Deaf Children’s Referential Messages to Mother

Sherri MacKay-Soroka, Sandra E. Trehub, and Leigh A. Thorpe

University of Toronto

Despite a growing consensus that the primary problem of deafness is the barrier it creates to the acquisition of functional communication skills (Liben, 1978; Meadow, 1975), most research in this domain has focused on specific linguistic skills (e.g., Dodd, 1976; Geers & Moog, 1978) as opposed to the composite of linguistic and nonlinguistic skills involved in successful communication. Of particular importance is referential communication, which constitutes “one of the simplest and most fundamental social uses of language” (Krauss, 1979, p. 51). In a recent developmental analysis of referential communication, Whitehurst and Sonnenschein (1985, p. 6) distinguish between general enabling skills, which involve “the linguistic, perceptual, and social skills that allow one to engage in communication,” and specific procedural rules, which involve “what one is to do to communicate referentially.” Such procedural rules include the difference rule, which requires a description of how the referent differs from other referents, the editing rule, which involves self-monitoring and editing of incipient messages, and the feedback rule, which requires the reformulation of messages on the basis of listener cues of noncomprehension.

With this framework in mind, one can attribute the sometimes inept communications of young hearing children to inadequate comprehension of these procedural rules, which are the antecedents of successful communication. Such children may fail to understand fully the needs of their communication partner and may be unable to use feedback appropriately in planning and executing messages (Peterson, Danner, & Flavell, 1972). Evidence is accumulating, however, that young children’s communicative competence can be improved by systematic intervention designed to enhance their understanding of the communication process (Whitehurst & Sonnenschein, 1985). The implications for deaf children are clear. Where language skills are less than optimal, it would seem reasonable to maximize communicative facility via effective communication strategies. Before proceeding to such intervention, however, one must first specify the communication skills that are characteristic of deaf children.

The primary goal of the present experiment was to provide a preliminary description of referential communication skills and strategies of deaf children in interaction with their mothers. The inclusion of mothers as

This research was supported by the Natural Sciences and Engineering Research Council of Canada and was part of a doctoral dissertation submitted by the senior author to the University of Toronto. We are indebted to Adele Churchill, who interpreted for bimodal communicators, and to Debbie Falconer and Gail Edgar, who prepared transcripts of the test sessions. Requests for reprints should be sent to Sandra E. Trehub, Centre for Research in Human Development, Erindale College, University of Toronto, Mississauga, Ontario, Canada, L5L 1C6.

[Child Development, 1987, 58, 385–394. © 1987 by the Society for Research in Child Development, Inc. All rights reserved. 0009-3920/87/$01.00]
communication partners was motivated by several factors including familiarity with the child's communication ability and style. Two groups of 6–10-year-old deaf children participated in the study. One group attended educational and therapeutic programs that focused exclusively on the development of oral language skills, whereas the other attended special schools that supplemented oral communication with a system of manual or signed communication. This diversity of communication options within the local community made it possible to explore the nature and efficacy of mother-child communication under these varying circumstances.

Despite the obvious importance of parental communication with deaf children, it has received little experimental attention, particularly beyond the preschool years. Research on hearing mothers' interaction with their deaf preschoolers has revealed impoverished communication compared to matched hearing pairs (Meadow, Greenberg, Erting, & Carmichael, 1981). What has also emerged is that bimodal (oral plus manual) communication appears to facilitate mutually satisfying interaction between mothers and their deaf children. Compared to orally communicating dyads, bimodally communicating dyads show "more complex, sociable, and contingently responsive social interaction" (Greenberg, 1984, p. 218). It is unclear, however, whether bimodal communication offers comparable advantages for mother-child dyads in structured tasks (e.g., referential communication) and during later childhood.

Referential communication between dyads of hearing mothers and children has received some experimental attention. Dickson, Hess, Miyake, and Azuma (1979) found that referential communication performance between mothers and preschool children predicted later academic achievement in these children. Successful outcome on the referential communication task appears to involve mothers’ skill at supporting their child’s communicative efforts, including facility in extracting relevant information (Bertrand & Mervis, 1985) and in resolving ambiguous messages (MacKay-Soroka, 1985).

The few studies of referential communication in deaf children simply compared dyads of deaf peers with those of hearing peers and found, as expected, poorer performance for deaf dyads (Alegria, 1981; Breslaw, Griffiths, Wood, & Howarth, 1981; Hoemann, 1972). Jordan (1983) reports, however, that the deaf child’s success on a referential task is also influenced by the competence of the communication partner. He found that the performance of signing schoolchildren improved substantially when they communicated with a teacher as opposed to a peer. Because Jordan (1983) had no measure of each participant’s skill but only of dyadic success (i.e., percentage of correct referents chosen), it is impossible to differentiate the contribution of the message sender (i.e., the child) from that of the receiver (i.e., the teacher). This underlines the importance of evaluating the quality of the referential message independently of its outcome.

It is important to go beyond the quality of deaf children’s referential messages to consider other skills that the child brings to the communication situation, such as the ability to reformulate or repair messages that are initially unsuccessful. An analysis of “failed” communications and subsequent reformulations is particularly relevant to deaf children, whose daily exchanges are replete with communicative misunderstandings. Hoemann (1972) found that deaf children 8–11 years of age responded to requests for clarification of their inadequate messages to peers by signing “Can’t” or “Don’t know.” Aside from Hoemann’s (1972) descriptive data, there is a little information on deaf children’s ability to correct unsuccessful communication.

It is also important to ascertain to what extent inadequate messages result from inattention to differentiating features of the target referent (Longhurst & Turnure, 1971) as opposed to specific difficulties in message formulation. If a child fails to apprehend the stimulus features that differentiate the referent from alternative events in a referential array, then he or she is unlikely to include these critical features in the message.

In the present study, mother and child had identical sets of pictures. The object of the referential communication “game” was for the child to formulate a description of a preselected target picture so that the mother could choose it from her set of pictures. By controlling the nature of the pictures and how they were differentiated from one another, the experimenter could establish the topic of communication and the relative difficulty of the task. No restrictions were placed on the mode and style of communication, with the participants free to use speech, sign, informal gesture, or any combination of these to accomplish the goals of the game. A visual recognition task was also included to examine the contribution of visual processing of the
referential array to unsuccessful performance on the message-sending task.

Our specific objectives were to examine the nature and quality of deaf children's referential messages to mother, the outcome of such messages, and the reformulations of "failed" messages. The nature and quality of the messages and reformulations would provide information on deaf children’s use of Whitehurst and Sonnenschein’s (1985) procedural rules for referential communication. The outcome of such messages would reveal, in addition, the mother’s contribution in supporting her child’s communicative efforts. Finally, the availability of data on hearing children 4, 6, and 8 years of age with the present task (MacKay-Soroka, 1985) offered the possibility of preliminary comparisons of the performance of deaf and hearing children.

Method

Subjects.—The subjects were two groups of mother-child dyads consisting of mothers (mostly hearing) with their (1) orally educated deaf children, or (2) bimodally educated deaf children. Children in the orally educated group (N = 15) had prelingual hearing losses of 63–110 dB, with a mean of 91 dB. All of these children participated in educational and therapeutic programs that focused exclusively on oral communication. These therapeutic programs were highly structured and required parents to devote daily at-home time to the implementation of prescribed speech and language programs. The children were 6–10 years of age, with a mean age of 7-6. All of the mothers in this group had normal hearing. (See Table 1 for subject characteristics.)

Children in the bimodally educated group (N = 15) had prelingual hearing losses of 65–120 + dB, with a mean of 106 dB. The hearing loss of this group was significantly greater than that of the orally educated children, t(28) = 2.46, p < .01. All children had participated for at least 1.5 years in an educational program that encompassed manual and oral communication. Only a few of these families (N = 3) had received intervention focusing on manual communication from the time of the diagnosis. The length of time in such intervention or educational programs ranged from 1.5 to 7.5 years, with a mean of 4.5 years and a median of 3 years. Some of the dyads (N = 7) had participated in intensive oral programs, with relatively little success, prior to the initiation of manual communication training. The children in the bimodally trained group were 6–10 years of age, with a mean age of 8-4. The age difference between bimodally and orally educated children was not significant, t(28) = 1.99, p < .10. With the exception of two mothers who were profoundly deaf, the mothers in this group had normal hearing.

The levels of hearing loss for both groups of deaf children were verified from records of local hospitals and schools. From these records, it was also ascertained that all children had normal intelligence (i.e., IQ scores within the normal range) and no other handicapping condition that might affect their level of functioning.

Stimuli.—Each of 15 stimulus sets, one for each trial, consisted of four individually mounted pictures (20 × 20 cm) preselected to span a wide range of referential difficulty.

<table>
<thead>
<tr>
<th>GROUP</th>
<th>AGE RANGE</th>
<th>N</th>
<th>UNAIDED PURE TONE AVERAGE (dB ISO)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Range</td>
<td>N</td>
<td>Range</td>
</tr>
<tr>
<td>Oral</td>
<td>6–10</td>
<td>15</td>
<td>63–110</td>
</tr>
<tr>
<td></td>
<td>5.5–6.4</td>
<td>3</td>
<td>63–68</td>
</tr>
<tr>
<td></td>
<td>6.5–7.4</td>
<td>5</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>7.5–8.4</td>
<td>2</td>
<td>90–100</td>
</tr>
<tr>
<td></td>
<td>8.5–9.4</td>
<td>5</td>
<td>101–110</td>
</tr>
<tr>
<td>Bimodal</td>
<td>6–10</td>
<td>15</td>
<td>65–120 +</td>
</tr>
<tr>
<td></td>
<td>5.5–6.4</td>
<td>1</td>
<td>65</td>
</tr>
<tr>
<td></td>
<td>6.5–7.4</td>
<td>3</td>
<td>83–85</td>
</tr>
<tr>
<td></td>
<td>7.5–8.4</td>
<td>6</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td>8.5–9.4</td>
<td>4</td>
<td>101–110</td>
</tr>
<tr>
<td></td>
<td>10.1</td>
<td>1</td>
<td>111–120</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&gt; 120</td>
</tr>
</tbody>
</table>
The sets of pictures contrasted in the degree of difference between target and alternative pictures, the difficulty of vocabulary items that could be used to label differentiating features, and the familiarity of component items. In order to guarantee some success for every child, both tasks included a midtask “easy” trial in which the target referent differed substantially from the alternative pictures. The pictures were brightly colored graphic representations of objects and events. On the basis of pilot testing with hearing children, stimuli for the two experimental tasks were selected to encompass an approximately equivalent range of difficulty. The estimated difficulty of each set was based on the percentage of pilot hearing subjects whose first description of the target referent resulted in correct identification of the target picture by mother. Miniature line drawings of sample stimulus sets from the picture description task are shown in Figure 1.

**Apparatus.**—Video and audio recordings of the session were made to facilitate subsequent coding and the preparation of transcripts for each trial. Two black-and-white video cameras, fixed atop tripods, were used. One was adjusted to focus on the child, the other on the mother. The cameras were aimed to film at an angle of about 45° from midline to make manual communication and gesture optimally visible. The signals from the two cameras were fed into a special-effects generator, which was used to display the signals on a 19-inch split screen. This signal was recorded on videocassette using a VHS videorecorder. Stereo audio recordings were made with a four-track, reel-to-reel tape deck at a tape speed of 3¾ inches per sec. Two microphones were suspended above the table at which the participants sat, one near the child, the other near the mother. Because the audio signal transmitted to the videorecorder was monaural, the superior audio recordings (stereo) were used for preparation of the verbal transcripts.

**Procedure.**—The study was introduced as a communication game and the rules de-
scribed verbally or bimodally (as appropriate) in simple, standardized fashion. Two experimenters were present at all times, the first author and a certified interpreter who had extensive experience with deaf children and adults and fluency in various signed communication systems. In all cases in which sign was used, the second experimenter communicated simultaneously in oral English and in the sign system with which the child was familiar. All communications to the mothers of such children were also signed and spoken simultaneously. Communication to the two dyads with deaf mothers was in American Sign Language, with vocalization of key words.

Mother and child were seated facing one another at opposite sides of a table, with wooden trays for the stimulus sets between them. The experimental session consisted of a training period followed by two different tasks. During the first, or picture description task (eight trials), the child acted as message sender and the mother as message receiver. For this task, mother and child were given an identical stimulus set for each trial with the exception that the target referent in the child's set was designated by a red dot. After the child had finished describing the designated picture, the mother selected a picture and showed it to her child. If her choice was incorrect, she was instructed to prompt the child to repair his or her message by saying "tell me something else," "tell me what's different about the picture with the red dot," after which she made a second selection. This procedure continued until the mother chose the correct referent. Mothers were free to request repetitions of all or part of a message at any time but they could only ask for additional information following their incorrect choice. They were also instructed to refrain from interrupting the child during the initial message (except to request repetitions) or from asking specific questions about the pictures (e.g., "Is it the one with the X?").

During the second or picture recognition task (seven trials), the child was given the target referent to study and was subsequently asked to identify it from a set of four alternatives. The child was allowed to look at the target for as long as he or she liked, before being given the set of alternatives. This task was included to ensure that difficulty on the picture description task did not stem from failure to encode visually the differentiating features of the target referent.

Results

No orally educated child used sign in the communication task. For the bimodally educated children, 3 used sign exclusively, 10 signed and spoke simultaneously, and 2 used speech primarily with little sign. The speech of those children with losses exceeding 100 dB (4 oral, 11 bimodal) was of very poor intelligibility.

The dependent measures were scored from the audio and video records as well as written transcripts of all verbal and nonverbal behavior (signs and informal gestures). Transcripts and ratings for the bimodal children were prepared by a certified interpreter. Preliminary analyses revealed no influence of sex on the dependent measures. Hence, the data were collapsed across sex for all subsequent analyses.

Picture recognition.—A percent-correct score on the picture recognition task was calculated for each child based on the number of pictures identified correctly. The distributions of scores for the two groups were highly similar, with recognition scores at or near ceiling for most children (mean recognition scores of 95% and 93% for bimodal and oral children, respectively).

Message adequacy.—Each of the child's initial messages on the picture description task (prior to mother's first choice of referent) was given a rating of 1, 2, 3, or 4, according to whether the message (including speech, sign, and informal gesture) described the target referent uniquely (rating of 1), whether it was ambiguous between the target referent and one nonreferent (rating of 2), or whether it referred equally to three, or all four pictures, respectively. An overall message adequacy score was calculated by summing the ratings across the 8 trials of the picture description task and subtracting the total from 32. Independent ratings on all trials were made by an observer who was not present during the test session. Interobserver reliability (number of agreements divided by number of ratings) was .89 for bimodal and oral children, calculated separately.

The mean message-adequacy scores of bimodal and oral children are displayed in Figure 2. To facilitate comparisons with hearing children, scores from 4-, 6-, and 8-year-old hearing children (MacKay-Soroka, 1985) are also included. Bimodal children provided more differentiated messages than orally educated deaf children, t(28) = 2.5, p < .02. An analysis of message adequacy, with age
covaried, also revealed significant differences (p < .025) favoring bimodal children, as did an analysis excluding the two deaf children of deaf parents (p < .02). In all subsequent analyses, the inclusion or exclusion of these two deaf dyads did not affect the findings.

Reformulations.—During the picture description task, the child was shown mother’s selection and asked to provide another description of the target referent whenever that choice was incorrect. On each trial, the child’s reformulation of an inadequate message following mother’s first incorrect choice was also given a rating of 1–4, according to the same criteria for rating the child’s initial message.¹ A mean reformulation-adequacy score was calculated for each child by averaging the ratings across his or her reformulations. A Mann-Whitney test indicated that the mean reformulation-adequacy score of the bimodal group was significantly lower than the oral group, reflecting more differentiated reformulations, U(13,15) = 38, p < .02.

Children’s reformulations for each trial were also categorized as (a) task-relevant (i.e., adding differentiating information) or (b) task-irrelevant (adding nondifferentiating information or repeating all or part of the initial inadequate message). Interobserver reliability on these classifications for bimodal and oral children was .92 and .89, respectively. An examination of the number of children in each group whose modal reformulation involved task-relevant information revealed a significant difference favoring bimodal children, χ²(1) = 5.07, p < .025. Fully 73% of the bimodal children provided more task-relevant than task-irrelevant reformulations. By contrast, less than one-third of the oral children did so. The modal reformulation strategies of bimodally and orally educated children are shown in Table 2 along with comparison data from hearing children (MacKay-Soroka, 1985). Analysis of MacKay-Soroka’s data indicated that simply repeating the original message was rare for hearing children (4% of all reformulations), and that no hearing child used repetition as the predominant strategy of responding to communication failure. Deaf children, on the other hand, frequently responded to mother’s requests for additional information by repeating their initial inadequate message (37% of all reformulations). In fact, simple repetition was the modal reformulation strategy of 27% of bimodal children and 46% of oral children.

Communication outcome.—There were two measures of outcome or success of child-to-mother communication: percent correct first choices and errors to correct selection (i.e., maximum of three errors on each trial). Since both measures showed a similar pattern of findings, only the data on first choices are presented. Analysis of these scores revealed a different pattern from that reported for message adequacy, with no differences in correct first choices between mothers of bimodally educated children (mean = 61.9%) and orally educated children (mean = 54.3%), t(28) = .91, p < .20.

Discussion

The present study revealed differences in the message-formulation skills of orally and bimodally educated deaf children, with bimodally educated children, despite greater hearing loss, providing more differentiated messages and reformulations than their orally educated counterparts. The communicative strengths of bimodally educated children are particularly encouraging when considered in the context of their “real-world” situation. In most respects, they were the disadvantaged group. Overall, they had a higher level of hearing loss, and for many, sign was a relatively new mode of communication, instituted as a remedial option after unsatisfactory prog-

¹ The analyses of message reformulations are based on 28 children. One orally educated child was excluded because mother asked specific questions about the target referent. In the case of another orally educated child (63-dB loss), mother’s initial choices were correct on all trials, thus precluding reformulations.
TABLE 2
REFORMULATION STRATEGIES AND REFORMULATION ADEQUACY SCORES

<table>
<thead>
<tr>
<th>GROUP</th>
<th>IRRELEVANTa</th>
<th>Relevanta</th>
<th>Mean Reformulation Adequacy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Repetition</td>
<td>Add Non-</td>
<td>Add Differentiating</td>
</tr>
<tr>
<td>Deaf:</td>
<td></td>
<td>differentiating</td>
<td></td>
</tr>
<tr>
<td>Oral</td>
<td>46</td>
<td>23</td>
<td>31</td>
</tr>
<tr>
<td>Bimodal</td>
<td>27</td>
<td>0</td>
<td>73</td>
</tr>
<tr>
<td>Hearing:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 years</td>
<td>0</td>
<td>67</td>
<td>33</td>
</tr>
<tr>
<td>6 years</td>
<td>0</td>
<td>15</td>
<td>85</td>
</tr>
<tr>
<td>8 years</td>
<td>0</td>
<td>10</td>
<td>90</td>
</tr>
</tbody>
</table>

a Percentage of children exhibiting designated strategy as their modal response.

ress in oral programs. The bimodal children were all in segregated schools, whereas the oral children were mostly in mainstreamed settings. Whereas the mothers of many orally educated deaf children provided daily formal language instruction under professional supervision, this was generally not the case for bimodally educated children. Finally, the historical devaluation of signing continues even today (Higgins, 1980; Lane, 1984), so that signed communication, in educational and social contexts, constitutes a less prestigious option than does spoken communication. This is particularly true for the Canadian communities from which the present sample was drawn, where bimodal programs are considered by most as a last resort rather than an alternative to oral programs.

Since the picture recognition scores of the oral and bimodal groups were comparable, it would seem that differences in visual encoding of relevant features from the referential array did not contribute to the observed differences in message quality. Moreover, the near perfect visual recognition scores of all deaf children suggest that, in contrast to the 4-year-old hearing children studied by MacKay-Soroka (1985), inadequate visual processing did not play a major role in deaf children’s difficulties on the communication task. Indeed, the considerable discrepancy between outcome on picture recognition and picture description implies that deaf children simply failed to include essential differentiating features in their messages, even when they had encoded these visually.

Limited vocabulary, deficient knowledge of syntactic rules, and poor fluency undoubtedly contributed to difficulties on the communication task. It is unlikely, however, that these factors, in themselves, can account for the poor quality of many messages. On virtually every trial, it was possible to describe the differentiating features of the target referent with only a few words or signs, a few informal gestures, or some combination of these. In practice, however, deaf children seldom produced concise, contrastive messages. Rather, they were more likely to provide longwinded descriptions that often focused on noncontrastive or shared features of target and potential referents. In this fashion, all children formulated adequate messages on the single “easy” trial, in which the target picture differed from the alternative pictures in numerous ways (different scenes, characters, actions, and objects). This suggests that inadequate application of Whitehurst and Sonnenschein’s (1985) difference rule, rather than inadequate language skill per se, was the core deficit evidenced by deaf children, particularly those who communicated orally. Indeed, the ability of some children to provide differentiated reformulations following inadequate initial messages provides additional evidence that deaf children failed to exploit fully their available linguistic skills.

The following examples from orally educated children illustrate that poor referential messages could be cast in adequate linguistic form and that distinctive messages could occur in the context of imperfectly structured utterances. Both of these messages concerned the set of pictures with a bird near a tree, the distinctive element being the hexagonal shape of the leaves on the tree (see Fig. 1).

(1) The bird is flying towards the tree and she is looking at the tree with straight arms. Would you guess it please? I’m finished.

(2) The bird look at a tree, orange leaves with the brown stem with about like that, that, that, that (outlining a hexagon in the air).
After seeing the incorrect picture that their mother had selected and receiving her instructions for additional distinctive information, deaf children frequently responded by simply repeating the original, inadequate message. This type of response is characteristic of hearing 2-year-olds (Wellman & Lemper, 1977) but not of older hearing children, who respond to explicit feedback by modifying their messages (MacKay-Soroka, 1985; Peterson et al., 1972; Spilton & Lee, 1977). This repetition strategy reflects an awareness of the obligation to reply to requests for additional information but limited awareness of the receiver’s needs (Schmidt & Paris, 1984). Thus, deaf children, particularly those who communicated orally, demonstrated deficiencies in the application of Whitehurst and Sonnenschein’s (1985) feedback rule, which requires message repairs in line with non-comprehension cues from the listener.

Perhaps deaf children’s past experience with communication failure is relevant to their use of a repetition strategy. In the course of mother/deaf-child interaction, it is likely that poor intelligibility of the child’s speech or mother’s lack of signing expertise would precipitate frequent communicative misunderstandings that stem from lexical decoding difficulties. Under these circumstances, repetition of the original message would have some utility. Indeed, many mothers in the present study did request repetitions of all or part of the initial message (to maximize intelligibility), but this seemed to be unrelated to their child’s use of repetition as a reformulation strategy.

Robinson (1981) reports that children who understand the causes of communication failure reformulate their messages in a way that reduces the number of choices for the listener, whereas children with a poorer understanding of communication failure reformulate their messages on the basis of a simple rule: “If the listener doesn’t respond appropriately, say something else.” Many deaf children used an alternate strategy, responding somewhat indiscriminately to communication failure on the basis of another rule: “If the receiver doesn’t respond appropriately, say (or sign) it again.” The superior message-formulation skills of bimodal over oral communicators may stem from greater opportunities for peer interaction among bimodal children, who need not be hampered by poor speech intelligibility. Peer communication, by requiring relatively explicit messages for communicative success, may be more effective than adult-child communication in fostering the development of efficient communication strategies (Robinson, 1981; Sonnenschein & Whitehurst, 1980).

Deficiencies in deaf children’s application of difference and feedback rules suggest inadequate understanding of the receiver’s needs. Short of the compliance associated with providing responses, deaf children provided little indication that their communicative behavior was influenced by the receiver. Indeed, it is presently unclear whether deaf children engage in the numerous communicative adjustments characteristic of hearing preschoolers in response to listener cues such as status (Bates, 1976) or age (Shatz & Gelman, 1973).

The outcome of dyadic communication revealed a discrepancy between deaf children’s message-sending skills and maternal performance. Despite receiving inferior messages, mothers of orally educated children performed no worse than mothers of bimodally educated children. This discrepancy between children’s message quality, on the one hand, and maternal picture selection, on the other, highlights the joint problem-solving nature of the present task (see Deutsch & Pechmann, 1982) and underscores the contribution that mothers made to the communicative success of their children. Mothers of orally communicating deaf children were particularly adept at decoding the poorly intelligible, grammatically flawed, and poorly formulated messages of many of the children. Faced with children’s failure to reflect on their own message, mothers reflected on their child’s limitations in order to disambiguate the intended referent.

Mothers of orally communicating children frequently echoed their child’s speech in phrase-by-phrase fashion. Such echoing may serve to clarify, through reciprocal feedback, the content of the child’s immediately preceding utterance, but it may also provide mother with an opportunity to recast and then check a liberal interpretation of her child’s intended meaning. This parallels the expansions provided by mothers of very young hearing children (Brown & Bellugi, 1964). The following examples illustrate the “rich” interpretations that mothers created from their deaf children’s spoken messages.

(3) Child: Dog put mouth cat ball.
Mom: O.K., again.
Child: Dog put mouth cat ball.
Mom: That’s what she says when she means stick out your tongue. So, the dog has stuck out his tongue and the cat has a ball.
Prompting their children was only one way in which mothers promoted successful outcome of their oral child’s communications. These mothers also facilitated communicative success by specific knowledge of their child’s productive phonological system, including typical sounds and sound substitutions. Indeed, MacKay-Soroka (1985) demonstrated that adult strangers presented with videotaped recordings of these children’s messages (with unlimited replaying of each message) made significantly fewer correct choices than did the mothers of these children. The poor performance of these strangers implies that the message-sending skills of orally educated children may have considerably less functional utility than is suggested by the findings of the present investigation.

For hearing mothers of bimodally educated children, facility with a manual code would be one important determinant of successful message reception. All of these mothers were committed to the use of sign with their children, but their experience and proficiency varied. For the most part, they had no difficulty decoding their child’s signs, but, as Krauss (1979) notes, effective communication involves more than a literal decoding of the message. Going beyond the literal message to derive subtleties in intended meaning may depend on a level of expertise not yet available to those acquiring and consolidating a new language or code, particularly when this involves a new modality.

In contrast to the superior receptive performance of orally communicating mothers over strangers, bimodal mothers had no comparable advantage over bimodal strangers (MacKay-Soroka, 1985). Moreover, these strangers did not experience the decoding difficulties of the oral receivers. Thus, bimodal children may be sharing more of the burden of communication with their mothers than do oral children.

In summary, the results of the present experiment reveal differences in deaf children’s message-sending skills as a function of modality of education. There has been considerable speculation regarding the cognitive factors responsible for age-related differences in communication (Schmidt & Paris, 1984; Shatz, 1978; Whitehurst & Sonnenschein, 1985) but no comparable analysis of such factors with respect to hearing status, educational placement, or communication modality. It is important to ascertain the extent to which such differences are attributable to children’s ignorance of effective communication strategies, their deficiencies in language or speech (Quigley & Paul, 1984), the increased attentional demands associated with the deployment of deficient or poorly practiced communication skills (Schmidt & Paris, 1984; Shatz, 1978), or some combination of these.

References


