high frequency of Prompt, Seek Attention, Elaborate own Topic, and Grammatical Utterances. These characteristics suggest that they

viewed their role to be more of a teacher-director than a communication partner. While they were very attentive to their children, their communication seemed to be focused more on their own interests, or agenda, rather than their children's. In marked contrast, Ignorers seemed not to perceive their children as communicators. These mothers and their children lacked the basic prerequisite for effective communication – a sensitivity and responsiveness to each other's communicative behaviour.

There is a striking resemblance of the patterns of maternal communication identified in this study and those reported by MacDonald & Pien (1982), even though the procedures for identifying communication patterns were quite dissimilar. Responsive mothers closely paralleled MacDonald & Pien's Conversation-eliciting Mothers; while the Attentive mothers paralleled their Controlling Mothers. Conversation-eliciting mothers, like Responders, were less dominant in conversation, more responsive to children's conversational turns, and less talkative during each of their own turns. Controlling mothers were high in their use of many of the same conversational behaviours, that characterized Attentive mothers, e.g., prompts, attention devices, acknowledgement of the child's action (i.e., reinforce-motivate), and monologuing (i.e. topic continuation).

Many of the differences between the findings from this study and those of MacDonald & Pien are likely the result of the discrepancies between the communication and cognitive ability of the subjects for the two studies. However, the Ignoring pattern observed in this study but not identified by MacDonald & Pien may indicate a pattern of communication that is unique to organically impaired or developmentally delayed populations.

If communication style is influenced by underlying cognitions and attitudes, then what are the differences between mothers of mentally retarded and normally developing children that could explain group differences in maternal communication? The styles of communication identified in this study and the literature on parents of handicapped children form the basis for two possible explanations. First, there is evidence that many parents of handicapped children have serious difficulties associated with emotionally accepting their children's handicapping condition (Emde & Brown 1978, Wolfensberger 1967). This type of emotional response could be manifested by parents being unable to focus on their children's behaviour. In the context of the findings from this study this type of reaction could be displayed by mothers ignoring their children's communicative behaviour.

Second, there is consensus among many special educators that a structured and directive environment is essential for promoting the development of handicapped children (Bricker 1986, Bailey & Wolery 1984). Based upon this rationale parents are frequently encouraged to be directive and

structured in their interactions with their children (Hanson 1977). These types of recommendations de-emphasize the significance of children's current behaviour and stress the importance of promoting higher level behaviours. Since the Attentive communication style identified in this study parallels this kind of emphasis, it is possible that this style reflects similar maternal beliefs about child-rearing.

The design of this study precludes causal inferences regarding the relationship between mother-child communication and children's rate of language development. Nevertheless, the fact that these communication patterns were associated with different levels of language functioning, but with few differences in other factors that might contribute to language functioning, suggests that the causal hypothesis is worthy of testing. In addition, the pattern of findings from this study were very consistent with Bruner's notion of a language acquisition support system (1983) insofar as the critical differences between the three types of mothers appeared to be related to their orientation towards their children's developing communication system. Clearly, additional research is required both to determine whether similar communication styles can be identified reliably in other samples, as well as to determine whether differences in maternal communicative responsiveness are predictive of subsequent rates of language development.

REFERENCES

- Bailey, D. & Wolery, M. (1984). *Educating Infants and Preschoolers with Handicaps* (Columbus, OH: Merrill).
- Bayley, N. (1969). *Bayley Scales of Infant Development* (New York: The Psychological Corporation).
- Bricker, D. (1986). *Early Education of at-risk and Handicapped Infants, Toddlers, and Preschool Children* (Glenview, IL: Scott, Foresman & Company).
- Bruner, J. S. (1983). *Child's Talk: Learning to use Language* (New York: Norton).
- Bzoch, K. R. & League, R. (1970). *The Receptive-expressive Emergent Language Scale for the Measurement of Language Skills in Infancy* (Gainesville, FL: The Tree of Life Press).
- Cunningham, C. E., Reuler, E., Blackwell, J. & Deck, J. (1981). Behavioural and linguistic development in the interactions of normal and retarded children with their mothers. *Child Development*, **52**, 62-70.
- Emde, R. M. & Brown, C. (1978). Adaptation to the birth of a Down syndrome infant. *Journal of the American Academy of Child Psychiatry*, **17**, 229-323.
- Fischer, M. A. (1987). Mother child interaction in preverbal children with Down syndrome. *Journal of Speech and Hearing Disorders*, **52**, 179-190.
- Grossman, H. J. (ed.) (1973). *Manual on Terminology and Classification in Mental Retardation* (Baltimore: Garamond/Pridemark Press).
- Hanson, M. (1977). *Teaching your Down Syndrome Infant: A Guide for Parents* (Baltimore, MD: University Park Press).
- Kaye, K. & Charney, R. (1980). How mothers maintain dialogue with two-year-olds. In Olson, D. (ed.), *The Social Foundations of Language and Thought: Essays in Honor of Jerome S. Bruner* (New York: Norton).

- McConkey, R. & Martin, H. (1984). A longitudinal study of mothers' speech to preverbal Down syndrome infants. *First Language*, **5**, 41-55.
- MacDonald, L., & Pien, D. (1982). Mother conversational behavior as a function of interactional intent. *Journal of Child Language*, **9**, 337-358.
- Mahoney, G. J. (1975) An ethological approach to delayed language acquisition. *American Journal of Mental Deficiency*, **88**, 109-112.
- Mahoney, G. J., & Petersen, G. (1980). *The Maternal Language Classification Scale* (New York: Ford Foundation (ERIC Document Reproduction Service No. ED 184 718)).
- Mahoney, G. J. & Robenalt, K. (1986). A comparison of conversational patterns between mothers and their Down syndrome and normal infants. *Journal of the Division for Early Childhood*, **10**, 172-180.
- Mahoney, G. J., & Seeley, P. (1976). The role of the social agent in language acquisition: Implications for language intervention. In N. R. Ellis (ed.), *International Review of Research in Mental Retardation. Volume 8* (New York: Academic Press).
- Maurer, H., & Sherrod, K. B. (1987). Context of directives given to young children with Down syndrome and nonretarded children: development over two years. *American Journal of Mental Deficiency*, **91**, 579-590.
- Nelson, K. (1973). Structure and strategy in learning to talk. Monograph of the Society for Research in Child Development, 1973, **38**.
- Nelson, K. E., Denninger, M. M., Bonvillian, J. D., Kaplan, B. J. & Baker, N. (1983). Maternal input adjustments and nonadjustments as related to children's linguistic advances and to language acquisition theories. In A. D. Pelligrine & T. D. Yawkey (eds), *The Development of Oral and Written Languages: Readings in Developmental and Applied Linguistics* (New York: Ablex).
- Olsen-Fulero, L. (1982). Style and stability in mother conversational behavior: a study of individual differences. *Journal of Child Language*, **9**, 543-564.
- Petersen, G. & Sherrod, K. (1982). Relationship of maternal language to language development and language delay of children. *American Journal of Mental Deficiency*, **96**, 391-398.
- Rondal, J. (1978). Maternal speech to normal and Down's syndrome children matched for mean length of utterance. *Monograph of the American Association on Mental Deficiency* (Washington, DC: American Association on Mental Deficiency).
- Snow, C. (1977). The development of conversation between mothers and babies. *Journal of Child Language*, **4**, 1-22.
- Uzgiris, I. C. & Hunt, J. McV. (1975). *Assessment in Infancy: Ordinal Scales of Psychological Development* (Urbana, IL: University of Illinois Press).
- Wells, G. (1981). Language as interaction. In Wells, G. (ed.), *Learning through Interaction: The Study of Language Development* (Cambridge: Cambridge University Press).
- Wolfensberger, W. (1967). Counseling the parents of the retarded. In A. A. Baumeister (ed.), *Mental Retardation: Appraisal, Education, and Rehabilitation* (Chicago: Aldine).