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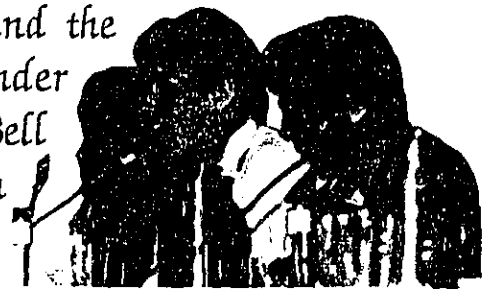

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THE
VOLTA REVIEW

Vol. 96, No. 1
Winter 1994
ISSN 0042-8639

Organized in 1890 to encourage the teaching of speech, speechreading, and the use of residual hearing to people who are hearing impaired, the Alexander Graham Bell Association for the Deaf welcomes to its membership all who are interested in improving educational, professional, and vocational opportunities for people who are hearing impaired. Affiliated with the Bell Association are the Parents' Section (PS), the Oral Hearing-Impaired Section (OHIS), and the International Organization for the Education of the Hearing Impaired (IOEHI).

Editor's Preface

The Many Faces of Communication

David F. Conway

This issue of the journal returns to the familiar and broad topic of communication. Communication presents many aspects that can be studied and that must be understood in order for us to be effective, contributing members of the broad society. The articles in this issue span the age range from kindergarten to adults and examine aspects of social interaction, speech development, and speechreading.

In the lead article, Trinka Messenheimer-Young and Richard R. Kretschmer, Jr., provide a compelling examination of the communication interactions of a five-year-old child (Nicholas) with hearing impairment as he interacts with peers who have normal hearing. Using video tapes and classroom observations, Messenheimer-Young and Kretschmer give detailed descriptions of the verbal and non-verbal strategies used by Nicholas to gain access to play activities. In particular, they looked at how Nicholas and his peers initiated social interactions. While the results showed that all the children used a variety of strategies to access play, Nicholas' repertoire was more limited than his peers and his success rate was much lower. The investigators also discovered a mismatch between the "adult-instructed, direct strategy of asking 'Can I play?'" and the more prominent "peer-culture" use and acceptance of non-direct strategies. Thus, Nicholas' efforts to use direct approaches (as instructed by the teacher) was counter to the peer group's use of non-direct strategies. This may account for Nicholas' low success rate. This discovery has significant implications for teachers. We must recognize that our "rules of operation" may not be the same as those of the children. We need to step back, watch, and discover how groups moderate and regulate their interactions. Finally, this study is a fine example of how classroom-based, ethnographic research can inform and enlighten our understanding of the communication process.

In the second article, John Ryalls, Bernard Michallet, and Guylaine Le Dorze present their study of the effectiveness of using IBM's SpeechViewer computer assisted instruction (CAI) program to improve the vowel production of elementary school students who are profoundly deaf. One group of students received instruction using the SpeechViewer programs. Traditional speech training strategies were used with the other group. While all of the subjects improved the technical quality of their vowel productions, the results showed no *significant* differences between the groups. That is, for these groups of students the traditional strategies and the CAI were equally effective. The results of the study must be viewed cautiously. The number of students who were able to participate in this study was small—four per group. Training time was limited to one half hour per week for a seven week period. As the authors state, additional studies using larger subject groups and longer

training periods need to be conducted. One difference that was noted between the groups was that of motivation/interest. The students in the SpeechViewer group maintained interest in the training. The visual stimulus and reinforcement provided through the computer graphics may attract and hold the students' attention. Ryalls and his colleagues go on to describe certain limitations of the SpeechViewer program and to provide suggestions for improving the program. This article should be of interest to those persons actively engaged in teaching speech and who are using the IBM SpeechViewer.

Shifting ages and topics, Jess Dancer, and his colleagues Mark Krain, Carolyn Thompson, Priscilla Davis, and Johanna Glenn report on the effect of age, gender, practice, and education on the speechreading performance of adults. In this initial investigation the researchers used adults with normal hearing ranging in age from 20-69 years. Results indicated that age, gender, and practice had significant effects on the scores, while years of education had no effects. Female participants had better speechreading performance than males, and females showed significantly more improvement than males. The best performance was shown by females in their 30s, while males in their 60s scored the lowest. The authors discuss other factors that may contribute to the findings. These include: changes in vision, neural conduction times, left-right hemispheric functions in the brain, and the "risk taking" level of the participation. Finally, the authors strongly suggest that additional studies with larger numbers of subject pools that include individuals with hearing losses need to be conducted. The present study is an early step in discovering the effects of age, gender, practice, and education on speechreading performance.

In a Programs In Action article, Charissa R. Lansing and Lisa A. Bievenue report on their efforts at developing a computer based system for training (improving) the speech recognition skills of adolescents and adults who use amplification (hearing aids and/or cochlear implants). They provide information on consonant recognition drills as a first step in a multiphase project. The computer system is able to control for speaker variables inherent in live-voice training. The authors provide a description of the system and the training procedures in the context of pilot trails with adults and high school aged students. In their concluding remarks, the authors outline how this system fits within a comprehensive program of aural rehabilitation. This article should be of particular interest to professionals focusing on developing speech recognition and speechreading skills in adults. It also should be of interest to researchers seeking additional tools for studying speech recognition skills.

I would also like to take this opportunity to congratulate Nancy Tye-Murray, winner of the Volta Review Editors' Award, for her article "Articulatory Organizational Strategies and the Roles of Audition" published in the July, 1992 issue of *The Volta Review*. Tye-Murray was selected to receive this award at the 1993 Editorial Board meeting. For a tribute to Tye-Murray, see page 73.

As 1994 is a Bell Association convention year, we are pleased to present the program for the convention in this issue. As you will note, this year's convention offers a wide array of short courses, mini-seminars, poster sessions, round table discussions, panels, video theater presentations, and special events. The convention chairs, program committee, local arrangements committee, and many other dedicated volunteers have assembled an exciting event. I look forward to seeing many of you in Rochester in June. Enjoy your reading!

David F. Conway
Editor

Research

The Volta Review, Volume 96, 5-18, Winter 1994

"Can I Play?" A Hearing-Impaired Preschooler's Requests to Access Maintained Social Interaction

Trinka Messenheimer-Young and Richard R. Kretschmer, Jr.

Peer culture in the preschool classrooms dictates the unwritten rule for communication. In an integrated setting, a hearing-impaired child and a subgroup of his peers were examined to establish patterns of communication interaction. Observations of classroom activities and peer communication were collected. Using micro-ethnographic techniques, these videotaped data were analyzed in an attempt to identify the communication strategies employed by the child. Patterns of strategies used by the hearing-impaired child were successful for accessing social interactions. These strategies were similar to those of his familiar peer subgroup. Nonverbal strategies for accessing prevailed, but the integrated setting promoted the verbal access of "Can I play?" even though it was not successful in gaining access to peer social interactions.

Corsaro (1985) defines peer culture as an attempt by children to gain control over their lives by establishing a collective identity via shared and repeated peer social activities. In preschool, "the assumption is that the parameters of classroom life are at least partially constructed and negotiated through the peer culture" (Elgas, Klein, Kantor, & Fernie, 1988, p.142). As with all cultures, preschool peer culture includes a common set of values, attitudes, beliefs, and artifacts or objects. Using the notion of peer culture, Corsaro (1985) and others have identified and described children's strategies for social interactions.

Research with hearing-impaired preschoolers has typically been conducted from an adult rather than a peer perspective. Hearing-impaired children have been found to have fewer communication skills and observed to be less socially mature during play than their normally hearing peers (Darbyshire, 1977; Higginbotham & Baker, 1981). This has been true of hearing-impaired children in both segregated and

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mainstreamed educational settings. However, the researchers who have previously studied the social interactions of hearing-impaired children have not utilized a peer culture perspective in their attempts to describe the children's communicative behaviors.

Review of Literature

Conversational strategies in child-to-child interactions. As children progress from adult-to-child to child-to-child social interactions, they take on more responsibility in the conversation and appear to develop more sophisticated communication competencies. Social play in preschools involving familiar peers, settings, and topics has been shown to promote positive social interactions that are more frequent and more intense than those involving unfamiliar peers (Forys & McCune-Nicolich, 1984; Guralnick & Groom, 1988). In interactions with familiar peers, children demonstrate a variety of conversational strategies for accessing social interactions.

Accessing social interactions. Social interactions between children have been studied in terms of accessing, maintaining, and terminating strategies. Here we will only discuss accessing strategies; however, this is not to say that maintenance and termination strategies did not also exist in these interactions.

Corsaro's (1985) year-long ethnographic study of a preschool classroom provided him the opportunity to describe child-initiated social interactions with special attention to accessing strategies. He attempted to describe what the children were doing and saying and the way in which they were saying it from a child's rather than from an adult's perspective. To gain an understanding of the organization of a group of preschool children, Corsaro was a participant observer in their classroom. He videotaped peer interactions twice a week for five months to provide opportunities for detailed analysis of child-to-child interactions. There were two groups of children. The age of the morning group was 2:11-3:11, and the age of the afternoon group was 3:9-4:10. These children were all primarily from white, two parent, middle class homes.

In describing interactive episodes, Corsaro (1979) extensively documented ways in which children gained access into peer play groups. He found that the children did not initiate interaction by using ritual greetings, as adults do. Rather, their most frequently used strategy was to use a sequence of nonverbal behaviors which functioned as required lead-ins to verbal interaction. Corsaro also found that the probability of an individual gaining access required more than one exchange; generally three or more sequences of exchanges of attempt and response were required to successfully gain access.

Within the sequence of exchanges, the most frequently used accessing strategy was labeled "encirclement," which consisted of approaching the group in a non-overt manner so as to not attract attention. This allowed the child to monitor the on-going activity while determining the group's behaviors. Once the situation was assessed, the child could produce a behavior similar to that of the other children, thus allowing the child to fit into the on-going activity. At this point, when the child appeared to be a part of the interaction, she or he would attempt to elicit acceptance from the group. This was done by either "Reference to Affiliation" (e.g., "We're friends, right?"), which Corsaro related to an adult handshake, or through an attempt to elicit affirmation of shared involvement in the on-going activity by using a tag question (e.g., "We're making cookies, right?").

Direct verbal access attempts were met with negative responses. If children were

pursuing access into an on-going activity, they had to use nonverbal strategies. A subtle, nonverbal approach was the first step in attempting to enter an on-going activity because children seem to have a need to protect their interactive space and to guard against intrusion from outsiders.

In a study of 3:0-4:4 year-old children, Healy-Romanello (1987) also attempted to identify accessing strategies. She observed preschoolers in a community church preschool setting where they met two mornings a week. There were 11 children, seven girls and four boys, from middle to high income families. For most children, this was their initial school experience. Like Corsaro (1985), Healy-Romanello (1987) used micro-ethnographic data collection techniques, including participant observation, audio and videotaping, and teacher interviews. Healy-Romanello's findings concerning accessing strategies were similar to those identified by Corsaro.

Her subjects were found to use a variety of accessing strategies, with the greatest use occurring in the categories labeled Nonverbal Entry, Watching, Suggesting, Mimic Behavior, and Requesting Permission. Their initial access attempts were most often negated or ignored by the other participants. The most successful method of gaining entry was use of a sequence of a nonverbal strategy followed by a verbal or nonverbal strategy directed to the group members of an on-going interaction.

To identify the complexity of access strategies used, the notion of sequence round was applied as a way to describe these data. A round consisted of access strategy and response exchange for each initiation of the interaction. A one-round sequence involved the entering child's use of a single strategy which was responded to in either a positive or negative fashion by the individual or group members. If the response was positive, then the entering child was allowed access into the ongoing activity. If the response was negative, or if the child's attempt was ignored, then the entering child did not gain access and left the immediate area. In a two-round sequence the entering child used two access attempts, with each attempt being responded to by the individual or group members.

Corsaro (1986) entered the children's world and attempted to gain the perspective of culture "to better understand their development of social knowledge and communication skills" (p. 82). The notion of peer culture was one of the central ideas motivating both Corsaro's (1986) and Healy-Romanello's (1987) ethnographic studies with hearing children in school settings. This research has centered on the patterns of conversational strategies and the notion of understanding peer communication from the child's perspective as opposed to analyzing it from an adult framework. Both studies were conducted over extended periods of time in attempts to discover patterns of interaction which would not be identifiable from an adult's perspective, especially in the context of those studies conducted in non-contextualized, quick intervals in contrived settings. Investigation from the peer culture perspective has stressed the importance of familiarity to the study of preschool social interactions.

Interactions involving children with hearing impairment. The majority of the research involving hearing-impaired children's social interactions has been conducted from an adult perspective. The identification of incompetencies and inabilities has been stressed in the research, which has led to the generalization that hearing-impaired children lack adequate social competence. Research focusing on the social interactions of preschool-age hearing-impaired children has been conducted for the following three purposes: (a) to identify the types of play categories

that occur in the play of hearing-impaired children (Darbyshire, 1977; Esposito & Koorland, 1989; Higginbotham & Baker, 1981); (b) to identify the types of play themes used by hearing-impaired children (Gatty, 1990); and (c) to identify the types of initiations and/or responses to others used by hearing-impaired children as they interact with other children (Brackett & Henniges, 1976; Vandell & George, 1981).

Some of these studies involved observations of the children in a familiar setting (Brackett & Henniges, 1976; Higginbotham & Baker, 1981) with familiar peers (Brackett & Henniges, 1976; Vandell & George, 1981). Esposito and Koorland (1989) observed two children in familiar settings with familiar peers, but failed to indicate the time each child spent in a setting with that peer. Darbyshire (1977) noted that, among the hearing-impaired children in his study, familiarity may have inhibited them from mixing with hearing children in a play setting. It was not clear how familiar the hearing-impaired children were with the hearing children.

Several aspects of research design and data collection procedures must be considered when summarizing these studies. Four of these studies involved observation in contrived and/or laboratory settings. Darbyshire (1977) observed pairs of children in a contrived play area in a laboratory setting. Vandell and George (1981) matched pairs of hearing and hearing-impaired dyads and then placed them in a laboratory playroom for observation. Gatty (1990) also matched pairs of children and observed their play behaviors in a laboratory setting.

Some research studies involved limited and/or brief observations of the children's interactions. Brackett and Henniges (1976) and Gatty (1990) each observed their subjects only once. Higginbotham and Baker (1981) based their research on fifteen one-minute observations of the children in five second intervals. Vandell and George (1981) carried out two fifteen-minute observations with their subjects. Esposito and Koorland (1989) observed their children for four ten-minute periods. As can be seen, these five studies provided limited context for the behaviors and interactions that were analyzed.

The research on communication among hearing-impaired children has typically been conducted to investigate and identify the ways in which the hearing-impaired children differ from the norm, not necessarily to identify and describe what the children were talking about or what conversational strategies they actually used to communicate. There are few studies on peer interaction among hearing-impaired preschoolers. Most of these studies have failed to consider social or environmental factors which could be affecting the communication in child-to-child interactions.

Interestingly, Gatty (1990) and Vandell and George (1981) identified their respective hearing-impaired children as frequently attempting to initiate social interactions with peers using nonverbal strategies. These findings were similar to Corsaro's (1979) and Healy-Romanello's (1987) findings concerning the accessing strategies of hearing children. The difficulty is that no specific information is provided concerning the strategies used by hearing-impaired children in maintaining these interactions.

Based on current literature, there is a need to observe hearing-impaired children with their familiar peers in a familiar setting. These investigations need to be carried out over a period of time, not in one or two observations. Further studies are needed both in segregated and in integrated settings describing child-to-child social interactions specifically identifying accessing strategies.

The purpose of this study was to examine the verbal and nonverbal communica-

tion strategies employed by a hearing-impaired child and his peers as they initiated social interactions in an integrated preschool setting. Five-year-old Nicholas was the focal child of the study. He is hearing impaired and has hearing parents. Nicholas has a moderate to severe sensorineural loss, communicates orally, and makes maximum use of his residual hearing.

Methods

Data collected for this research study occurred in a laboratory preschool, which is part of a metropolitan university located in the Midwest. This school provides half-day preschool programs for children 2-1/2 through 4 years of age. The participants in this preschool class included one head teacher, one assistant teacher, and four student teachers from the teacher preparation program. Sixteen children were enrolled in this preschool class; there were nine girls and seven boys. At the onset of the study, the children ranged in age from 3 years, 6 months to 5 years, 3 months. Eight of the children were identified under the Head Start guidelines with two of these children being identified as handicapped, specifically as physically handicapped and speech and language disordered, respectively. The one child identified as having a hearing impairment was not part of the Head Start group. There was racial/ethnic diversity among the children. There were Cambodian (2), Indian (2), African-American (3), and Caucasian (9) children.

To describe the social interactions of preschool peers in this setting, several procedures were used in the collection of data, including informal and formal interviews with the classroom teacher, compilation of field notes of observations, and videotaping. A trial videotape was made on the last day of the second week of observation. Starting the following Monday, videotaping began and continued every day for the next five weeks during the Monday through Thursday afternoon program. Two video cameras were used for this project; one was connected to an FM wireless microphone system which hung from the ceiling. Camera A was stationary and placed on top of the materials cupboard; it was focused on a day-by-day basis on either the manipulative area, the block area, or the dramatic play area. Camera B was with the researcher inside the observation booth, on a tripod. It was continually moved in an attempt to follow the activities of Nicholas and those around him.

There were sixteen days of videotaping, providing thirty videotapes (see Table 1) of 60 hours in duration, collected from 12:30-3:00 pm. Within the sixty hours of tape time, there were thirteen thirty-minute lunch periods, four fifteen-minute snack times, sixteen fifteen-minute group times, and forty-five and a half hours of free-play time. Sometimes camera A was focused on an area where individuals did not enter during that time, generating about ten hours of unusable tape.

At the end of the second week of observation, the first of five thirty-minute formal interviews was conducted with the teacher in her office before class started. The next three observations occurred at approximately two week intervals. The final formal interview occurred six weeks after data collection had ended and data analysis had begun. The first author asked questions about the class, its participants, and the teacher's perceptions of what was occurring in the classroom from observations made in the previous week's data collection. These questions focused mainly on Nicholas and his playmates' behaviors and activities. In the final interview, I asked the teacher if she promoted the children's use of "Can I play?" Her response was "yes." She explained further that the other children were then to respond upon entry "You can tell (the child's name) what you want them to do." At this time she also

Table 1. Types and Frequency of Classroom Activities Captured on Video Tape

Activity	*# of times recorded*	*Length of activity*	*Total time*
Lunch	19	30 minutes	9.5 hours
Snack	4	15 minutes	1 hour
Group time	16	15 minutes	4 hours
Free-play	20	usable	35.5 hours
		unusable	10 hours
total tape time			60 hours

expressed her opinion that Nicholas was "not able to demonstrate successful/appropriate entry" into play activities with other children.

Thus, the data collected included: (a) seventy-two pages of field notes from observation and informal interviews; (b) 30 (two hour) video tapes, 26 hours from camera A and 34 hours from camera B; and (c) interview notes from two and a half hours of formal interviews with the classroom teacher. Data from these sources provided the information base for establishing a description of preschool age-peer social interactions between a hearing-impaired child and his classmates.

Subgroup. It was ascertained that Nicholas interacted most often with a particular set of children. This set consisted of five members. Most interactions involved the playmates Nissam, Peter, Anjulie, Nathanial, and Jonathon. Simply by the way they grouped themselves, these were some of the oldest children; all three of the (labeled) handicapped children were in the subgroup. Their ethnic background was diverse, with two Caucasian children, two Indian children, and two African-American children.

To gain a full picture of accessing strategies being used to enter or initiate peer social interactions, accessing attempts by all six children in this subgroup were included. The data from these sources provided the information base for establishing a description of these peer social interactions.

Analysis of Accessing Social Interactions

The analysis of accessing social interactions involved three steps.

Step one. The researcher identified all social interactions in which Nicholas and his peer group attempted to access peer social interactions among themselves. These clips were copied onto a consolidated working master tape to identify Nicholas and his peers' accessing strategies.

In determining which interactions to include on the master tape, three guidelines were used:

1. Interactions in which Nicholas attempted to access social interaction with a group member;
2. Interactions in which members of the group attempted to access social interactions with Nicholas; and/or
3. Interactions in which group members attempted access with another group member(s) (other than Nicholas).

Table 2. Codes and Definitions for Children's Access Strategies

N *Non-verbal entry*—Entering into an area without verbal marking.

P *Producing variant of ongoing behavior*—Entering into area where episode is underway and (verbally and/or non-verbally) producing behavior similar to that underway.

D *Disruptive entry*—Entering into area and (verbally and/or non-verbally) producing behavior which physically disrupts ongoing activity.

M *Making claim on area or object*—Entering into area and verbally making a claim on an area or an object in the area.

Req *Request for access*—Entering into an area and verbally requesting permission to participate.

Q *Questioning participants*—Entering into an area and questioning participants regarding ongoing activity.

O *Offering of object*—Entering into an area and (verbally and/or non-verbally) offering an object (gift) to one or more of the participants.

G *Greeting*—Entering into an area and verbally greeting one or more of the participants.

Raf *Reference to affiliation*—Entering into an area and producing a verbal reference to affiliation (friendship) with one or more of the participants.

Aid *Aid from non-participant*—Verbally requesting aid or help to gain access from non-participant(s) prior to or during access into area.

Ex *Extending an invitation*—Verbally offering an invitation to a peer to participate from one or more of the participants.

S *Suggest other activity*—Verbally asking one or more participants to engage in another activity.

—Adapted from Corsaro, 1979, p. 321

Additions for this study:

T *Starting together*—Entering into an area, (two or more participants) start an interaction together without negotiation.

I *Intervention*—Entering into an area, the teacher (any adult) intervenes without the request of child who is attempting to participate.

O *Other:*

Waiting List—Entering into an area and literally putting his/her name on a piece of paper to be the next participant in an activity.

Second Party Request—Entering into an area and a participant voluntarily makes a request to the other group member(s) for the individual to participate.

Using these guidelines, 115 attempts to access social interactions were identified. They occurred at the following rate: (a) Nicholas attempting to access social interaction with a group member in 25 episodes; (b) members of the group attempting to access interactions with Nicholas in 27 episodes; and (c) group members attempting access with another group member(s) (other than Nicholas) in 63 episodes. These episodes were clearly visible and had sound of sufficient quality to be intelligible. These clips were then placed on a working master tape of approximately one and a half hour in length.

Table 3. Response Categories to the Access Strategy

N *Negative response*—Verbal or nonverbal refusal of access to the interaction.

I *Ignored*—The participant(s) did not acknowledge the presence of the entering child.

Y *Positive response*—Verbal or nonverbal acknowledgement of the entering child into the activity/social interaction.

—Adapted form Healy-Romanello, 1987, p. 68

Table 4. Individual Use: Access Strategies

Nicholas	*N*	*P*	*D*	*M*	*Req*	*Q*	*O*	*G*	*Raf*	*Aid*	*Ex*	*S*	*T*	*I*	*other*
total	8	4	9	-	25	5	6	-	-	4	6	-	2	7	-
yes response	2	-	-	-	2	1	2	-	-	-	4	-	2	-	-
no response	5	3	9	-	18	4	4	-	-	2	2	-	-	6	-
ignored	1	1	-	-	5	-	-	-	-	2	-	-	-	1	-

Nissam	*N*	*P*	*D*	*M*	*Req*	*Q*	*O*	*G*	*Raf*	*Aid*	*Ex*	*S*	*T*	*I*	*other*
total	7	3	-	-	3	1	-	1	-	-	6	-	4	1	1
yes response	1	3	-	-	3	1	-	-	-	-	6	-	4	1	1
no response	2	-	-	-	-	-	-	1	-	-	-	-	-	-	-
ignored	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Peter	*N*	*P*	*D*	*M*	*Req*	*Q*	*O*	*G*	*Raf*	*Aid*	*Ex*	*S*	*T*	*I*	*other*
total	8	3	3	-	-	1	-	-	-	-	2	1	2	1	-
yes response	1	-	-	-	-	-	-	-	-	-	2	1	2	-	-
no response	5	3	3	-	-	1	-	-	-	-	-	-	-	1	-
ignored	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Nathanial	*N*	*P*	*D*	*M*	*Req*	*Q*	*O*	*G*	*Raf*	*Aid*	*Ex*	*S*	*T*	*I*	*other*
total	7	6	1	-	24	1	1	-	2	-	1	1	3	2	1
yes response	3	4	-	-	1	-	1	-	-	-	1	-	3	1	-
no response	2	2	1	-	17	1	-	-	2	-	-	1	-	1	1
ignored	2	-	-	-	6	-	-	-	-	-	-	-	-	-	-

Anjulie	*N*	*P*	*D*	*M*	*Req*	*Q*	*O*	*G*	*Raf*	*Aid*	*Ex*	*S*	*T*	*I*	*other*
total	5	3	-	-	3	-	-	3	-	-	-	1	2	-	-
yes response	2	3	-	-	2	-	-	1	-	-	-	1	2	-	-
no response	1	-	-	-	1	-	-	2	-	-	-	-	-	-	-
ignored	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Jonathon	*N*	*P*	*D*	*M*	*Req*	*Q*	*O*	*G*	*Raf*	*Aid*	*Ex*	*S*	*T*	*I*	*other*
total	13	4	-	4	18	-	2	-	1	1	1	-	1	1	1
yes response	2	-	-	-	1	-	1	-	-	1	1	-	1	-	-
no response	4	3	-	3	8	-	1	-	1	-	-	-	-	1	-
ignored	7	1	-	1	9	-	-	-	-	-	-	-	-	-	1

Step two. In a search for patterns, a domain analysis was conducted (Spradley, 1980). Each of the episodes was reviewed to identify information with regards to: (a) time lapse; (b) date; (c) interactants; (d) interactant who attempted the accessing; (e) place of interaction within the classroom; (f) activity in which the interactants were involved; and (g) objects used in the interaction. The tape clips were labeled for cataloguing in order to keep track of them in the process of analysis.

Step three. The master tape was viewed again in order to identify and code for each

Table 5. Transcript Example of Offering an Object Strategy by Nicholas

Peter was building in the block area as Nicholas entered.

Nicholas: (entering the block area) Can I pway?

Peter: No!

Nicholas: Is it. Is it two way? (as he knelt beside Peter)
Two. (touched the block, and looked around)

Peter: NO! (grabbed the car and crouched down) But, but, but.

Nicholas: Where them cars? (looked around)
Can I pway? Nissam. (which was the wrong name)
If I get a car?

Peter: NO:::! (yelling)
(a pause)

Nicholas: (looked around) Where you found dease?
(patted the car) Found that?

Peter: Nobody can have. GO AWAY.

Nicholas: I wanna pway.

Peter: No, you can not play. And when I open my eyes, okay?

Nicholas: (moved and looked around the block area)
I think, where did he ...

Peter: Yoo hoo, Anjulie. (who was in another part of the room)

Nicholas: (continued to look around the area)
Can I pway? (knelt to Peter)
Can I pway too?

Peter: No:::

Nicholas: Can I have a car? (went to the corner of the block area)
Got a car.

Peter: (looked up at Nicholas)

Nicholas: (opened his palm to show the car to Peter)

Peter: Ok:::ay.

Nicholas: (put the car on a block)

Peter: Don't mess up my road.

Nicholas: (played with the car)

Peter: Okay.

Nicholas: Wee.

Peter: These have to be unstuck.

Nicholas: (moved to where Peter was sitting) Free bird. (singing)

Peter: Okay, now we work on the road.
Okay, we work on the track.
(went to get another block)

Table 6. Transcript Example of Teacher Intervention for Accessing a Social Interaction

One afternoon Peter and Nissam were in the block area of the classroom, building a track with blocks and running trucks over the track. Janie (the head teacher) was sitting in the area watching the activities.

Nicholas: (wandered into the block area and picked up a chair, he went toward the boys)

Nicholas: Hey you guys. (He picked up a block from the boys' track construction.)

Nissam: Do:::n't.

Nicholas: (moved across the block area) I got this block. I got this block.

Peter: (Continued to get blocks from the shelf to build.)

Nissam: No.

Nicholas: Dang.

Janie: (brought Nicholas to her)

Nicholas, when you come into a play area, you can say 'Can I play?'

Nicholas: Can I play?

Janie: Ask them. Ask them if you can play. Ask them what you can do.

Nicholas: Can I play?

Janie: What can you do?

Nicholas: (?)

Janie: Ask them what you can do Nicholas. They are working on a project.

Nicholas: (moved toward blocks)

Janie: (moved toward Nicholas)

Before you grab things.

(she turned Nicholas around to look at her)

Before you pick up things.

Peter: (fell over some blocks)

Janie: (turned attention toward Peter) Woo, Peter are you okay?

Peter: Yea? It's broke. (and he whines)

Janie: It's disappointing that your structure fell apart. I think . . .

Nicholas: (grabbed for the truck that Janie was holding)

Janie: NO. Nicholas. (she turned him to her side and looked at the boys)

You are grabbing things before you ask.

You have to ask them what you can do.

Nicholas: N . .

Janie: You just grab things

continued on next page

Table 6. Continued

Nicholas:	Nissam, can I play?
Janie:	That makes them angry.
Nicholas:	Can I play?
Nissam:	Okay.
Janie:	What can he do? What can he do, Nissam?
Peter:	(made a noise as he continued to play)
Nissam:	You can use one of those trucks.
	(as he points to the truck that Janie is holding)
Janie:	(said to Nicholas) Now you know what Nissam wants you to do.
	Play together without fighting.
Nicholas:	(walked toward the block shelf)
Janie:	(talking to Peter) I think the reason that you tripped is that there's lots of blocks out here, that makes it difficult to walk around. You can take a few minutes to put away the blocks you're not going to use.
Nicholas:	(he walked toward Janie, and looked at her) I don't wanna play.
Janie:	(nodded to Nicholas)
Nicholas:	(left the block area)

episode the access strategy or strategies used to gain entry into that social interaction. The codes that were used were adapted from Corsaro's (1979) work, a study that identified strategies used by preschoolers when accessing group interactions. In addition to Corsaro's categories, four additional codes were developed to account for all the data generated in this study.

To identify the complexity of access strategies used, the notion of sequence round, as used by Healy-Romanello (1987), was also applied as a way to describe the data. A round consisted of an access strategy and a response exchange for each initiation of an interaction.

Steps one and two of the process of analysis were carried out initially by the first author then reviewed with the second author and questioned and/or verified for a second rater reliability. Step three was a continual exchange process for reliability between the authors to identify and verify the categories for labeling the accessing strategies. Although this process was time consuming, it allowed for clear and reliable description of the interaction data.

Results

The data highlighted several interesting characteristics of the six group members in this study. The children used a variety of access strategies, which ranged from Non-verbal Entry to verbally Requesting Access. Nicholas, the target child, Nathanial, and Jonathon employed Requesting for Access as their primary strategy. Peter, Nissam, and Anjulie tended to use Non-verbal Entry as their primary strategy.

The accessing strategies used by the group are displayed in Table 2. The categories are identified using the strategy title codes (e.g., N-Nonverbal Entry) which appear in Table 4. Responses to an individual's accessing attempts are identified as successful (yes response), unsuccessful (no response), or ignored by another interactant (see Table 3). Nicholas, the target child, used 10 of the 16 strategies; of the 76 attempts, 13 were successful, whereas 63 were not. Nissam used 9 of the 16 strategies; of the 27 attempts, 20 were successful, whereas 7 were not. Peter used 8 of the 16 strategies; of the 21 attempts, 6 were successful, whereas 15 were not. Nathanial used 12 of the 16 strategies; of the 50 attempts, 14 were successful, whereas 36 were not. Anjulie used 6 of the 16 strategies; of the 17 attempts, 11 were successful, whereas 6 were not. Jonathon used 11 of the 16 strategies; of the 47 attempts, 7 were successful, whereas 40 were not. The most versatile children were Nathanial and Jonathon, but the most successful at accessing with the group was Nissam.

In analyzing the accessing attempts with group members, it was evidenced that only two strategies were used by all participants: Non-verbal Entry and Producing a Variant Behavior. Requesting Access was the most frequently used strategy, but not the most successful by far, as only nine of seventy-three (9/73) attempts were successful for gaining entry. The number of strategies was inflated by three of the six group members, the three "labeled" handicapped members of the interactant group; in comparison, the other three members, who were not handicapped, used Requesting Access minimally or not at all.

Nicholas and the other group members demonstrated a variety of successful accessing strategies which led to maintained social interactions. For example, they used strategies such as: Extending an Invitation, Offering of Object, and Producing a Variant Behavior. This is interesting in light of the classroom teacher's comments. She said that "Nicholas cannot access play with the other children." In an attempt to rectify this situation, she would recommend to Nicholas that he use a Requesting Access strategy, specifically, to ask, "Can I play?". Although Nicholas did utilize this prescribed access strategy, it was identified in this study as not being successful for entry into social interactions. The preceding transcript (see Table 5) is an example of Nicholas successfully accessing a social interaction with Peter. He used the teacher's adult strategy of Requesting Access, "Can I play?" five times to no avail and two times he Asks a Question in an attempt to engage Peter. But not until Nicholas presented the object (the car) and offered it does Peter accept Nicholas to engage in this social interaction. In this example, Nicholas did gain access to this interaction with Peter by utilizing a nonverbal strategy.

Discussion

Corsaro's premise of a preschool classroom's peer culture was based on his identification of the existence of a peer culture within the classroom culture, and the analysis of the children's interaction strategies through using a peer culture lens, rather than an adult model perspective. In this study, the adults established a rule for accessing social interactions which they conveyed to the children as appropriate. To access an on-going activity appropriately, the children were told to say, "Can I play?" Teachers verbalized the adult rule to children as "Can I play?", but it did not work. Peer culture within this preschool classroom dictated the rules for communication behavior in an attempt to control the children's social environment. Non-

direct strategies were the most successful in gaining entry.

The adult rule was highly overshadowed by the power of the peer culture; but Nicholas and the other two handicapped boys were hindered by being instructed to follow the adult strategy of "Can I play?". Nicholas was the most frequent user of a Request for Access strategy with 25 attempts using Requests. Along with this, he was followed closely by Nathanial and Jonathon in their number of attempts. These boys were hearing the adult rule for accessing and repeatedly utilized it with their peers without much success. The teachers especially prompted Nicholas in saying, "Can I play?". This is can be seen in by the following transcript (see Table 6) of Nicholas' attempt to access a social interaction with the assistance of the teacher. Her assistance did not meet Nicholas' needs.

"Can I play?" was an adult rule given to children, especially those having perceived to have communication difficulties. This accessing strategy was verbalized by adults as *the* proper/appropriate way to "get in." At times, the children even verbalized to other children, "say, can I play."

The other three children in the identified interactant group demonstrated limited use of a Request for Access strategy. One of the children never used the Request for Access strategy. The other two children only used this strategy three times each.

All six of the children identified in the interactant group were successful communicators. It was initially stated by the teacher that Nicholas could not access play with the other children. Nicholas demonstrated that he could successfully use a variety of accessing strategies that led to maintained social interactions with classmates. He was recorded as being a participant in thirteen maintained social interactions, lasting from two minutes to over fifty-eight minutes when using accessing or initiation strategies. Nicholas' biggest hindrance, as well as that of the other children identified as having Exceptional Education Needs, was the use of the suggested requesting strategy that most often did not allow acceptance into a social interaction.

The question we are left with, then, is do adults hinder preschool age children by "imposing" certain adult communication strategies on them in the name of facilitation?

REFERENCES

Brackett, D., & Henniges, M. (1976). Communicative interaction of preschool hearing-impaired children in an integrated setting. *The Volta Review, 78*, 276-285.

Corsaro, W.A. (1979). 'We're friends, right?': Children's use of access rituals in a nursery school. *Language in Society, 8*, 315-336.

Corsaro, W.A. (1985). *Friendship and peer culture in the early years*. Norwood, NJ: Ablex.

Corsaro, W.A. (1986). Discourse processes within peer culture: From a constructivist to an interpretive approach to childhood socialization. In P. A. Adler & P. Adler (Eds.), *Sociological studies of child development* (Vol. 1, pp. 81-101). Greenwich, CT: JAI Press.

Darbyshire, J.O. (1977). Play patterns in young children with impaired hearing. *The Volta Review, 79*, 19-26.

Elgas, P., Klein, E., Kantor, R., & Fernie, D. (1988). Play and the peer culture: Play styles and object use. *Journal of Research in Childhood Education, 3*, 142-153.

Esposito, B.G., & Koorland, M.A. (1989). Play behavior of hearing impaired children: Integrated and segregated settings. *Exceptional Children, 55*, 412-419.

Forys, S.K.S., & McCune-Nicolich, L. (1984). Shared pretend: Sociodramatic play at 3 years of age. In I. Bretherton (Ed.), *Symbolic play* (pp. 15-191). Orlando, FL: Academic Press.

Gatty, J.C. (1990). *The effects of deafness on play in four-year-old boys.* Unpublished doctoral dissertation, University of Massachusetts, Boston, MA.

Guralnick, M.J., & Groom, J.M. (1988). Friendships of preschool children in mainstreamed playgroups. *Developmental Psychology, 24*, 595-604.

Healy-Romanello, M. (1987). *A study of social interaction in preschool children with an emphasis on child-child initiated activities.* Unpublished doctoral dissertation, University of Cincinnati, Cincinnati, OH.

Higginbotham, J., & Baker, B.M. (1981). Social participation and cognitive play differences in hearing impaired and normally hearing preschoolers. *The Volta Review, 83*, 135-149.

Messenheimer-Young, T. (1991). "Can I play?" A hearing-impaired preschooler's social interactions with his peers in an integrated setting. Unpublished doctoral dissertation, University of Cincinatti, Cincinatti, OH.

Spradley, J.P. (1980). *Participant observation.* New York, NY: Holt, Rinehart, & Winston.

Vandell, D.L., & George, L.D. (1981). Social interaction in hearing and deaf preschoolers: Successes and failures in initiations. *Child Development, 52*, 627-635.

The Volta Review, Volume 96, 19–30, Winter 1994

A Preliminary Evaluation of the Clinical Effectiveness of Vowel Training for Hearing-Impaired Children on IBM's SpeechViewer

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The clinical effectiveness of the "Vowel Accuracy Skill Building" module of IBM's SpeechViewer system was tested by comparing the speech performance of four profoundly hearing-impaired children trained on this system with four profoundly hearing-impaired children who received traditional speech training without computer support. Progress in vowel articulation was continuously measured for both groups using SpeechViewer. Two measures were taken of vowel improvement: the degree of differentiation between the first (F1) and second (F2) formant frequencies for the /i/ vowel and the amount of variation about the second formant frequency value for this same vowel. Although neither measure revealed statistically significant differences between the subject groups pre- to post-training, there was a somewhat better average F2 - F1 differentiation at the end of training for the subjects who used SpeechViewer than for those traditionally-trained. Neither method of speech training resulted in improved variation for F2. The results are discussed within the context of current research and the clinical effectiveness of computer-assisted speech training. Finally, some comments are offered for improving SpeechViewer.

While the use of computers in experimental and clinical speech pathology increased rapidly throughout the 1980s, there is currently a significant increase in the availability of software which more easily integrates computers into speech-language therapy. Until recently, such computer systems existed only as prototypes in research laboratories; however, as they become commercially available, a new challenge arises in speech-language pathology. Clinical testing of these systems not only will guide the profession, but it will also supply crucial information back to engineers about how such systems can be improved. The former type of information is needed because the busy schedules of most clinical practices prohibit time and energy for testing individual systems. The second type of information is necessary because, without such information, research design and development of sensory aids may proceed in a "hit or miss" fashion.

Watson & Kewley-Port (1989), Kewley-Port (1990), and Schwartz (1989) have

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pointed out the lack of empirical research on the clinical effectiveness of computer-based speech training systems. Watson and Kewley-Port (1989) stated in a recent overview that "the major problem faced by clinicians interested in adopting CBST (Computer Based Speech Training) systems at the present time is the meager amount of research demonstrating the clinical effectiveness of these systems" (p. 38).

IBM's SpeechViewer is a commercial product that has been available to speech-language pathologists in North America for approximately four years. SpeechViewer is the result of research conducted by IBM for over ten years. This system has already been greeted with some degree of enthusiasm by a number of clinics. Although the American Speech-Language-Hearing Association (ASHA) has supported a preliminary comparison among several different clinical populations (ASHA, 1990), the detailed results of this work have not been published. A report of two cases of clinical application of SpeechViewer (Ryalls, Cloutier, & Cloutier, 1991) has been published. However, the clinical application of SpeechViewer was not compared to any other training method.

The present study is an independent evaluation of the use of the French-language version of SpeechViewer available in Canada. Vowel production was studied in particular because it is a problem for hearing-impaired children (i.e., Monsen, 1976) and because there is provision for vowel training in SpeechViewer. SpeechViewer was also used to generate vowel spectra in order to monitor vowel formant frequency production in both subject groups.

One difficulty that is encountered in attempting to study the clinical effectiveness of any computer-assisted therapy is simply what to compare it to. That is, one hallmark of speech therapy as practiced in the actual clinical milieu is the manner in which it is individually adapted to the client. While this insures speech therapy that is oriented to the particular needs of the patient, it does not allow for controlled comparison to another method. Standardizing traditional speech therapy was necessary in order to effect a comparison with SpeechViewer. In order to do so, an informal survey of the major clinical practices used in Quebec for treating vowel articulation problems was undertaken. The Ling (1976) method was most frequently mentioned by speech language pathologists working with vowel articulation problems in hearing-impaired children. Thus, the speech therapy in this experiment was structured following the method described by Ling (1976). However, in order to compare it with computer-assisted therapy, a concreteness in application that is certainly not advocated by Ling was imposed.

The purpose of this study was to provide some preliminary data on the clinical effectiveness of vowel training on SpeechViewer compared to traditional training without computer support. Below, the therapy is described as conducted with and without SpeechViewer. The objective measures of improvement in vowel articulation that were developed for this study are presented. Finally, the results of this study are outlined and compared for both subject groups.

Method

Subjects. Eight hearing-impaired boys served as experimental subjects. All subjects in this study sustained profound hearing loss (average PTA of more than 100 dB HL for each ear). The subjects' age and degree of hearing loss (ANSI, 1970) can be found in Table 1. The average age of the SpeechViewer group was 11 years,

Table 1. Subject Characteristics: Age (Years; Months) and Hearing Loss (dB HL)

	SpeechViewer:				*Traditional:*		
	Age:	*HL:* *L:*	*R:*		*Age:*	*HL:* *L:*	*R:*
S1	9;4	97	98	T1	9;4	106	98
S2	9;3	>120	>120	T2	8;10	110	>118
S3	12;3	>120	105	T3	11;5	>110	>110
S4	13;5	>100	105	T4	11;7	92	93
	X= 11;1	>109	>107		10;4	>105	>105

Table 2. Early- and Late-Treatment Measures for the Difference Between F2 and F1 (in Hertz)

	SpeechViewer:				*Traditional:*		
	Early:	*Late:*	*Change:*		*Early:*	*Late:*	*Change:*
S1	2525	2500	-25	T1	2080	1948	-132
S2	2415	2375	-40	T2	2200	2388	188
S3	1175	1313	138	T3	2503	1958	-545
S4	1000	1120	120	T4	1688	1558	-130
X=			48				-155

Table 3. Early- and Late-Treatment Measures for Variation About F2 (in Hertz)

	SpeechViewer:				*Traditional:*		
	Early:	*Late:*	*Change:*		*Early:*	*Late:*	*Change:*
S1	700	513	-187	T1	475	325	-150
S2	1100	390	-710	T2	375	355	-20
S3	468	305	-163	T3	850	343	-507
S4	425	275	-150	T4	815	333	-482
X=			-303				-290

1 month. The average hearing impairment was >109 dB HL for the left ear, and it was 107 for the right. The average age was 10 years, 4 months for the Traditional group whose average hearing loss was >105 dB HL for the left ear and 105 dB HL for the right. No subject had received speech training specifically for vowels before participating in the experiment. All subjects attended a school employing a 'Total Communication' approach—that is a combination of sign and oral speech. The oral skills of all subjects can be described as rather limited. Subjects were tested in two

different clinical trials. First, four younger children (subjects S1, S2, T1, & T2) with profound hearing impairment were randomly assigned to one of two groups: one employing SpeechViewer in therapy and one traditional group without computer assistance in therapy. The second group of four slightly older children (S3, S4, T3, & T4) was also randomly assigned to experimental groups. Both groups worked with the same speech-language pathologist.

Vowel Training with SpeechViewer

Subjects assigned to the SpeechViewer group used the "Vowel Accuracy Skill Building" module (i.e., the "Monkey Game"), wherein good vowel productions are rewarded by progress in a videogame-like format: a monkey climbs up a coconut tree and pushes a coconut which then falls to the ground. The game can employ either predetermined multi-speaker default vowel templates or custom-made templates created by the user. The predetermined multi-speaker vowel templates were used throughout this study. This game was found to be motivating for children in the age groups recruited for this study.

The SpeechViewer allows for an adjustment for the degree of correspondence between internal target and the vowel trial produced by the child. This was continuously adjusted for our subjects throughout the experimentation. The criterion for increasing the degree of precision required for a match was four consecutive successes.

Traditional Vowel Training Without SpeechViewer

For the purposes of this study, a traditional training modeled on Ling (1976) that was comparable to the training offered by SpeechViewer was employed. First, a standard vowel target was provided using sensori-perceptual training. Then, when subjects were capable of judging whether their production was correct or incorrect in reference to the target, production training began. Then subjects were led to improve their capacity to produce the most correct vowel possible. Vowel production training employed games (such as tic tac toe and dominos) using the vowels /i/, /a/, and /u/ written on cards. Children were reinforced for good vowel productions with progress in the particular game in a manner similar to SpeechViewer.

Vowel Training Therapy

Vowel training proceeded for both groups for one half hour per week for seven weeks. The vowels trained were the extreme points of the vowel triangle /i/, /a/, and /u/. Each session began by recording isolated /i/ vowel tokens in SpeechViewer's "Spectra patterning" module for formant measures. The /i/ vowel was chosen to measure progress in vowel production because it is the vowel with the most difference between first and second formant frequencies and, consequently, one likely to reveal the tendency of some hearing-impaired speakers to neutralize productions. This recording of vowel tokens lasted about five minutes. Children then trained with the therapist with or without the support of SpeechViewer.

Hard copies of vowel spectra for /i/ vowel productions were then interpolated for F1 and F2 formant frequency values, as well as the amount of variation about F2. Figure 1 provides an example of such measures from a vowel spectra. In order to

standardize measures, F1 was measured at 70 dB throughout the experiment, while 45 dB was employed for F2. These values were chosen because all spectra measured had formants which met these amplitude levels. F2 variation was extrapolated directly from the spectra's frequency scale. Measures of F2 frequency variation were taken, since this measure had previously been found to be sensitive to improved vowel articulation (Ryalls, Cloutier, & Cloutier, 1991). F1 variation was not measured since it did not vary significantly in the vowel spectra.

The difference between F1 and F2 was determined for each spectra. (The /i/ vowel normally has the greatest amount of difference between F1 and F2.) It was reasoned that, since hearing-impaired children have a tendency to centralize vowels (Monsen, 1976), this measure would be sensitive to improved vowel articulation. Central vowels have the least amount of difference between F1 and F2. The average amount of difference between F1 and F2 for a group of 5 Canadian French-speaking boys of a similar age is 2668 Hz (Ryalls, Larouche, Dupont, & Fournier, 1990). However, there are no comparable data available for the average amount of F2 variation found in normally-hearing French-speaking children.

Results

Figures 2 and 3 provide graphs of the post-treatment F2- F1 /i/ vowel measures for each subject for SpeechViewer and Traditional groups respectively. There is a data point missing for Treatment #5 for subjects T1 and T3—the /i/ spectra for these dates did not provide interpretable formant measures. Figures 4 and 5 provide similar plots for F2 variation. Again, some data points for subjects T1 and T3 are missing.

There are no obvious group differences, nor do individual subjects display an entirely consistent pattern within groups. Subjects S1, S2, and S3 appear to improve in F2-F1 differentiation (Figure 2) in the SpeechViewer group, while the same only appears to be true for subject T1 in the Traditional group (Figure 3). Subjects S2, S3, and S4 appear to reduce their /i/ vowel F2 variation in the SpeechViewer group (Figure 4), while subjects T2 and T4 appear to do so in the Traditional group (Figure 5).

In order to further compare groups, a measure of improvement was developed by looking at the differences between the average of the first two measures and the average of the last two measures for each subject. These average differences are presented in Table 2 for F2- F1 and in Table 3 for F2 variation. In these tables, the results for the first two sessions at the beginning of therapy were averaged together and compared with average results for the two last sessions at the end of therapy for both of the measures under study. It is these differences which are reported in Tables 2 and 3. For subject S5 the value reported in Table 3 for F2 variation is a single measure because one data point was missing.

The differences between early-training and late-training measures were compared for both groups using a one-tailed T-test. A T-test was employed since there were not enough subjects in each group to submit the data to an analysis of variance. For F2-F1 there was no statistically significant difference in average differences between groups (t= 1.29, p >.12). The same was also true of F2 variation (t= .07, p >.47). There was no statistically significant difference between groups for either measure.

We also tested whether or not there was a significant difference between average measures in early-training versus those for late-training for each group—in other

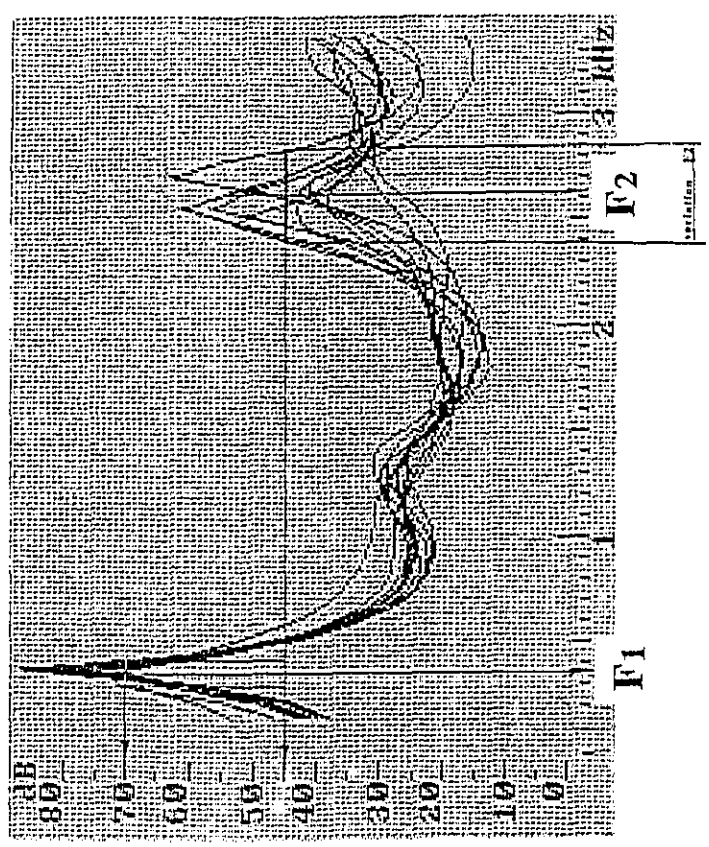

Figure 1. Sample vowel spectrum with formats indicated.

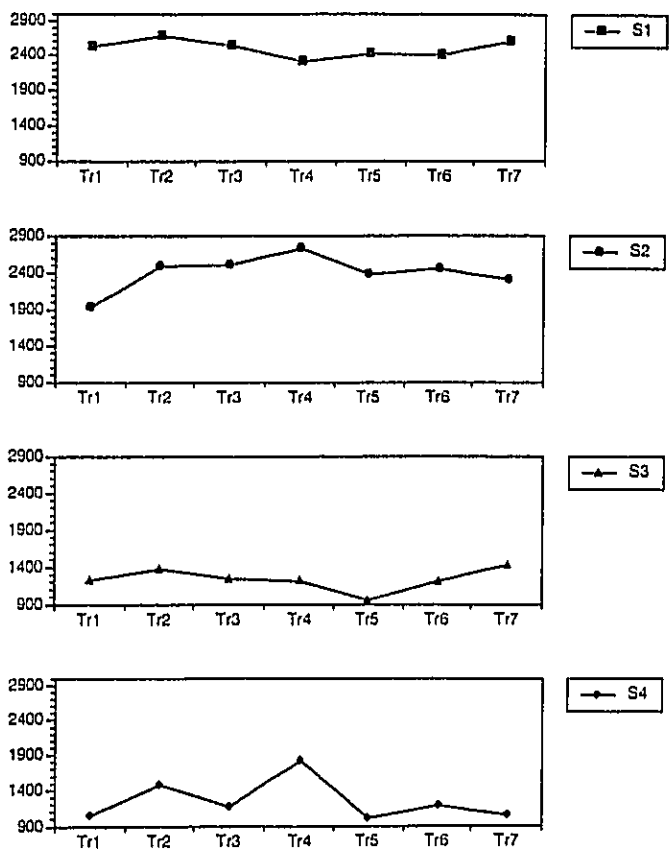

Figure 2. Individual F2–F1 measures by treatment session SpeechViewer group.

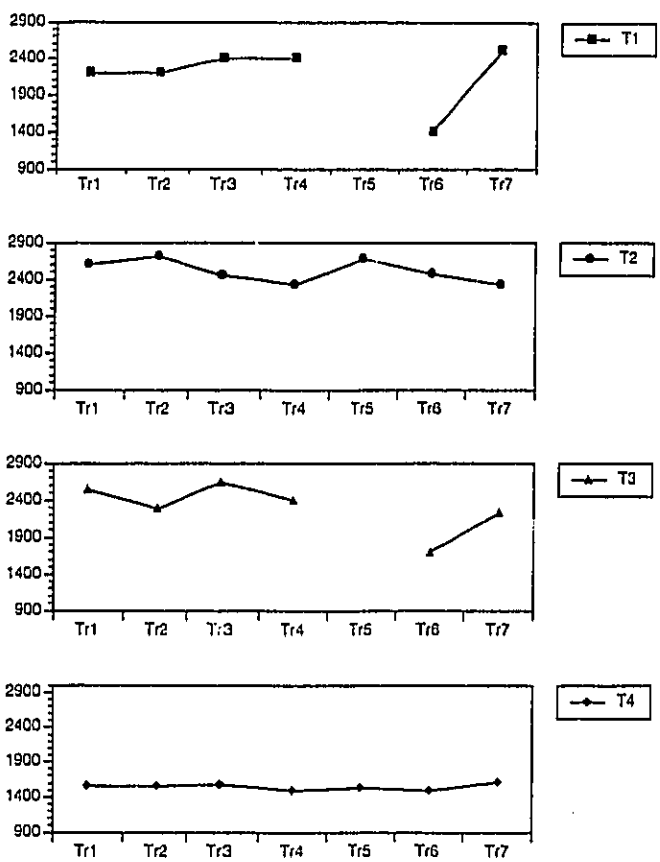

Figure 3. Individual F2–F1 measures by treatment session traditional group.

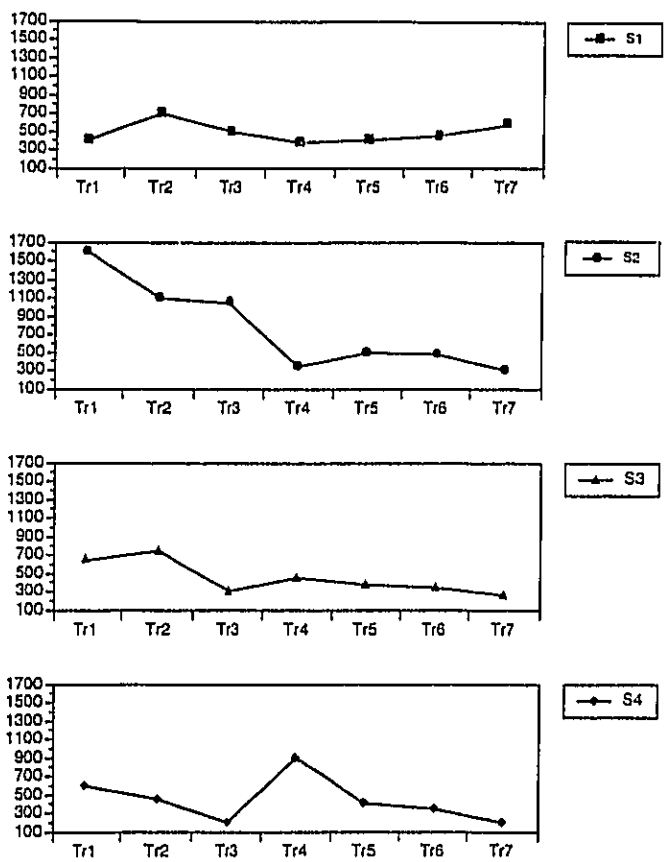

Figure 4. Individual F2 variation measures by treatment session SpeechViewer group.

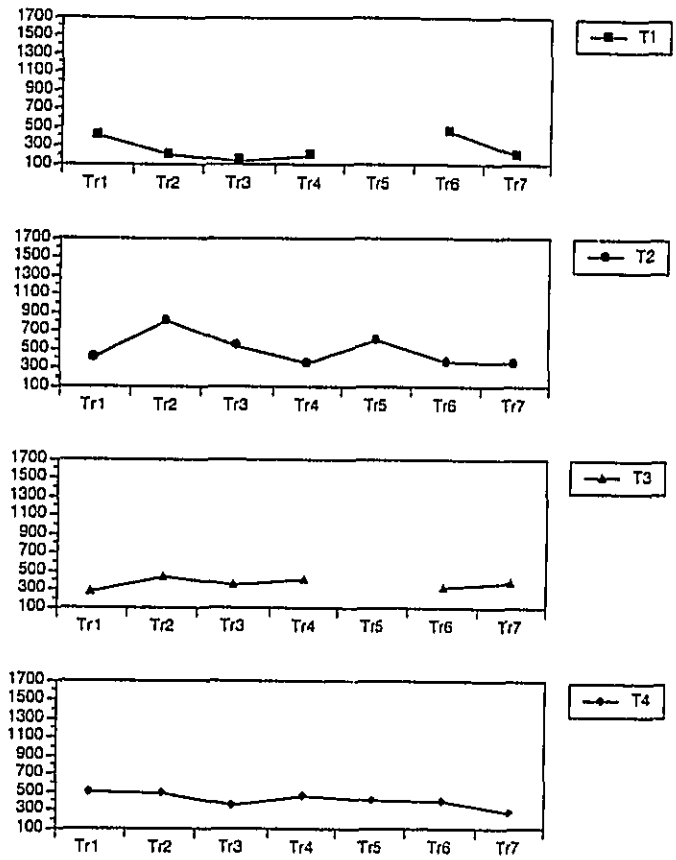

Figure 5. Individual F2 variation measures by treatment session traditional group.

words, the significance of the improvement for each group. For F2-F1, the difference between pre- and post-training values was statistically significant neither for SpeechViewer (t= 1.03, p >.19) nor for Traditional (t= 1.03, p > .19) groups. However there was a trend for F2 variation to diminish between early-training and late-training assessments both for SpeechViewer (t= 2.22, p >.05) and Traditional (t= 2.39, p <.05) groups.

Discussion

Our results did not reveal statistically significant differences in measures of the vowel /i/ between subjects using SpeechViewer in vowel training and subjects who received 'Traditional' vowel training. These results may not be surprising, especially in light of the short period of therapy and the limited number of subjects in each group. The SpeechViewer group had slightly better average first and second formant frequency differentiation for /i/ at the end of therapy, while the Traditional group was somewhat worse. But this difference did not reach the level of statistical significance. For the change in F2 frequency variation, the results for the two groups were comparable. That is, there was a trend towards a significant reduction in variation about F2 that was similar for both groups.

We can draw the conservative conclusion that use of SpeechViewer under the same conditions and for the same stimuli seems to be *no less effective* than the same amount of the traditional vowel training of the type conducted in this experiment. However, further testing is needed with a larger group of subjects for much longer periods of therapy.

Since children seemed to find SpeechViewer training interesting and motivating, SpeechViewer seems appropriate for the training of isolated vowels in the hearing-impaired child. But this comment also leads us to note a couple of drawbacks with SpeechViewer. That is, there is presently no provision for training vowels in context. Most training programs find it necessary to move onto training of vowels in at least CV (Consonant- Vowel) contexts rather early into training. Once isolated vowels have been mastered, therapy may even become artificial if training does not move on to larger units.

Another difficulty with SpeechViewer was encountered in effecting vowel formant frequency measures. Once a child produced a vowel, it was immediately necessary to print up a hard copy of the vowel spectrum in order to go on to the next production. This meant that the child also had to sit there with the therapist in the "down time" while the computer printed because other uses were frozen during this time. It would be convenient to be able to store vowel productions for later spectrum analysis such as is possible in fundamental frequency analyses. It is also not possible to know exactly where in the vowel the spectrum has been taken.

While we cannot expect SpeechViewer to have the analysis capabilities of more powerful speech analysis software packages (such would probably necessitate abandoning a great deal of the desirable user-friendliness which is a feature of the present system), an ability to define the portion which is analyzed, as well as the ability to store productions for subsequent analysis are two very desirable features which should seriously be considered for an improved version.*

* Update: Since the time of this experimentation, a new version of SpeechViewer, SpeechViewer 2, has become available. While SpeechViewer 2 does now provide for vowel training in limited contexts (i.e. CV, CVC words), it still does not provide a means of knowing exactly which portion of the vowel is used for the spectra, nor can vowel spectra yet be stored for later subsequent analysis.

ACKNOWLEDGMENTS

We would like to thank the children who served as subjects in this study, as well as the speech-language pathologists who helped us to arrange for their participation—especially Nicole Groulx of the Gadbois School. We would also like to extend our thanks to M. Raymond Barette (the school's director) and the teachers at Gadbois, the Institut Raymond-Dewar, La Commission des Écoles Catholiques de Montréal (CÉCM) who allowed for this research and the Fonds de la Recherche en Santé du Québec (FRSQ) who provided financial support. Christine Brassard provided the MacIntosh graphics. This work forms part of a Master's thesis completed by Bernard Michallet in speech-language pathology at the Université de Montréal.

REFERENCES

ASHA Foundation. (1990). "The Special Needs Technology Project" American Speech-Language Hearing Foundation Report.

Kewley-Port, D. (1990). Cross-disciplinary advances in speech science. *ASHA Reports, 20*, 69-85.

Ling, D. (1976). *Speech and the hearing impaired child.* Washington, DC.: Alexander Graham Bell Association for the Deaf.

Monsen, R. (1976). Normal and reduced phonological space: The production of English vowels by deaf adolescents. *Journal of Phonetics, 4*, 189-198.

Ryalls, J., Cloutier, M., & Cloutier, D. (1991). Two clinical applications of IBM's SpeechViewer: Therapy and its evaluation on the same machine. *Journal for Computer User's in Speech and Hearing, 7*(1), 22-27.

Ryalls, J., Larouche, A., Dupont, C., & Fournier, A. (1990). Normes phonétiques de base pour l'enfant franco-québécois/Basic phonetic norms for the French Quebec child. *Journal of Speech-Language Pathology and Audiology, 14*(2), 65-70.

Schwartz, A. (1989). A look at the needs for the application of microcomputers in the 1990s. *Journal for Computer Users in Speech and Hearing, 5*(2), 114-124.

Watson, C., & Kewley-Port, D. (1989). Advances in computer-based speech training: Aids for the profoundly hearing impaired. *The Volta Review, 91*(5), 29-45.

The Volta Review, Volume 96, 31-40, Winter 1994

A Cross-Sectional Investigation of Speechreading in Adults: Effects of Age, Gender, Practice, and Education

Jess Dancer, Mark Krain, Carolyn Thompson, Priscilla Davis, and Johanna Glenn

The speechreading performance of 50 adults ranging in age from 20-69 with normal hearing and vision was determined using lists A and B of Harris' Revised CID Everyday Sentence Lists. Statistical analysis of the four variables of age, gender, practice, and education revealed that females showed significantly higher speechreading scores than did males. Further, females improved their performance significantly over the two trials while males did not. Females in their 30s showed the highest performance levels while males in their 60s showed the lowest. Years of education had no effect on scores. A number of factors, including caution, visual-neural conduction times, presbyopic changes in vision, and left-right hemispheric function, may help to explain the present findings, which have implications for both clinicians and researchers.

Speechreading is the ability to understand speech through the visual perception of facial and bodily gestures. A number of cross-sectional studies have demonstrated that speechreading changes with age. In general, older adult speechreaders perform more poorly than younger adult speechreaders (Ewertsen & Nielsen, 1971; Farrimond, 1959, 1989; Honnell, Dancer & Gentry, 1991; Middelweerd & Plomp, 1987; Pelson & Prather, 1974; Roonberg, Arlinger, Lyxell, & Kinnefors, 1989; Shoop & Binnie, 1979). However, little attention has been paid to the effects of gender, education, and practice on speechreading performance over the adult lifespan. For better planning of individualized speechreading training protocols and of appropriately-controlled research methodologies, both clinicians and researchers need to know any significant effects of these variables. The following paragraphs serve to highlight what is known about gender, practice, and education effects.

Gender. There is some evidence from earlier studies, most unpublished, to indicate that, on average, females perform better on speechreading tasks than do

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males (Blager & Alpiner, 1981; Lesner, 1979; Taaffe, 1957; Wynn, 1964). No recent studies have been located which either confirm or extend such suggestions.

Practice. The practice effect, in which performance increases over speechreading trials, even without feedback, is well established (Bannister & Britten, 1982; Crawford, Dancer, & Pittenger, 1986; Lesner, Sandridge & Kricos, 1987; Montgomery, Walden, Schwartz, & Prosek, 1984; Raney, 1982; Squires & Dancer, 1986; Walden, Prosek, Montgomery, Scheer, & Jones, 1977; Warren, Dancer, Monfils, & Pittenger, 1989; Wilson, Dancer, & Stamper, 1984). No studies, however, have explored the practice effect as a function of age and gender.

Education. Although no studies directly related to education and speechreading ability in adults have been found, a number of older studies, summarized in Jeffers and Barley (1971), report little or no relationship between speechreading and overall intelligence, which is a correlate of educational achievement.

The present cross-sectional investigation was designed to explore the following questions:

1. What are the effects of education on speechreading scores of adults with no hearing or vision impairment?
2. What are the effects of gender on speechreading scores?
3. What are the effects of age on speechreading scores? and
4. What are the interaction effects among the variables of gender, ages, practice, and education?

Since this is a cross-sectional study, any findings related to age reflect age group differences rather than true aging effects or age-related changes. For the latter, a longitudinal research design is definitive. Thus, any aging or developmental implications of this study should be interpreted with the reservation appropriate to all cross-sectional research designs.

Method

Subjects. Fifty adults with no hearing or vision complaints, 25 females and 25 males, participated in this study. Subjects were equally divided by gender (five females, five males) into the following age groups: 20 to 29; 30 to 39; 40 to 49; 50 to 59; and 60 to 69. All were selected from a church directory listing its members in alphabetical order. Based on the location of the church and the surrounding community, subjects were likely to be of a higher than average socioeconomic status.

A systematic sampling procedure with a random starting point was used. Since the church directory listed about 1,000 names, the intended sample size of 50 represented a 1-in-20 sampling ratio. It was therefore established that every 20th name would be contacted. After the number 4 was randomly drawn from the numbers 1 through 20, the 4th name was contacted, then the 24th, 44th, 64th, and so forth. As each telephone contact was made, the study was briefly described and the respondent was asked if he/she would participate in the study. If the response was positive, an appointment was made. If it was negative, the next phone call was promptly made.

A second pass through the directory was required because 50 persons did not respond positively. A systematic sampling procedure with a random start was again used, but this time a one-in-five ratio was employed. To maximize the independence of all subjects' data, only one member of each household was allowed to participate

in the study. A running tally of the age and sex of all participants was kept so that, as the sampling procedure progressed, those age and sex categories that had already recruited their 5 members were eliminated from the process.

Testing procedure. Prior to testing, subjects were screened for hearing and vision. For those below the age of 60, pure-tone screenings were administered at 20 dB HL through the speech frequencies (ANSI, 1969), and for those aged 60 and above, a 30 dB HL was used. Since there are no standards for age-appropriate hearing in older adults, we chose the 30 dB HL level in hopes of allowing the majority of our adult sample to pass the screening *and* to have no complaints of hearing handicap. All our older subjects passed this screening and in retrospect we could probably have chosen the 25 dB HL as recommended by Schow (1991) and still have retained the majority of our sample. Although our choice of 30 dB HL for subjects over 60 is a somewhat higher fence than that chosen for subjects under 60, it did ensure that our older subjects had at least borderline-normal hearing through 2000 Hz, thus maintaining audibility of the spectral energy of this critical speech frequency (Rudmin, 1983). Vision was screened with a Snellen eyechart at 20/40, with corrective lenses if necessary. No diagnostic eye tests were performed.

Speechreading materials. Speechreading performance was measured using lists A and B of Harris' Revised Central Institute for the Deaf (CID) Everyday Sentence Lists (Harris, Haines, Kelsey, & Clack, 1961). Consisting of ten sentences per list, the CID lists were designed to be a representative sample of colloquial American speech (Silverman & Hirsh, 1955). They were also designed to be of equal difficulty, with the fifty key words in each list a representative sample of the phoneme content of English. For convenience, the lists were presented in sequential order with list A first and list B second. Alternative presentations were unnecessary since the lists are statistically equivalent and have high intercorrelation coefficients (Wilson et al., 1984).

Instrumentation. A UCA-60 Videocassette Color Plus was used to record an adult male with a General American dialect speaking list A and B of the CID everyday sentences. The sentences were spoken only once and separated by a 10-second pause, which could be extended through the use of a pause button. The image on the video recording was a head-and-shoulder view of the speaker. High intensity studio lighting during the taping afforded a clear view of the speaker's face, mouth, tongue, and teeth. This videotape has been used in a number of studies of speechreading (Calhoun, Dancer, & Pittenger, 1988; Honnell et al., 1991; Raney, Dancer, & Bradley, 1984; Warren et al., 1989; Wilson et al., 1984). A direct comparison of scores on the everyday sentences to scores on the Utley Speechreading Test (Utley, 1946) suggests that the everyday sentences represent a more difficult speechreading task (Calhoun et al., 1988). However, moderate to high intra-correlations between the two tests indicate they are essentially measuring the same performance, just at different levels.

Test session. Subjects who qualified for the study signed an informed consent sheet and filled out a data sheet asking for demographic information. Then, subjects were informed that they would watch a man on a videotape saying some sentences; they would hear no sound and must understand what was said by vision alone. After watching carefully, they were asked to write verbatim on the response sheet what had been said. Ample time was provided to write responses and guessing was encouraged. Subjects were tested individually during one session in a quiet room. The subjects were seated approximately six feet from the television screen. Administra-

Table 1. Mean Percent-Correct Scores on Two Speechreading Trials for Males and Females, with Standard Deviations in Parentheses

	A		B	
Age Group	*Males*	*Females*	*Males*	*Females*
20-29	12.4% (10.0%)	12.8% (7.3%)	12.8% (20.9%)	15.6% (14.0%)
30-39	16.8% (6.4%)	28.4% (14.8%)	23.2% (17.2%)	40.4% (15.1%)
40-49	10.8% (8.8%)	25.2% (11.3%)	11.6% (10.1%)	33.6% (11.7%)
50-59	7.2% (3.6%)	10.0% (2.8%)	6.0% (4.7%)	14.4% (5.0%)
60-69	1.6% (3.6%)	4.0% (5.1%)	.8% (1.8%)	10.8% (14.2%)

Note: In the overall analysis, age, gender, and practice were all statistically significant beyond the .05 level of confidence (p's of .0001, .0025, and .0008, respectively).

tion of one list followed immediately after the other, and subjects were given no feedback on their performance.

Scoring. As recommended by Harris et al. (1961), a 50 key-word scoring procedure was used in measuring performance. Strict scoring criteria were employed, with the correct word and word order required. Contractions, spelled-out contractions, identifiable misspellings, and root stems were considered correct; homophemes were not. The number of correct key words for each list was totaled and converted into a percentage-correct score by multiplying by two. The differences in percentage-correct scores on the two speechreading trials were also determined to illustrate any practice effect. Thus, each subject received a score on list A, a score on list B, and a difference score. For reliability, two persons independently scored all subjects' responses, resulting in an initial 75% concordance rate. Disagreements were reconciled, and a 100% concordance was reached by the two scorers prior to data analysis.

Data analysis. Data were subjected to analysis of variance (ANOVA) techniques to determine whether any of the null hypotheses could be rejected at the .05 level of confidence. In case significant differences were found, Duncan's Multiple Range Tests were used to find where such differences existed.

Results

Analysis of education effects on speechreading. The subject sample, drawn primarily from a middle/upper-middle socioeconomic group, was highly educated, with the majority having completed high school or college. Gender and age groups matched closely on the education variable: for females, the mean number of years of education was 15.9 and for males, 16.9; for age groups, the mean number of years of education ranged from a low of 15.5 in the 60-69 year group to a high 17.4 in the

50-59 year group.

Any effects of education on speechreading scores A and B and on practice were examined by one-way ANOVAs, grouping education into three arbitrary classes: less than 16 years, 16 years, and greater than 16 years. No significant differences were observed for any of the three tests. The education variable was further included as a covariate in the initial simultaneous analysis of variance of age group, gender, and practice but did not yield greater significances of obtained differences.

Analysis of age, gender, and practice. Table 1 shows speechreading performance scores of the male and female subjects over the two trials for the five age groups. Note that the mean percentage scores of the female subjects were higher than the mean percentage scores of the male subjects in all age groups and on both trials. To determine any statistically-significant effects of the variables of gender, age, and practice on speechreading scores, a three-factor analysis of variance (ANOVA) with repeated measures was performed. Although statistical significance resulted for all three factors, with females scoring significantly higher than males (p of .0025), a statistically significant interaction (p of .0123) between gender and practice required separate analyses for males and females.

In the female analysis, statistically-significant differences were found for both age group (p of .0019) and practice (p of .0001). Thirty-year-old females ranked highest in performance and improved the most, followed by forty-year-old females. Both of these age groups scored statistically-significantly higher ($p < .05$) than the other age groups by Duncan's Multiple Range Test.

In the male analysis, no statistically-significant differences were found for either age group or practice. Thus, not only did females perform higher than males on the initial speechreading trials, but they also improved significantly from the first trial to the second. Males showed no significant improvement over trials. On the first trial, females had a mean 6.2% advantage over males; on the second trial, they outscored the males by a mean 11.9%, more than double the male's mean score on that trial.

In summary, the following results are highlighted:

1. There were not statistically-significant effects of education on the speechreading scores of this sample of 50 persons, which consisted of higher than average socioeconomic individuals ranging in age from 20-69 and having no hearing or vision complaints.
2. There was a statistically-significant effect of gender on speechreading scores: females scored higher than males.
3. There was a statistically-significant interaction between gender and practice on speechreading performance: females increased their performance from a first to a second trial; males did not.
4. There was a statistically-significant effect of age group on speechreading scores in females: 30- and 40-year-old females scored higher than the other age groups.

Discussion

Effects of age, gender, and practice on speechreading. The present study supports previous findings of a decrease in speechreading performance as a function of increasing age; however, the significant effects of gender over the large portion of the adult lifespan, with females superior in all age groups, has not been previously

elaborated. The significant interaction of gender and practice, with only females showing improvement, is also newly reported here. A number of factors may account for these age- and gender-related findings, including caution, visual-neural conduction times, visual proficiency, and function of the left and right hemispheric areas responsible for visual/language processing.

Caution. Caution has been recently cited as an important factor in the speechreading performance of older adults (Farrimond, 1989; Honnell et al., 1991). Farrimond (1989) used 179 male subjects ranging in age from 23 to 79 years. He found that performance was highest in the 30s and decreased thereafter. However, older subjects showed greater performance increases than younger subjects after being encouraged to guess. Farrimond attributed the initial reluctance to guess on the part of older persons to either age-related visual changes or cultural/educational influences related to schooling. He stated that more recent educational philosophies may be inclined to stress a more "adventurous approach" to learning.

Honnell et al. (1991) found that older subjects wrote significantly fewer responses to a speechreading task than did younger subjects. They commented that caution was the "watchword" of many of the older subjects, some of whom spontaneously commented that they were reluctant to write something down because they might be wrong. Although caution may be a factor in decreased speechreading scores with age, it does not appear sufficient to explain significant gender differences over all age groups unless it can be shown that males are more cautious in general than are females. Given our culture's emphasis on male assertiveness during the first three-quarters of this century, at least, caution by itself is unlikely to be the sole explanation.

Visual-neural conduction times. A number of studies have investigated the correlation between speechreading performance and visual-neural conduction times (Lesner & Sandridge, 1984; Roonberg et al., 1989; Samar & Sims, 1983; Shepherd, 1982; Shepherd & DeLavergne, 1977). Results from the studies vary, ranging from no significant correlation to highly positive, with scores increasing as conduction times decrease. A strong relationship between speechreading and visual-neural conduction time or any other measure related to visual evoked potentials would tend to indicate that speechreading as a skill is primarily dependent upon hard-wired nervous system activity which is not modifiable by training. Such a finding, if age- or gender-related, would alert clinicians to potential limitations in any long-term training protocol.

Reduced visual proficiency. As the eye ages, presbyopic changes affect proficiency on a number of visual tasks (Thom & Thorn, 1989). Older viewers extract less information from a complex visual configuration and demonstrate diminished ability to detect human faces. In addition, more light is required for the older viewer, and there is increased sensitivity to glare. As the ability to perceive rapidly changing visual-facial movements diminishes with age, so possibly does speechreading. It is interesting that Blager and Alpiner (1981) report a significant correlation between visual-spatial ability and speechreading in young normal *female* subjects only.

More study of the relationship of visual proficiency to both age and gender is needed. In their study of speechreading and dioptic blur, Thorn and Thorn (1989) indicate that the visual mechanisms underlying speechreading are presently more amenable to study and "the ability of people to speechread with other forms of visual compromise, such as simple contrast reduction, bandpass spatial filtering, and foveal scotomas may be studied..." (p. 498).

Hemispheric changes with age. As previously stated, females performed significantly better than males in all age groups and on both trials. In addition, females improved with practice while males did not. Such findings may be in line with female superiority in language and reading skills (Moir & Jessel, 1991; Springer & Deutsch, 1981). Also, females show less hemispheric specialization (Moir & Jessel, 1991; Springer & Deutsch, 1981), more neural connective fibers between the two hemispheres (Moir & Jessel, 1991), and less of a central aging effect in the language and vision centers (Moir & Jessel, 1991).

In a recent study of gender differences in brain atrophy as measured by magnetic resonance imaging, Gur and Gur (1991) found that elderly men have "disproportionally high" atrophy indices, especially in the left hemisphere, where language functions are developed and controlled. Gur and Gur attribute such atrophy to a "lack of protection" afforded by the female sex hormones.

In addition to the language functions controlled by the left hemisphere, Campbell (1986) has pointed to the right hemisphere as actively involved also in speechreading. In a tachistoscopic study, right-handed undergraduates with normal hearing and vision showed a right hemispheric superiority for matching a sound to a photograph of a lip movement corresponding to that sound. Thus, in-depth study of the effects of age and gender on those speechreading functions controlled by the left and right hemispheres is necessary for a better understanding of the underlying mechanisms involved in speechreading performance.

Gender significance. Such female superiority in speechreading, if confirmed over the adult lifespan in further studies, has implications for clinicians and for researchers. For clinicians, the low scores in older males especially might lead to modifications in training protocols. For example, any person, regardless of gender, who scores poorly on a speechreading pre-test and shows little or no improvement over pre-training trials might be provided auditory/visual training only, rather than any visual training in isolation. By combining auditory and visual cues, the chance for higher performance scores during training through bisensory integration is increased (Wilhite, Dancer, & Rozema, 1986). With more success through this combined approach, the person may be motivated to stay in the training for a longer time, thus enhancing the possibility of improved communication skills. This is conjectural and requires further research for confirmation.

If the significant effects of gender and the significant interaction of gender and practice are confirmed in subsequent studies, then researchers must be more careful in controlling for gender. For example, Farrimond (1989) used 179 male subjects only in his study of caution, and many other studies did not control gender completely. Any reported findings which do not include both males and females may have low internal validity and lack generalization.

The curvilinear nature of speechreading performance. The present study found the possibility of a curvilinear relationship over the adult lifespan in speechreading performance, with females in their 30s scoring highest and males in their 60s scoring lowest. These findings agree with Farrimond (1989), who also found a performance peak in males in their 30s, but the findings do not agree with those of Shoop and Binnie (1979). Shoop and Binnie's data show a "step-wise" decrease with age in the speechreading of sentences; however, they included no subjects in their 30s. Because of the lack of studies which have examined age, gender, and practice effects over the adult lifespan, and because the results of this study are based on a relatively small sample, the findings of the present study should be confirmed on a much larger

subject sample. Such differences should also be examined in persons with hearing loss. Both clinicians and researchers are affected by such information in the application of clinical techniques to improve speechreading and in their research methodologies to better understand the factors involved in speechreading.

REFERENCES

ANSI. (1969). *American National Standard Specifications for Audiometers.* New York, NY: American National Standards Institute.

Bannister, M., & Britten, F. (1982). Linguistically based speechreading assessment. *Journal of Communication Disorders, 15*, 475-479.

Blager, F., & Alpiner, J. (1981). Correlation between visual-spatial ability and speechreading. *Journal of Communication Disorders, 14*, 331-339.

Calhoun, A., Dancer, J., & Pittenger, J. (1988). A comparison of the Utley lipreading forms to three lists of Harris' Revised CID everyday sentences as lipreading stimuli. *The Volta Review, 90*, 149-154.

Campbell, R. (1986). The lateralization of lip-read sounds: A first look. *Brain and Cognition, 5*, 1-21.

Crawford, J., Dancer, J., & Bittenger, J. (1986). Initial performance on a speechreading task as related to subsequent improvement after short term training. *The Volta Review, 88*, 101-105.

Ewertsen, H., & Nielsen, H. (1971). A comparative analysis of the audiovisual, auditive, and visual perception of speech. *Acta Otolaryngologica, 72*, 201-205.

Farrimond, T. (1959). Age differences in the ability to use visual codes in auditory communication. *Language and Speech, 2*, 179.

Farrimond, T. (1989). Effect of encouragement on performance of young and old subjects on a task involving speechreading. *Psychological Reports, 65*, 1247-1250.

Gur, A. & Gur, S. (1991). Gender differences in age effect on brain atrophy measured by magnetic resonance imaging. *Proceedings of the National Academy of Science-USA, 88*, 2845-2849.

Harris, J., Haines, H., Kelsey, P., & Clack, T. (1961). The relation between speech intelligibility and electroacoustic characteristics of low fidelity circuitry. *Journal of Auditory Research, 1*, 357-381.

Honnell, S., Dancer, J., & Gentry, B. (1991). Age and speechreading performance in relation to percent correct, eyeblinks, and written responses. *The Volta Review, 93*, 207-231.

Jeffers, J., & Barley, M. (1971). *Speechreading (lipreading).* Springfield, IL: Charles C. Thomas.

Lesner, S. (1979). *An investigation of involuntary eyeblinks during lipreading.* Doctoral dissertation, The Ohio State University, Columbus, OH.

Lesner, K., & Sandridge, S. (1984). Flash-evoked potentials and lipreading in older adults. *Journal of the Academy of Rehabilitative Audiology, 17*, 97-105.

Lesner, K., Sandridge, S., & Kricos, P. (1987). Training influences on visual consonant and sentence recognition. *Ear and Hearing, 8*, 283-287.

Middelweerd, M., & Plomp, R. (1987). The effect of speech-reading on the speech-reception threshold of sentences in noise. *Journal of the Acoustical Society of America, 82*, 2146-2147.

Moir, A., & Jessel, D. (1991). *Brain sex: The real difference between men and*

women. Carol Publishing: New York, NY.
Montgomery, A., Walden, B., Schwartz, D., & Prosek, R. (1984). Training auditory-visual speech reception in adults with moderate sensorineural hearing loss. *Ear and Hearing, 5*, 30-36.
Pelson, R., & Prather, W. (1974). Effects of visual message-related cues, age, and hearing impairment on speechreading performance. *Journal of Speech and Hearing Research, 17*, 518-525.
Raney, L. (1982). *Correlation between auditory and visual skills on two speech tasks*. Unpublished master's thesis, University of Arkansas for Medical Sciences, Little Rock, AR.
Raney, L., Dancer, J., & Bradley, R. (1984). Correlations between auditory and visual skills on two speechreading tasks. *The Volta Review, 86*, 134-141.
Roonberg, J., Arlinger, S., Lyxell, B., & Kinnefors, C. (1989). Visual evoked potentials: Relation to adult speechreading and cognitive functions. *Journal of Speech and Hearing Research, 32*, 725-735.
Rudmin, L. (1983). The why and how of hearing /s/. *The Volta Review, 85*, 263-269.
Samar, V., & Sims, D. (1983). Visual evoked response correlates of speechreading performance in normal-hearing adults: A replication and factor analytic extension. *Journal of Speech and Hearing Research, 26*, 2-9.
Schow, R. (1991). Considerations in selecting and validating an adult/elderly hearing screening protocol. *Ear and Hearing, 12*, 337-348.
Shepherd, D. (1982). Visual-neural correlate of speechreading ability in normal-hearing adults: Reliability. *Journal of Speech and Hearing Research, 25*, 521-527.
Shepherd, D., & DeLavergne, R. (1977). Visual-neural correlate of speechreading ability in normal-hearing adults. *Journal of Speech and Hearing Research, 20*, 752-765.
Shoop, C., & Binnie, C. (1979). The effects of age upon the visual perception of speech. *Scandinavian Audiology, 8*, 3-8.
Silverman, S., & Hirsh, I. (1955). Problems related to the use of speech in clinical audiometry. *Annals of Otology, Rhinology, and Laryngology, 64*, 1234-1244.
Springer, S., & Deutsch, G. (1981). *Left brain right brain*. W.H. Freeman: San Francisco, CA.
Squires, S., & Dancer, J. (1986). Auditory versus visual practice effects in the intelligibility of words in everyday sentences. *Journal of Auditory Research, 26*, 5-10.
Taaffe, G. (1957). *A film test of lipreading*. John Tracy Clinic Research Papers, No. 2, Los Angeles, CA.
Thorn, F., & Thorn, S. (1989). Speechreading with reduced vision: A problem of aging. *Journal of Optometry Society of America, 6*, 491-499.
Utley, J. (1946). A test of lipreading ability. *Journal of Speech Disorders, 11*, 105-116.
Walden, B., Prosek, R., Montgomery, A., Scheer, D., & Jones, C. (1977). Effects of training on the visual recognition of consonants. *Journal of Speech and Hearing Research, 20*, 130-145.
Warren, Y., Dancer, J., Monfils, B., & Pittenger, J. (1989). The practice effect in speechreading distributed over five days: Same versus different CID sentence lists. *The Volta Review, 91*, 321-325.
Wilhite, A., Dancer, J., & Rozema, H. (1986). Bisensory versus summed-unisen-

sory improvement on two speech-reception tasks. *Journal of Auditory Research, 26*, 279-286.

Wilson, S., Dancer, J., & Stamper, J. (1984). Visual equivalency of Harris' revised CID everyday sentence lists. *The Volta Review, 86*, 267-273.

Wynn, M. (1964). *Norms for a film presentation of the semi-diagnostic test in aural rehabilitation*. Unpublished master's thesis, Michigan State University, Lansing, MI.

The Volta Review, Volume 96, 41–49, Winter 1994

Programs in Action

Intelligent Computer-Based Systems to Document the Effectiveness of Consonant Recognition Training

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This report describes the design and instructional contingencies of a computer-based system for auditory and visual consonant recognition training. The project is the first part of a multiphase investigation to document the effectiveness of computer-based auditory and visual speech-recognition training. This system is being used at the University of Illinois with adults who require hearing aids or a cochlear implant to understand speech. Instead of using rigid flash-card types of drills, individual training sequences are developed as students interact with the system. Computer-based drills incorporate adaptive feedback, increasing ratio review, a retirement criteria, and discrimination training.

Speech reading and auditory training programs which serve adults with hearing loss historically include drills on specific consonant sounds presented through auditory, visual, and auditory-visual modalities. The assumption is that these drills will increase the individual with hearing loss's ability to extract and use relevant acoustic and visual cues during communication.

The efficacy of such training for long-term communication functioning in everyday situations, however, has not been established. Furthermore, there is limited experimental evidence that supports the benefits of auditory or visual consonant recognition training to improve sentence recognition. The available literature

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suggests conflicting findings regarding benefits of live-voice consonant recognition training as a component of a total aural rehabilitation program (e.g., Lansing & Davis, 1988; Rubinstein & Boothroyd, 1987; Walden, Erdman, Montgomery, Schwartz, & Prosek, 1981). All of these studies demonstrate methodological differences with regard to subject groups, training and testing protocols, and specific speech stimuli. These differences make comparisons between studies difficult to interpret. Additionally, the concomitant variables inherent in live-voice training and testing protocols potentially limit the replication of experimental findings. These variables include trial-to-trial changes in the voice of the talker and the variation of acoustic-phonetic parameters in speech production (Mullennix, Pisoni, & Martin, 1988), as well as differences in talker visibility (Kricos & Lesner, 1982). The systematic control of these variables and rigorous evaluation of longitudinal modality training effects is now possible through application of recently developed interactive laser videodisc and computer-based technology. The availability of this technology has renewed research efforts in treatment efficacy of rehabilitative audiologic protocols (Bernstein, Eberhardt, & Demorest, 1989; Gagné, Dinon, & Parsons, 1991; Montgomery & Demorest, 1988; Pichora-Fuller & Benguerel, 1989; Ross, 1987; Sims, 1985; Tye-Murray, Tyler, Lansing, & Bertschy, 1990).

Unfortunately, computer-based programs for auditory-visual training typically employ standard computer-based drills rather than individualized drill sequences to allow for generalized learning (for a review see Sims, 1988). This is not unusual because, since the application of computers to education in the early 1970s, practice paradigms based on flash-card drills have been widely used (Siegel & Davis, 1986). Mounting research efforts in instructional design, however, have explored new techniques to improve the efficiency and effectiveness of computer-based drills. It is likely that consonant recognition training may be enhanced by applying individualized drill sequences, termed "intelligent teaching systems" (Siegel & Misselt, 1984).

Purpose

We have developed a set of computer-based consonant recognition drills that can individualize learning sequences. This is the first part of a multi-phase project designed to document the efficacy of auditory and visual speech recognition training with adults and adolescents who use hearing aids or a cochlear implant. The purpose of this article is to describe the design and instructional contingencies of the training system. This computer-based system controls variables inherent in live-voice training. Consequently, it is well suited for research in treatment efficacy. Our initial goal is to document the effectiveness of our system. This is necessary before the system can be recommended as part of a comprehensive program of aural (re)habilitation for individuals with hearing loss.

Training Station

The components of our laboratory-based training station are a personal computer (IBM PS/2 Model 70) configured with a full-motion video card (IBM M-Motion Video Adapter) and computer-controlled laser video disc player (Pioneer 8000). Subjects record their responses by moving a mouse-controlled cursor to response areas defined on a 14", high-resolution VGA color monitor. Auditory stimuli are

presented through an amplifier (Crown D75) and speakers (Boston Acoustics). The TenCore Language Authoring System (1987-89) was used to program the computer-based testing and training materials.

The student is seated directly in front of the color monitor in an armchair fitted with a lap desk to support the mouse operation (Logitech, Series 9). All testing and training is administered in a double-walled sound booth. Only the color monitor, a talk-back microphone, and a set of speakers are in the sound booth with the student. The examiner views lesson presentation and responses on a second monitor located outside of the sound booth and may observe the student through a glass window. Additionally, if appropriate, the student and examiner may communicate through a two-way intercom system.

This system may be adapted to portable training station applications. Basic hardware components include a personal computer, computer-controlled laser video disc player, motion-video card, and computer keyboard or mouse. The training system may be adapted for any combination of software and auditory, visual, or auditory-visual stimuli.

Training Stimuli

In the initial stage of the project, we are training individuals with hearing loss to recognize nonsense-syllables. Students receive vision-only or auditory-only training. Prior to training and during follow-up intervals we measure the generalization from syllable recognition to auditory-visual sentence recognition. The nonsense-syllables for training include 22 consonants in an /a/-C-/a/ context, and the single vowel /a/. Recognition of nonsense-syllables is modelled as a type of stimulus-response learning. The student must match visual or auditory cues produced by a talker to an alphabet-based (ARPABET) label, first described by Shoup (1980). Stimuli are stored on laser videodisc developed by Bernstein and Eberhardt (1986).

Drills for auditory-only and vision-only recognition training utilize identical instructional methodology; however, the grouping of stimuli differs depending on the training modality. Auditory-only recognition drills group consonants with regard to the four categories listed in Table 1. Students practice recognition of consonants that differ across place-of-articulation or manner feature (for example, nasal versus glide) within each category. Voiced/voiceless cognates or consonants that share a manner feature are not compared. Vision-recognition drills group consonants with respect to their visible speech movements (Nitchie, 1950) listed in Table 1. Homophenous speech movements are not compared.

Training System

The training system is based on research reported by Siegel and Misselt (1984) regarding their paradigm for computer-based drills with adaptive feedback and review. Four basic principles are incorporated that distinguish their training system from computer-based drills typically used in auditory-visual training: adaptive feedback, discrimination training, increasing ratio review, and retirement criterion. The application of these principles to our instructional contingencies is illustrated in Figure 1.

Adaptive feedback. The type of feedback presented to the student is dependent upon the response. In our paradigm, if the student recognizes the nonsense-syllable,

Table 1. Groupings of the Training Stimuli, Identified by Their ARPABET Labels, Within Each Training Set for Auditory-Only and Vision-Only Computer-Based Small Set Recognition Drills

Auditory-only presentation	
Training sets	*Characteristics*
(p, b) (k, g) (t, d)	stop
(f, v) (h) (s, z)	fricative
(sh, zh) (th, dh) (ch, j)	fricative and affricate
(m, n) (l, w, r) (ah)	nasal/semivowel/vowel
Vision-only presentation	
Training sets	*Characteristics*
(p, b, m) (f, v) (w)	formed/revealed by lips
(r) (s, z) (sh, ch, j)	formed by tongue/revealed by lips
(th, dh) (l) (t, d, n)	formed/revealed by tongue
(k, g) (h) (ah)	revealed by context

a color change and bell-like tone simultaneously signal that the response is correct. Additionally, a histogram, in the form of a thermometer, displays the number of correct responses. If the student's response is incorrect, the list of possible alternatives is displayed with an "X" placed on the student's response. Should the student incorrectly respond on a consecutive trial that employs the same alternatives, the program executes the following actions in the order shown: (a) the feedback regarding the incorrect response is repeated; (b) the target sound is presented again; and (c) the student is asked to choose among the remaining alternatives. If incorrect again, this last step is repeated so that only the correct choice remains in the set of alternatives.

Increasing ratio review. This is perhaps the most unique aspect of the training system. Flash-card type computer-based drills attempt to model the procedure of typical drill sessions. In most drill sessions, items that are answered correctly are removed from the stack of items to be presented. In contrast, items that are answered incorrectly are moved to the bottom of the stack (e.g., Walden, Prosek, Montgomery, Scherr, & Jones, 1977). Siegel and Misselt (1984) point out two problems associated with this procedure: (a) if there are several items in the stack, the correct response for a missed item will be forgotten by the time it is used again, and (b) if only a few items remain in the stack, the student will not have an opportunity to practice the correct responses over several trials and demonstrate retention over time.

In our system, we have incorporated repetition of missed items according to a spaced review schedule. Our pilot studies support the use of three review positions. When an incorrect response is made, the item is reviewed in the second position. If the student makes another error on that item, it is moved to the fourth position for a review. If a third error is made on the item, the item is reviewed in the sixth position in the list. With each review, the order of the correct response within the set of alternatives is random. As shown in Figure 1, at any stage in this sequence an

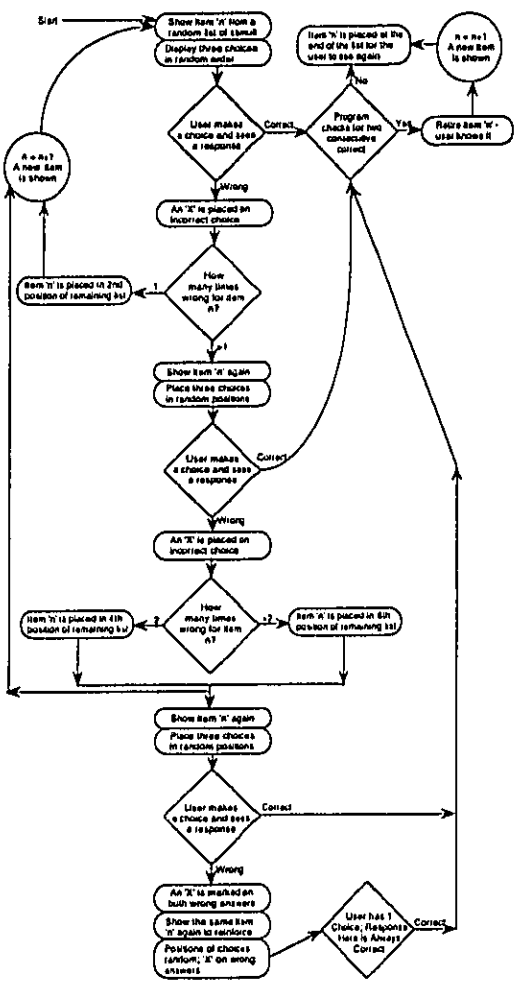

Figure 1. Flow chart showing the design and instructional contingencies of the training system.

incorrect response to the reviewed item initiates the review schedule for the item once again.

Retirement criteria. Each time an item is responded to correctly, the item is placed at the end of the stack of items presented. Figure 1 illustrates that the item is dropped from the drill only after the student has responded to it correctly on a given number of consecutive trials. For our initial application, we have arbitrarily chosen two consecutive trials without an intervening mistake as our retirement criteria.

Discrimination training. Training on the stimulus-response pair is accomplished by reviewing the student's choices and presenting more than one example of each nonsense-syllable. This repeated comparison allows the student to contrast similarities and differences and to generalize to other examples of the nonsense-syllable.

Training Procedures and Training Activities

Performance for the recognition of auditory-visual consonant and sentence level materials is assessed at four intervals: prior to participation, after one-month of no treatment, at the end of one-month of participation, and after an additional month of no treatment. This experimental design, described by Rubinstein and Boothroyd (1987), allows one to determine the efficacy of intervention. We hope to compare the effects of auditory-only versus vision-only intervention used in the context of a group design. Students would then be tested on auditory-visual sentence recognition to determine if the specific consonant recognition training had contributed to performance for sentence recognition. Performance is measured for auditory-visual

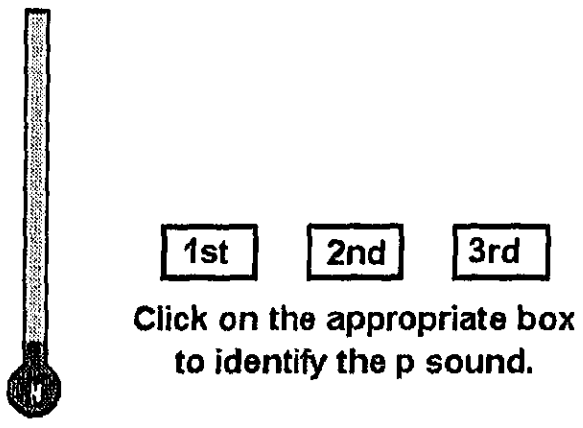

Figure 2. Example of a display screen that is used for responses to the three-interval choice paradigm. A histogram, in the form of a thermometer, displays the number of correct responses. A color change and bell-like tone simultaneously signal the correct response.

presentations in a background of multi-talker babble to simulate adverse everyday communication situations.

Three basic training activities are used with the auditory-only or vision-only modality training. A brief description of the training exercises follows.

Three-interval choice paradigm. The initial activity uses a three-interval forced-choice paradigm (Lansing & Davis, 1988). The student is asked to recognize a particular nonsense-syllable produced in an /a/-C-/a/ context, for example, /b/. Three nonsense-syllables are presented. One syllable contains the target sound defined as the sound named in the directions to the student. The other syllables are repetitions, containing another sound, for example, a contrast consonant, /ava/. The student may accomplish the task by simply recognizing which syllable contains a consonant that is different; however, the student is reminded of the target ARPABET label on each trial. An example of a response screen displayed for the student is shown in Figure 2.

Small-set recognition. In these exercises the student is shown three possible alternatives for each production. The student's job is to correctly identify the target nonsense-syllable from the correct answer and two foils.

Student exploration. In this segment of practice the student may request repetitions of any one item or contrast similarities and differences among any of the training items. A choice of vision-only, auditory-only, or auditory-visual modality is possible. The student's requests direct the sequence of contrasts so that further discrimination training may be achieved.

Conclusion

In our ongoing assessment with adult hearing-aid users and multichannel cochlear implant users, we have found that the curved-shape of the three-button mouse is comfortable and flexible for older adults to operate. Pilot trials with high school-aged children suggest that the activities maintain their interest. They have suggested that we include recognizable words instead of nonsense-syllables in the drill activities.

We have discovered several advantages to incorporating computer-based drills into our rehabilitation protocols. Discrete drill training may increase the students ability to extract useful auditory and visual cues for speech recognition. Such training may be helpful in enhancing the student's attention for speech cues. Identifying each student's specific visual and auditory confusions and developing individualized learning sequences may not be practical during the course of daily classroom instruction. The use of intelligent computer-based lessons should reduce demands made on the teacher or clinician's time (Tye-Murray et al., 1990). Additionally, the teacher or speech-language pathologist can maximally use this technology to readily accomplish an accounting task that would be humanly unreasonable. The computer can keep track of: missed items, their position within a list of items, the review schedule, the complicated interaction of repeated missed items with a review schedule, and the retirement criteria. Consequently, instead of rigid flash-card type drill, individualized lessons that present discrimination practice, opportunities for increased learning, and generalization may be realized for every student.

ACKNOWLEDGEMENTS

This work was supported by the University of Illinois Research Board at Urbana-Champaign. Thanks to Michael Clark for his assistance in developing portions of computer software.

REFERENCES

Bernstein, L.E., & Eberhardt, S.P. (1986). Johns Hopkins Lipreading Corpus I-IV: Disc I-II [Laser videodiscs]. The Johns Hopkins University, Baltimore, MD.

Bernstein, L.E., Eberhardt, S.P., & Demorest, M.E. (1989). Single-channel vibrotactile supplements to visual perception of intonation and stress. *Journal of the Acoustical Society of America, 85*, 397-405.

Gagné, J.-P., Dinon, D., & Parsons, J. (1991). An evaluation of CAST: A computer-aided speechreading training program. *Journal of Speech and Hearing Research, 34*, 213-221.

Kricos, P.B., & Lesner S.A. (1982). Differences in visual intelligibility across talkers. *The Volta Review, 84*, 219-225.

Lansing, C.R., & Davis, J.M. (1988). Early versus delayed speech perception training for adult cochlear implant users: Initial results. *Journal of the Academy of Rehabilitative Audiology, 11*, 29-42.

Montgomery, A.A., & Demorest, M.E. (1988). Issues and developments in the evaluation of speechreading. In C.L. De Filippo & D.G. Sims (Eds.), *New reflections in speechreading* [Monograph]. *The Volta Review, 90*(5), 193-214.

Mullennix, J.W., Pisoni, D.B., & Martin, C.S. (1988). Some effects of talker variability on spoken word recognition. *Journal of the Acoustical Society of America, 85* (1), 365-378.

Nitche, E.H. (1950). *New Lessons in Lip Reading*. Philadelphia: Lippincott.

Pichora-Fuller, M.K., & Benguerel, A.-P. (1989). The design of CAST (computer-aided speechreading training). *Journal of Speech and Hearing Research, 34*, 202-212.

Rubinstein, A., & Boothroyd, A. (1987). Effect of two approaches to auditory training on speech recognition by hearing-impaired adults. *Journal of Speech and Hearing Research, 30*, 153-160.

Ross, M. (1987). Aural rehabilitation revisited. *Journal of the Academy of Rehabilitative Audiology, 12*, 103-115.

Shoup, J. E. (1980). Phonological aspects of speech recognition. In W.A. Lea (Ed.), *Trends in Speech Recognition* (pp. 125-138). Englewood Cliffs, NJ: Prentice Hall.

Siegel, M., & Davis, D.M. (1986). *Understanding Computer-Based Education*. New York: Random House.

Siegel, M.A., & Misselt, A.L. (1984). Adaptive feedback and review paradigm for computer-based drills. *Journal of Educational Psychology, 76*(2), 310-317.

Sims, D.G. (1985). Adults with hearing impairment. In J. Katz (Ed.), *Handbook of clinical audiology* (3rd ed., pp. 1017-1045.) Baltimore: Williams & Wilkins.

Sims, D.G. (1988). Video methods for speechreading instruction. In C.L. De Filippo & D.G. Sims (Eds.), *New reflections on speechreading* [Monograph]. *The Volta Review, 90*(5), 273-288.

TenCore Language Authoring System: Operating System Manual (1987-89).

[Software]. Computer Teaching Corporation, Champaign, IL.
Tye-Murray, N., Tyler, R., Lansing, C., & Bertschy, M. (1990). Evaluating the effectiveness of auditory training stimuli using a computerized program. *The Volta Review, 92*, 25-30.
Walden, B.E., Erdman, S., Montgomery, A.A., Schwartz, D., & Prosek, R.M. (1981). Some effects of training on speech recognition by hearing-impaired adults. *Journal of Speech and Hearing Research, 24*, 207-216.
Walden, B.E., Prosek, R.A., Montgomery, A.A., Scherr, C.K., & Jones, C.J. (1977). Effects of training on the visual recognition of consonants. *Journal of Speech and Hearing Research, 20*, 130-145.

Association Report

Toward Full Participation: Communication, Education, & Technology

Alexander Graham Bell Association for the Deaf
International Convention
Rochester, NY

Tentative Daily Schedule

CC—Rochester Convention Center
HI—Holiday Inn
HY—Hyatt Regency

Monday, June 27

9:00 am - 5:00 pm	Volta Review Board Meeting	HI-Boulevard
9:00 am - 5:00 pm	CED Meeting	HI-Room 312
9:00 am - 5:00 pm	OPTION	HI-Downtown
9:00 am - 4:00 pm	Board of Directors	HY-Ballroom
9:00 am - 5:00 pm	Public School Caucus Steering Committee Meeting	HI-Crossroads
1:00 pm - 7:00 pm	Registration	HI-Lobby II
2:00 pm - 4:00 pm	Oral Interpreter Committee Meeting	HI-Room 322
2:00 pm - 7:00 pm	OHIS Hospitality Room	HI-Huron
4:00 pm - 7:00 pm	Parent Hospitality Room	HI-Lilac
4:00 pm - 7:00 pm	Audio-Visual Tryout Room	CC-Aqueduct

Tuesday, June 28

7:00 am - 7:00 pm	Registration	HI-Lobby II
7:00 am - 9:00 pm	Parent Hospitality Room Continental Breakfast (7-10 am)	HI-Lilac
8:00 am - 12 noon	OHIS Executive Committee Meeting	HI-Algonquin
8:00 am - 5:30 pm	0-6 Children's Program	HI-330/332/338
8:00 am - 5:30 pm	7-12 Children's Program	HI-Tiffany
8:30 am - 12 noon	Short Courses	See pp. 53-69
9:00 am - 12 noon	Chapter President's Meeting	HI-Boulevard
9:00 am - 5:00 pm	A-V Tryout room	CC-Aqueduct
10:00 am - 4:00 pm	OHIS Hospitality Room	HI-Lilac
1:30 pm - 5:00 pm	OHIS Membership Meeting	HI-Algonquin
1:30 pm - 5:00 pm	Short Courses	See pp. 53-69
4:00 pm - 6:00 pm	IOEHI Board Meeting	HI-Lobby Boardroom
5:30 pm - 7:00 pm	Auditory-Verbal International Reception	HI-Boulevard
7:30 pm - 11:00 pm	Opening Session and Reception	HY-Ballroom

Wednesday, June 29

7:00 am - 4:00 pm	Registration	HI-Lobby II
7:00 am - 6:00 pm	Parent Hospitality Room (Continental Breakfast 7-10 am, Coffee and Conversation 7:30-8:30 am)	HI-Huron
8:00 am - 5:30 pm	0-6 Children's Program	HI-330/332/338
8:00 am - 5:30 pm	7-12 Children's Program	HI-Windsor
8:00 am - 5:00 pm	Teen Program	HI-Tiffany
8:00 am - 10:00 am	Public School Caucus	HI-Algonquin
8:00 am - 6:00 pm	OHIS Hospitality Room	HI-Lilac
8:30 am - 5:00 pm	Technology Symposium	HI-Crossroads/Downtown
8:30 am - 10:00 am	Program Session 1	See pp. 50-66
9:00 am - 5:00 pm	Exhibits	CC-Lilac Ballroom
9:00 am - 5:00 pm	A-V Tryout Room	CC-Aqueduct
10:30 am - 12 noon	General Session I	HY-Ballroom
1:30 pm - 3:00 pm	Program Session 2	See pp. 50-66
3:30 pm - 5:00 pm	Program Session 3	See pp. 50-66
6:00 pm - 7:30 pm	NY State Chapter Reception	HI-Boulevard
6:00 pm - 7:30 pm	Volta Review Reception	HI-Algonquin
6:00 pm - 7:30 pm	OHIS Party	Eastman House
7:30 pm - 10:00 pm	0-12 Childcare	HI-330/332/338
8:00 pm - 9:30 pm	Parent Rally	HY- Ballroom

Thursday, June 30

7:00 am - 8:15 am	Children's Right Coordinator's Breakfast	TBA
7:00 am - 4:00 pm	Registration	HI-Lobby II
7:00 am - 5:30 pm	Parent Hospitality Room (Continental Breakfast 7-10 am, Coffee and Conversation 7:30-8:30 am)	HI-Huron
8:00 am - 5:30 pm	0-6 Children's Program	HI-330/332/338
8:00 am - 5:30 pm	7-12 Children's Program	HI-Windsor
8:00 am - 5:00 pm	Teen Program	HI-Tiffany
8:00 am - 6:00 pm	OHIS Hospitality Room	HI-Lilac
8:30 am - 3:00 pm	Volta Academy	HI-Crossroad/Downtown
8:30 am - 10:00 pm	Program Session 4	See pp. 50-66
9:00 am - 12 noon	State Chapter Forum	HI-Algonquin
9:00 am - 5:00 pm	Exhibits	CC-Lilac Baliroom
9:00 am - 5:00 pm	A-V Tryout Room	CC-Aqueduct
10:30 am - 12 noon	Program Session 5	See pp. 50-66
12 noon - 1:00 pm	Parents' Section Meeting	HI-Algonquin
1:30 pm - 3:00 pm	Program Session 6	See pp. 50-66
3:30 pm - 5:00 pm	Program Session 7	See pp. 50-66
3:30 pm - 4:30 pm	IOEHI Membership meeting	HI-Boulevard
4:30 pm - 6:00 pm	IOEHI Reception	HI-Downtown
6:30 pm - 9:30 pm	0-12 Child Care	HI-330/332/338
7:00 pm - 11:00 pm	Banquet	HY-Ballroom

Friday, July 1

7:00 am - 6:00 pm	Parent Hospitality Rm. (Continental Breakfast 7-10 am; Coffee and Conversation 7:30-8:30 am)	HI-Huron
8:00 am - 12 noon	Registration	HI-Lobby II
8:00 am - 5:00 pm	0-6 Children's Program	HI-330/332/338
8:00 am - 5:00 pm	7-12 Children's Program	HI-Windsor
8:00 am - 5:00 pm	Teen Program	HI-Tiffany
8:00 am - 6:00 pm	OHIS Hospitality Room	HI-Lilac
8:30 am - 10:00 am	Program Session 8	See pp. 50-66
9:00 am - 5:00 pm	Exhibits	CC-Lilac Ballroom
9:00 am - 5:00 pm	A-V Tryout Room	CC-Aqueduct
10:30 am - 12 noon	General Session II	HI-Ballroom
12:30 pm - 2:30 pm	Association Luncheon	HY-Ballroom
3:00 pm - 4:30 pm	Program Session 9	See pp. 53-69

Saturday, July 2

7:30 am - 8:30 am	Registration	HI-Lobby II
8:00 am - 10:00 am	New OHIS Committee Meeting	HI-Huron
8:30 am - 12 noon	Short Courses	HI-Algonquin/Boulevard/Crossroads/Downtown
9:00 am - 12 noon	Board of Directors Meeting	HY-Ballroom
8:00 am - 5:30 pm	0-6 Children's Program	HI-303/332/338
8:00 am - 5:30 pm	7-12 Children's Program	HI-Windsor
11:00 am - 12:30 pm	New IOEHI Board Meeting	HI-Huron
11:15 am - 5:00 pm	Golf Tournament	Meet at HI

Short Courses

JUNE 28, 1994, TUESDAY

Session 1, Tuesday Morning (8:30 - noon)

Candidate Selection, Fitting, and Rehabilitation of Users of Frequency Transposing Hearing Aids CC-Highland A
Melody Harrison, Ph.D., University of North Carolina, Chapel Hill, NC
Wendy Davis Penn, Carolina Hearing and Speech Center, Greensboro, NC

Yes, I'm Deaf...Impact on Self-Perceptions CC-Highland E
Irene Leigh, Ph.D., Gallaudet University, Washington, DC
Michael S. Stinson, Ph.D., National Technical Institute of the Deaf, Rochester, NY

Getting the Most Out of Your Hearing Aids and Earmolds CC-CascadeB
Charles I. Berlin, Ph.D., Louisiana State University, New Orleans, LA

Session 2, Tuesday (1:30 - 5:00 pm)

Computer Applications for Children and Adults with Hearing Impairments-Ultimate Accessibility CC-Highland A
Ann K. Lieberth, Ph.D., Southwest Missouri State University, Springfield, MO
Doug Martin, Ph.D., Portland State University, Portland, OR

Cochlear Implants and Mainstreaming: When, Where, and How? CC-Highland E
Mary Ellen Nevins, Ph.D., Manhattan Eye, Ear, and Throat Hospital, New York, NY
Patricia M. Chute, Ed.D., Manhattan Eye, Ear, and Throat Hospital, New York, NY
David Manning, Ed.D., Clarke School for the Deaf, Northampton, MA

Hear and Listen! Talk and Sing! CC-Cascade B
Warren Estabrooks, North York General Hospital, Toronto, Canada
Lois Birkenshaw-Fleming, Royal Conservatory of Music, Toronto, Canada

Short Courses

JULY 2, 1994 SATURDAY

Session 3, Saturday, Morning (8:30 am - 12 noon)

Discovering Science with Students Who are Deaf or Hard of Hearing—
A Science Curriculum for K Through Grade 9 — HI-Algonquin
Peter A. de Villiers, Ph.D., Smith College, Northampton, MA
Julia Sheldon and Bob Storm, Clarke School for the Deaf, Northampton, MA

Becoming a Love and Logic Parent/Teacher — HI-Boulevard
Jill L. Bader, HEAR AT HOME, Denver, CO

Positioning Yourself for Future Career Changes — HI-Downtown
Frances J. Richardson and Denise Kavin, National Technical Institute for the Deaf's Center for Employment, Rochester, NY

Session 4, Saturday Afternoon (1:30 - 5:00 pm)

Evaluating the Fundamental Speech Skills of Speakers
Who are Deaf or Hard of Hearing — HI-Boulevard
Karen S. Youdelman, Ed.D., The Lexington Center, Jackson Heights, NY
Janet Head, Lexington School for the Deaf, Jackson Heights, NY
Harry Levitt, Ph.D., City University of New York, New York, NY

The Americans with Disabilities Act (ADA) — HI-Algonquin
Karen Peltz Strauss, National Center for Law and Deafness, Washington, DC

Everyday Garden Variety Auditory Embellishing for Young Children
Who are Deaf or Hard of Hearing — HI-Downtown
Elizabeth B. Cole, Ed.D., McGill University, Montreal, Quebec

JUNE 29, 1994, WEDNESDAY

Session 1, Wednesday Morning (8:30 - 10:00 am)

Panels

Guess Who's Talking: 20 Years Later HI-Fairfax
Karen Moody-Karpf, Sunshine Cottage School for Deaf Children, San Antonio, TX
Bradford P. Gay, Southern Research Institute, Birmington, AL
Kathleen S. Treni, Franklin Lakes Board of Education, Ramsey, NJ
Sandra S. Goy, Social Security Administration, Naperville, IL
Gena G. Cox, Daytona Medical Center, New Smyra Beach, FL
Nick Wirth, West Norwalk, CT

Educating the Cochlear Implanted Child: Parenting Coordination with Educators HI-Genesee
Patricia M. and Michael J. Higgins, Kettering, OH

Strategies for Bell Affiliates Advocating for Educational Choice at the State and Local Level CC-Cascade B
Mary Neznek, Alexander Graham Bell Association for the Deaf, Washington, DC
Nan Ellen East, Advocacy Services, Inc., Little Rock, AR
Steven Noyce, Utah School for the Deaf and Blind, Salt Lake City, UT
David James, Ph.D., Howard University, Washington, DC
Sandra North, Redford Union (MI) Oral Program, Redford, MI
Melody James Parton, Parents' Section Board Member, New York, NY

Round Table Discussions

Fast Plants, Bugs, People and the Environment: Hands-On Science for Elementary Students HI-Exchange
Peter A. de Villiers, Ph.D., Smith College, Northampton, MA
Michelle Chaplin, Willie Ross School for the Deaf, Longmeadow, MA
Linda Larkin, Clarke School for the Deaf, Northampton, MA
Renee Provost-Clausing, Willie Ross School for the Deaf
Frank Redmond, Rhode Island School for the Deaf, Providence, RI

The Mainstream: Building Friendships and Social Skills CC-Highland A
Mary Bowden, Montreal Oral School, Quebec, Canada
Jean Biro, Carelton Board of Education, Nepean, Ontario, Canada

Formal Presentations

Creating Needs for Natural Communication CC-Cascade A
Pamela Talbot, Helen Beebe Speech and Hearing Center, Easton, PA
Stephanie Shaeffer, Helen Beebe Speech and Hearing Center

More Than Lipservice: Screening Oral Interpreters (8:30 - 9:15 am) CC-Highland B
Elaine N. Young, The Mainstream Center, Clarke School for the Deaf, Northampton, MA
David Manning, Ed.D., The Mainstream Center, Clarke School for the Deaf

Rights of Hearing Impaired Citizens and College Students (9:15 - 10:00 am) CC-Highland B
Sidney Kraizman, Michigan Children's Rights Coordinator, Alexander Graham Bell Association for the Deaf, Detroit, MI

Inclusive Schooling: An Achievable Goal (8:30 - 9:15 am) CC-Highland C
Pamela Hart, The Garfield Barwick School, N.S.W., Australia
Irene Truscott, The Garfield Barwick School

Mini-Courses: Meeting the Challenge of Inclusion (9:15 - 10:00 am) CC-Highland C
Rosanne King, Delaware Co. International Unit, Wallingford Elementary School, Wallingford, PA
Paula Mathai, Delaware Co. International Unit, Wallingford Elementary School

Otolaryngology and Education: A Critical Partnership for the Deaf and Hard of Hearing Child (8:30 - 9:15 am) CC-Highland D
Dorothy Boothroyd-Turner, Special Education Hearing-Itinerant, Toronto, Ontario, Canada
Danna Dewar, Special Education Communication Programs for Deaf and Hard of Hearing Students, Etobicoke Board of Education, Etobicoke, Ontario, Canada
Diane Fulcher, Speech and Language Services, Etobicoke, Ontario, Canada

TORCH Infections, the High Risk Registry, and Hearing Loss Identification (9:15 - 10:00 am) CC-Highland D
Faye P. McCollister, Ed.D., University of Alabama, Tuscaloosa, AL

Looking at the Whole Child: The Interdisciplinary Evaluation (8:30 - 9:15 am) CC-Highland E
Joanne O'Connell, Clarke School for the Deaf, Northampton, MA
Jaclyn Gauger, Clarke School for the Deaf

Breaking Through the Jargon or How to Read an Evaluation (9:15 - 10:00 am) CC-Highland E
Effie G. Ronald, Clarke School for the Deaf, Northampton, MA
Janice C. Gatty, Ed.D., Clarke School for the Deaf
Joanne O'Connell, Clarke School for the Deaf
Holly Altman, Clarke School for the Deaf

Poster Sessions CC-Galleria

A Model for Maximizing Personal Amplification in Speech Therapy
Allen A. Austin, Speech and Language Department, National Technical Institute for the Deaf (NTID), Rochester, NY
Linda Bement, Audiology Department, NTID

Update: KnowledgeINeeds Assessment for Mainstream Teachers of the Hearing Impaired
Donald M. Goldberg, Ph.D., Helen Beebe Speech and Hearing Center, Easton, PA
Faith L. Hann, Helen Beebe Speech and Hearing Center

Language for All Reasons
Cynthia L. Forsythe, Clarke School for the Deaf, Northampton, MA
Linda Findlay, Clarke School for the Deaf
Lynne Bibeau, Clarke School for the Deaf
Deb Willis, Clarke School for the Deaf

Session 2, Wednesday Afternoon, 1:30 - 3:00 pm

Panels

Panel of Mainstreamed College Students: They Share Their Secrets HI-Fairfax
Buddy Cunningham, Oral Hearing Impaired Section, Columbia, MD

Our Kids are Part of the Community HI-Genesee
Virginia W. Stern, American Association for the Advancement of Science (AAAS), Washington, DC
Betsy Brauer, AAAS, Rochester, NY

Models and Management: Quality Auditory Oral Programs in Public Schools CC-Cascade A
Jennifer M. Kolzak, Stillman School, Wethersfield, CT
Steven Noyce, Utah School for the Deaf and Blind, Salt Lake City, UT
Jean Garner Ching, Palo Alto School District, Palo Alto, CA
Lillian Wilson, Delaware County, Newtown Square, PA
Mary Campbell, Michigan Public School Programs for the Hearing Impaired, Ida, MI

Round Table Discussions

Successful Pioneers: Differing Perspectives on Oral Interpreting in High School HI-Exchange
Eva Basch, Cégep du Vieux, Montreal, Quebec, Canada
Stephen Mulrooney, Montreal Oral School for the Deaf, Montreal, Quebec, Canada

Becoming Oral: From Self-Contained to Mainstream with Cochlear Implants CC-Cascade B
Catherine McEnroe, Auditory-Verbal Services, Utica, NY
Sonia Hartmann, Fayetteville, NY

Formal Presentations

Parents Can Help Their Child Learn to Talk CC-Highland A
Jean S. Moog, Ph.D., Central Institute for the Deaf, St. Louis, MO

Parents as Teachers: Information About Hearing Aids (1:30 - 2:15 pm) CC-Highland B
Linda Bement, National Technical Institute for the Deaf (NTID), Rochester, NY
Linda Gottermeier, NTID

Grandparents: Impact and Role (2:15 - 3:00 pm) CC-Highland B
Dale V. Atkins, Ph.D., psychologist in private practice, New York, NY

Improving Communication Skills to Facilitate Parent/Professional Decision Making (1:30 - 2:15 pm) CC-Highland C
JoAnn S. Bernardo, Beginnings for Parents of Hearing Impaired Children, Raleigh, NC

Discovering and Sharing Critical Information About your Hearing Impaired Child (2:15 - 3:00 pm) CC-Highland C
Carter Felvey, Parent Resource Center, Richmond, VA
Leeann Seaver, Denver, CO

Reading and Writing Achievement of Auditory-Verbal Children (1:30 - 2:15 pm) CC-Highland D
Lyn S. Robertson, Ph.D., Denison University, Granville, OH

Developing Concepts in Auditory-Verbal Therapy at North York General Hospital (2:15 - 3:00 pm) CC-Highland D
Ivy Chan, Auditory-Verbal Therapy Programme, North York General Hospital, Willowdale, Ontario, Canada
Warren Estabrooks, Auditory-Verbal Therapy Programme, North York General Hospital

Using World Knowledge and Inference to Construct Comprehensive Spoken Tests (1:30 - 2:15 pm) CC-Highland E
Paula Brown, Ph.D., National Technical Institute for the Deaf (NTID), Rochester, NY
Mary Jones, NTID

Technology Meets Whole Language: Producing Television Commercials with Desk-Top Video (2:15 - 3:00 pm) CC-Highland E
Stan Piesla, St. Frances de Sales School for the Deaf, Brooklyn, NY
Marie Hartman, St. Frances de Sales School for the Deaf

Poster Sessions CC-Galleria

Collin County Courier: Student Communication Across District Lines
Cindy Williams, Plano Regional Day School for the Deaf, Aldridge Elementary School, Richardson, TX

Cooperative Conversations
Kevin J. Miller, Ed.D., Trenton State College, Trenton, NJ

101 Ways to Enhance our Child's Communication Skills
Joanne O'Connell, Clarke School for the Deaf, Northampton, MA
Janice C. Gatty, Ed.D., Clarke School for the Deaf

Cochlear Implant Rehabilitation with a Teen: A Single Subject Design
Richard Miske, Area Education Agency 4, Sioux Center, IA

Sesion 3, Wednesday Afternoon, 3:30 - 5:00 pm

Panels

Challenges in the Hearing World: Revisited HI-Fairfax
Karen Moody-Karpf, Sunshine Cottage School for Deaf Children, San Antonio, TX
Dale V. Atkins, Ph.D., psychologist, private practice, New York, NY

Reality Check with the Cochlear Implant HI-Genesee
Melody James and Steve Parton, parents of Caitlin Parton, New York, NY

A Team Approach to Educating Children with Hearing Losses CC-Cascade A
Amanda J. Mangiardi, Auditory-Verbal International, Allentown, PA
Linda Boehmer, Emmaus, PA
Carol Kelly, Emmaus, PA
Teri St. John, Jefferson School, Emmaus, PA

Round Table Discussions

Parents as Facilitators of Conversational Skill Development — HI-Exchange
Marianne S. Gustafson, National Technical Institute for the Deaf (NTID), Rochester, NY
Karen G. Dobkowski, NTID

Provision of Direct Services in Schools: Making it Work — CC-Cascade B
Jean B. Brown, Ph.D., Vocal Point Therapies, Inc., Albuquerque, NM
Dale G. Birkeland, Vocal Point Therapies, Inc.

Formal Presentations

Legal Issues Regarding Oral Options for Children with Hearing Impairments
Bruce A. Goldstein, Buffalo, NY — CC-Highland A

A Weekend for Families with Hearing-Impaired Children
(3:30 - 4:15 pm) — CC-Highland B
Dan Salvucci, Clarke School for the Deaf, Northampton, MA

A Summer Program for Hearing-Impaired Children and Their Siblings
(4:15 - 5:00 pm) — CC-Highland B
Dan Salvucci, Clarke School for the Deaf, Northampton, MA

Development of Self-Discipline in the Hearing-Impaired Child
(3:30 - 4:15 pm) — CC-Highland C
Ellen Rajtar, The Oral School, The Atlanta Speech School, Atlanta, GA
Marty B. Hodge, school psychologist, Marietta, GA

Who Ever Said Studying Was Easy? Creating Good Study Skills
(4:15 - 5:00 pm) — CC-Highland C
Kimberly A. Szakalun, Clarke School for the Deaf, Northampton, MA
Michael F. O'Connell, Clarke School for the Deaf

Theme-Units: Making the Most of Learning (3:30 - 4:15 pm) — CC-Highland D
Mary Lee Walter, St. Joseph Institute for the Deaf, St. Louis, MO

Learning How to Learn Through I-Search/Theme Cycling Experiences
(4:15 - 5:00 pm) — CC-Highland D
Christine Montecalvo, Cincinnati Public Schools, Cincinnati, OH
Roberta R. Truax, University of Cincinnati, Cincinnati, OH

Simultaneous Communication: Acoustic Characteristics and Speech Naturalness
(3:30 - 4:15 pm) — CC-Highland E
Robert L. Whitehead, Ph.D., Jeddah Institute for Speech and Hearing, Saudi Arabia
Brenda Whitehead, Jeddah Institute for Speech and Hearing
Nicholas Schiavetti, Ph.D., State University of New York (SUNY), Geneseo, NY
Dale E. Metz, Ph.D., SUNY-Geneseo

Techniques for Encouraging, Developing, and Correcting Speech in the Classroom
(4:15 - 5:00 pm) — CC-Highland E
Karen Stein, Central Institute for the Deaf, St. Louis, MO
Christine Gustus, Central Institute for the Deaf

Poster Sessions **CC-Galleria**

IBM Speechviewer: Creative Modifications for Speech Language and Listening
Carol V. Zara, New York League for the Hard of Hearing, New York, NY

Teaching Language Through Theme-Based Units
Pamela Zacher, Central Institute for the Deaf, St. Louis, MO
Barbara Lanfer, Central Institute for the Deaf

PSST! Parent Support for Successful Teaching
Becky Blondeau, Houston School for Deaf Children, Houston, TX
Sheryl Jorgensen, Houston School for Deaf Children

Acoustic Accessibility of a Mainstreamed Child with Moderate Hearing Loss
Carol Flexer, Ph.D., School of Communication Disorders, University of Akron, Akron, OH
Catherine Richards, School of Communication Disorders, University of Akron

JUNE 30, 1994, THURSDAY

Session 4, Thursday Early Morning, 8:30 - 10:00 am

Panels

Conflict Resolution: Forward Looking Ways to Approach Conflict in the Deaf Community HI-Fairfax
Mary Neznek, Ph.D., Alexander Graham Bell Association for the Deaf, Washington, DC
Staff from Conflict Management, Inc., Cambridge, MA
Lillian and Rich Arpicella, NY State Chapter, Bell Association Parents' Section, Oyster Bay, NY
Mildred Oberkotter, Lexington Center, Jackson Heights, NY

Information Share Mini Conference: National Resources for Local Advocacy Help HI-Genesee
Nan Ellen D. East, Advocacy Services, Inc., Alexander Graham Bell Association for the Deaf Children's Rights Committee Chairperson, Little Rock, AR

Children with Atypical Hearing Loss: Looking at the Whole Child CC-Cascade A
Joy E. Munson, Clarke School for the Deaf, Northampton, MA
Jaclyn Gauger, Clarke School for the Deaf
Holly Altman, Clarke School for the Deaf
Joanne O'Connell, Clarke School for the Deaf
Effie G. Ronald, Clarke School for the Deaf

Round Table Discussions

How to Survive College: Meet the Challenges HI-Exchange
Tania Lambert, London, United Kingdom

Needs of Teachers Who are Responsible for Language/Literacy Learning CC-Cascade B
Kathleena Whitesell, Lenoir-Rhyne College, Hickory, NC
Roberta R. Truax, University of Cincinnati, Cincinnati, OH

Formal Presentations

Are They Different? Cochlear Implants vs. Conventional Auditory-Verbal Therapy CC-Highland A
Mary Eager Koch, clinical director, Helen Beebe Speech and Hearing Center, Easton, PA
Sylvia Rotfleisch, auditory-verbal therapist in private practice, Los Angeles, CA

Motion Picture Access: Coming Soon to a Theater Near You...Captions! (8:30 - 9:15 am) CC-Highland B
Larry Goldberg, director, Media Access Research and Development Office, WGBH, Boston, MA

Earmolds: You Have a Choice! (9:15 - 10:00 am) CC-Highland B
Chris Hawrylak Evans, Rochester School for the Deaf, Rochester, NY

A Guide for Optimizing Auditory Learning Skills (8:30 - 9:15 am) CC-Highland C
Ruth M. Reeder, Carle Clinic Association, Urbana, IL
Jill B. Firszt, Carle Clinic Association

Otoacoustic Emission Screening Results Compared to Traditional Hearing Screening Procedures (9:15 - 10:00 am) CC-Highland C
Carmen Taylor, University of Alabama, Tuscaloosa, AL

A Family Centered Early Intervention Program (8:30 - 9:15 am) CC-Highland D
Anita Bernstein, Montreal Oral School for the Deaf, Montreal, Quebec, Canada
Susan Sulla, Montreal Oral School for the Deaf

Family Focused Early Intervention Services (9:15 - 10:00 am) CC-Highland D
Sister Arline Eveld, Molloy Parent-Child Center, St. Joseph Institute for the Deaf, St. Louis, MO

An Ethnographic Study of the Auditory Growth of a Cochlear Implanted Child (8:30 - 9:15 am) CC-Highland E
Robert E. Kretschmer, Ph.D., Manhattan Eye, Ear and Throat Hospital, Children's Hearing Institute and Teachers College, Columbia University, NY, NY

A Cochlear Implant at Age Ten: Patrick's Story (9:15 - 10:00 am) CC-Highland E
Sally Tannenbaum, Auditory-Verbal International, Inc., Chicago, IL

Poster Sessions CC-Galleria

East, Meet West: An Approach to Professional Collaboration
Mary Mosher-Stathes, private practice, Specialized Services, Inc., Denver, CO
Sylvia Rotfleisch, private practice, Los Angeles, CA

Interpreters' Attitudes and Preparation for Children with Cochlear Implants
Catherine McEnroe, Auditory-Verbal Services, Utica, NY
Sonia Hartmann, Fayetteville, NY

Auditory-Verbal Parents' Knowledge of Hearing Loss and Hearing Aids
Donald M. Goldberg, Ph.D., Helen Beebe Speech and Hearing Center, Easton, PA

Session 5, Thursday Late Morning, 10:30 - 12 noon

Panels

Toward Full Participation: Young Deaf Adults Speak Out HI-Fairfax
Amy Hurowitz, student, National Technical Institute for the Deaf, Rochester, NY
Rob McIntosh, student, National Technical Institute for the Deaf
Steven Scher, student, University of Maryland College Park, Rockville, MD
Daniel Koo, student, University of Maryland, North Potomac, MD

The Power of the Parent Hi-Genesee
Beth Hamersley, president, Natural Communication, Inc., West Lafayette, OH
Larry Gerbetz, Silver Lake, OH
Nancy Walker-Gerbetz
Linda Peshek, Canton, OH
Donna Robertson, Rittman, OH

React/Interact/Discover Science Activities for K-9 CC-Cascade A
Linda B. Larkin, Clarke School for the Deaf, Northampton, MA
Robert D. Storm, Clarke School for the Deaf
Eleanor Jones, Clarke School for the Deaf
Mary Kate Sawyer, Clarke School for the Deaf
Ellen Wilson, Clarke School for the Deaf
Dorothy Phelps, Clarke School for the Deaf

Round Table Discussions

Rapping: Learning Through Shared Experiences: How to Lead a Guided Support Group HI-Exchange
Jeannette E. Kanter, Self Help for the Hard of Hearing (SHHH), Rochester, NY
Harriet Adams, SHHH

Interactive Hypercard Science Units for Macintosh Computers CC-Cascade B
Peter A. de Villiers, Ph.D., Smith College, Northampton, MA
Nat Sims, Smith College and Clarke School for the Deaf, Northampton, MA

Formal Presentations

A Parent's Perspective on Auditory Verbal Training: Evolution and Implementation
(birth-8) CC-Highland A
Susan Silver Schonfeld, Silver Systems, Chicago, IL

Cost-Utility Analysis of the Multichannel Cochlear Implant
(10:30 - 11:15 am) CC-Highland B
J. Robert Wyatt, Cochlear Corporation, Englewood, CO

Standing Up to the Cochlear Implant Opposition (11:15 - 12 noon) CC-Highland B
Melody James and Steve Parton, parents of Caitlin Parton, New York, NY

Discourse Strategies of Hearing-Impaired Children in an Integrated Setting
(10:30 - 11:15 am) CC-Highland C
Jill C. Duncan, University of Western Australia, Wembley, Australia

Interpersonal Discourse: A Prelingually Deafened Child and Hearing Peer
(11:15 - 12 noon) CC-Highland C
Nedra A. Sneed, University of Cincinnati, Cincinnati, OH
Richard R. Kretschmer, Ed.D., University of Cincinnati, OH

Experience Books: Passports to Language (10:30 - 11:15 am) CC-Highland D
Faith Lafferty Hann, Helen Beebe Speech and Hearing Center, Easton, PA

Breaking the Mold: Changing Traditions in Language/Literacy Teaching and Learning
(11:15 - 12 noon) CC-Highland D
Amy Otis-Wilborn, Ph.D., University of Wisconsin, Milwaukee, WI
Trinka Messenheimer-Young, Ed.D., University of Wisconsin

Integrating Language/Literacy Learning Across Art, Music, and Social Studies I
(10:30 - 11:15 am) CC-Highland E
Roberta R. Truax, Ph.D., University of Cincinnati, Cincinnati, OH
Bertha Edwards, Cincinnati Public Schools, Cincinnati, OH
Sandra Anderson, Clifton Elementary Schools, Cincinnati, OH

Integrating Language/Literacy Learning Across Art, Music and Social Studies II
(11:15 - 12 noon) CC-Highland E
Bertha Edwards, Clifton Elementary Schools, Cincinnati, OH
Roberta R. Truax, Ph.D., University of Cincinnati, Cincinnati, OH
Sandra Anderson, Clifton Elementary Schools

Poster Sessions CC-Galleria

Use of SpeechViewer II and Visi-Pitch in Voice and Articulation Therapy
Marianne S. Gustafson, Speech and Language Department, National Technical Institute for the Deaf, Rochester, NY

Auditory Training Activities for the Preschool Classroom
Kathleen M. Newbern, Atlanta Speech School, Atlanta, GA

Communication Breakdown Management by Hearing-Impaired Children in the Regular Classroom
Ellen Wilson, SHCD, Dalhousie University, Halifax, N.S., Canada
Rachel Caissie, Ph.D., Dalhousie University

Session 6, Thursday Early Afternoon, 1:30 - 3:00 pm

Panels

Knowledge and Assertiveness: A Perfect Combination of Self Advocacy HI-Fairfax
Marcia B. Dugan, National Technical Institute for the Deaf, Rochester, NY
Susan Miller, Self Help for Hard of Hearing People, Inc., Rochester, NY
Larry Medwetsky, Rochester Hearing & Speech Center, Rochester, NY

A Computerized Abbreviation System for Transcribing Speech into Print HI-Genesee
Michael S. Stinson, Ph.D., National Technical Institute for the Deaf (NTID), Rochester, NY
Barbara G. McKee, Ph.D., NTID
Janette B. Henderson, Ph.D., NTID

A Comparison of Three Computer-Based Speech Training Systems CC-Cascade A
Karen S. Youdelman, Ed.D., Millridge Center for Hearing Impaired Children, Highland Heights, OH and The Lexington Center, Inc., Jackson Heights, NY
Ginny Howell, Millridge Center for Hearing Impaired Children
Lynne Massie, Millridge Center for Hearing Impaired Children
Carol Nemastil, Mayfield Secondary Hearing Impaired Program, Highland Heights, OH

Round Table Discussions

Conversational Management Skills for Social and Professional Situations HI-Exchange
Karen G. Dobkowski, National Technical Institute for the Deaf (NTID), Rochester, NY
Marianne S. Gustafson, NTID

Formal Presentations

FM Amplification in the Mainstream: Is It For Everyone? CC-Cascade B
Carolyn Mandelker, Toronto Board of Education, Toronto, Ontario, Canada
Dorothy Boothroyd-Turner, Special Education Hearing Itinerant, Toronto

Children's Rights CC-Highland A
Sidney Kraizman, Alexander Graham Bell Association for the Deaf
Children's Rights Coordinator, Detroit, MI

A Fitting Protocol for the Transonic Frequency Transposition Hearing Aid
(1:30 - 2:15 pm) CC-Highland B
Patricia M. Chute, Manhattan Eye, Ear and Throat Hospital, New York, NY
Judith Gravel, Albert Einstein College of Medicine, New York, NY
Amy Popp, Manhattan Eye, Ear and Throat Hospital
Tad Zelski, AVR Sonovation, New York, NY
Barak Dar, AVR Sonovation

Speech Perception Abilities with the Transonic Frequency Transposition Hearing Aid
(2:15 - 3:00 pm) CC-Highland B
Patricia M. Chute, Manhattan Eye, Ear and Throat Hospital, New York, NY
Judith Gravel, Albert Einstein College of Medicine, New York, NY
Amy Popp, Manhattan Eye, Ear and Throat Hospital
Tad Zelski, AVR Sonovation, New York, NY

Science Discovery Project (1:30 - 2:15 pm) CC-Highland C
Robert D. Storm, Clarke School for the Deaf, Northampton, MA
Julia Sheldon, Clarke School for the Deaf

Assessing Scientific Reasoning in Deaf Students (2:15 - 3:30 pm) CC-Highland C
Peter A. de Villiers, Ph.D., Smith College, Northampton, MA
Becky Haines, Smith College
Jennie Pyers, Smith College

Establishing Real-World Carry-Over in Cochlear Implant Rehabilitation
(1:30 - 2:15 pm) CC-Highland D
Kathy S. Kessler, Indiana University School of Medicine, Indianapolis, IN

Learning with a Cochlear Implant: Acquisition of Perception and Production Skills
(2:15 - 3:30 pm) CC-Highland D
Mary Joe Osberger, Ph.D., Indiana University School of Medicine,
Indianapolis, IN
Susan L. Todd, Indiana University School of Medicine

To Private Practice or Not to Private Practice (1:30 - 2:15 pm) CC-Highland E
Sylvia Rotfleisch, Auditory-Verbal Therapy, Los Angeles, CA
Karen Rothwell-Vivian, Auditory-Verbal Services, Costa Mesa, CA

Teachers-as-Researchers: Supporting Professional Development
(2:15 - 3:00 pm) CC-Highland E
Michele Gennaoui, St. Frances de Sales School for the Deaf, Brooklyn, NY

Poster Sessions CC-Galleria

Using an Interactive Videodisc for Learning English Vowel Pronunciation
Sidney M. Barefoot, National Technical Institute for the Deaf (NTID), Rochester, NY
E. William Clymer, NTID, Rochester, NY
Brenda Whitehead, NTID
Cecelia Dorn, NTID

A Deaf Awareness Program for Use by Teachers in a Mainstreamed Classroom
Tania Lambert, London, United Kingdom

101 Ways to Enhance Your Child's Self Esteem
Effie G. Ronald, Clarke School for the Deaf, Northampton, MA
Janice C. Gatty, Ed.D., Clarke School for the Deaf

Session 7, Thursday Late Afternoon, 3:30 - 5:00 pm

Panels

The Influence of Technology and Collaboration on Job Search Preparation HI-Fairfax
Diane Castle, Ph.D., National Technical Institute for the Deaf (NTID), Rochester, NY
Marilyn Enders, NTID
Moderator: Elizabeth Ewell, NTID
Jacquelyn F. Kelly, NTID
Linda Palmer, NTID
Ernest Paskey, NTID
Nora Shannon, NTID
David B. Strom, NTID

You Need More Than an Audiogram to Consider a Cochlear Implant HI-Genesee
Janice C. Gatty, Ed.D., Clarke School for the Deaf, Northampton, MA
Louise Johnson, Clarke School for the Deaf
Effie G. Ronald, Clarke School for the Deaf
Joanne O'Connell, Clarke School for the Deaf
Joy Munson, Clarke School for the Deaf

Round Table Discussions

Preschool and Elementary Education of the Hard of Hearing Child: Parents as Advocates HI-Exchange
Noreen and Robert Conte, Rochester, NY

Formal Presentations

Amplification Fitting Process: What You Should Know CC-Cascade B
Larry Medwetsky, Rochester Hearing and Speech Center, Rochester, NY

Cochlear Implants in Children: What Should be Expected CC-Cascade A
Jean S. Moog, Ph.D., Central Institute for the Deaf, St. Louis, MO
Ann E. Geers, Ph.D., Central Institute for the Deaf

Make New Friends and Keep the Old CC-Highland A
Mary Mosher-Stathes, Specialized Services, Inc., Denver, CO

Life with a Neurotic Mother (3:30 - 4:15 pm) CC-Highland B
Jim Massing, Sarasota, FL

Religion and Religious Ritual in the Development of Deaf Children (4:15 - 5:00 pm) CC-Highland B
Reverend William Maxon, St. Peter's Lutheran Church, Easton, PA

Connected Discourse Tracking with Profoundly Hearing-Impaired Children
(3:30 - 4:15 pm) CC-Highland C
Julia J. Biedenstein, Central Institute for the Deaf, St. Louis, MO
Beth Holstad, Central Institute for the Deaf
Lisa S. Davidson, Central Institute for the Deaf

Development of Expressive Communication Skills with Cued Speech
(4:15 - 5:00 pm) CC-Highland C
Catherine S. Quenin, Ph.D., National Technical Institute for the Deaf, Rochester, NY

A Differentiated Approach to Reading: Finding the "Best Fit"
(3:30 - 4:15 pm) CC-Highland D
Laura S. McKirdy, Ph.D., Lake Drive School, Mountain Lake, NJ
Michele Klimovitch, Lake Drive School

Development of a School-Wide "Encoding" Screening and Follow-Up Program
(4:15 - 5:00 pm) CC-Highland D
Robert E. Kretschmer, Ph.D., Teachers College, Columbia University, New York, NY
Arthur Martello, St. Frances De Sales School for the Deaf, Brooklyn, NY

Issues Affecting the A. G. Bell Association in a Time of Minority Growth
(3:30 - 4:15 pm) CC-Highland E
Kenneth R. Nash, Ph.D., National Technical Institute for the Deaf, Rochester, NY

Using the Child's Environment to Learn Math (4:15 - 5:00 pm) CC-Highland E
Bruce F. Godsave, Ed.D., State University of New York, Geneseo, NY

Poster Sessions CC-Galleria

A Computerized Abbreviation System for Transcribing Speech into Print
Michael S. Stinson, Ph.D., National Technical Institute for the Deaf (NTID), Rochester, NY
Barbara G. McKee, Ph.D., NTID
Janette B. Henderson, Ph.D., NTID

A Strategy for Teaching Phonetic Reading Decoding Skills That Works!
Kit Becker, Cartwright School District, Phoenix, AZ

Evidence of Empathy Development
Nilsa C. Toranzo, St. Frances de Sales School for the Deaf, Brooklyn, NY
Keirsten Rain, St. Frances de Sales School for the Deaf

Comparison of Self-Rated and Measured Speech Intelligibility Estimates
Marianne Gustafson, National Technical Institute for the Deaf, Rochester, NY
Dale Evan Metz, Ph.D., State University of New York, Geneseo, NY

JULY 1, 1994, FRIDAY

Session 8, Friday Early Morning, 8:30 - 10:00 am

Panels

Orally-Oriented Deaf Students in a Signing College Environment — HI-Fairfax
E. Ross Stuckless, Ph.D., National Technical Institute for the Deaf (NTID), Rochester, NY
Barbara G. McKee, Ph.D., NTID
Valerie Yust, NTID
Diane Castle, Ph.D., NTID
Dominique Lepoutre, NTID

What Does the Future Hold for Your Deaf Child? — HI-Genesee
Brian D. McCartney, Ed.D., Michigan School for the Deaf, Lansing, MI

Round Table Discussions

Family Focus: Understanding the Effects of Hearing Impairment on the Family — HI-Exchange
Susan Slama, Sunshine Cottage School for the Deaf, San Antonio, TX
Ellen Paskin-Balkan, Siblings Connection Network, Encino, CA and parents and hearing siblings from Sunshine Cottage School for the Deaf

Formal Presentations

Mainstreaming: Kindergarten to Graduation — CC-Cascade B
Tina Novelli-Olmstead, Carleton Board of Education, Nepean, Ontario, Canada
Penny Cumbaa, Carleton Board of Education
Muriel Mischook, Carleton Board of Education
Christine Pugh, Carleton Board of Education

What is the Mainstream Really Like? Can you "Just Do It?" — CC-Cascade A
David Manning, Ed.D., Clarke School for the Deaf, Northampton, MA

States' Implementation of Least Restrictive Environment Policy and Procedure — CC-Highland A
Michael Bienenstock, Ph.D., Ellicott City, MD

High Tech Makes High School 100% Accessible for Hearing Impaired (8:30 - 9:15 am) — CC-Highland B
Keenan A. Moore, teenager, West Linn, OR
Chris Bolesky, steno-interpreter, Portland, OR

Computer Assisted Notetaking for Mainstreamed Hearing-Impaired Students (9:15 - 10:00 am) — CC-Highland B
Carol Messerly, Ph.D., Mayfield Auditory-Oral Program, Mayfield, OH
Karen S. Youdelman, Ph.D., Millridge Center for Hearing Impaired Children, Highland Heights, OH, and The Lexington Center, Jackson Heights, NY

For Parents and Teachers: Understanding the MAPs of Implanted Children
(8:30 - 9:15 am) CC-Highland C
Jill B. Firszt, Carle Clinic Association, Urbana, IL
Ruth M. Reeder, Carle Clinic Association

Habilitation of Young Cochlear Implant Recipients: A Case Study
(9:15 - 10:00 am) CC-Highland C
Margaret J. Hamilton, Warren Otologic Group, Inc., Warren, OH
Denise Wray, Ph.D., University of Akron, Akron, OH

Bedtime Story Reading: A Mother and Her Hearing-Impaired Son
(8:30 - 9:15 am) CC-Highland D
Richard R. Kretschmer, Ph.D., University of Cincinnati, Cincinnati,OH
Yildiz Uzuner, Ph.D., University of Eskisehir, Turkey

Celebrate with Books (9:15 - 10:00 am) CC-Highland D
Carol B. Stevens, educational consultant, Hollidaysburg, PA

Establishing Peer Interactions with Preschoolers (8:30 - 9:15 am) CC-Highland E
Jill L. Bader, HEAR at Home, Denver, CO

A Process-Oriented Preschool for Hearing and Hearing-Impaired Children
(9:15 - 10:00 am) CC-Highland E
Janice C. Gatty, Ed.D., Clarke School for the Deaf, Northampton, MA
Joy Munson, Clarke School for the Deaf
Holly Altman, Clarke School for the Deaf
Pamela Goodrow, Clarke School for the Deaf

Poster Sessions CC-Galleria

Mainstreaming Potpourri: Inservice Ideas for Mainstream Teachers
Cindy Williams, Plano Regional Day School for the Deaf, Aldridge Elementary School, Richardson, TX

My Class, Her Class, Their Answers: A Story of Collaboration
Christine O'Connor, Atlanta Speech School, Atlanta, GA

Classroom Amplification: A Longitudinal Study of Teacher-Rated Performance
Carol Flexer, Ph.D., School of Communication Disorders, University of Akron, Akron, OH
Catherine Richards, University of Akron, Akron, OH
Cheryl Buie, Cuyahoga Falls Public School, Cuyahoga Falls, OH
Denise Wray, Ph.D., School of Communication Disorders, University of Akron
William Brandy, Ph.D., School of Communication Disorders, University of Akron

Session 9, Friday Late Afternoon, 3:00 - 4:30 pm

Panels

When the Oral Option Isn't Enough, What Now? HI-Fairfax
Thomas E. Fields, Oral Hearing Impaired Section, National Park Service, Falls Church, VA
Sue Schwartz, Ph.D., Montgomery County Public Schools, Silver Spring, MD

A Parent Planned Camp for Families and Professionals — HI-Genesee
Linda Balderson, Rockville, MD
Sheila Scher, Rockville, MD
Karen McIntosh, Crofton, MD
Judy Weiss, Chevy Chase, MD
Marty Franklin, Rockville, MD

Round Table Discussions

A Model for the Provision of Educational Interpreting Services — HI-Exchange
Eva Basch, Cégep du Vieux, Montreal, Quebec, Canada
Paul Bourcier, Cégep du Vieux

Formal Presentations

Deaf Students in Regular Colleges and Universities — CC-Cascade B
Robert S. Menchel, Harvard University, Cambridge, MA

A Multi-Center Study Update: Results of Children Using Cochlear Implants — CC-Cascade A
Jill B. Firszt, Carle Clinic Association, Urbana, IL
Ruth M. Reeder, Carle Clinic Association
Susan Zimmerman-Phillips, University of Michigan, Ann Arbor, MI
Holly Fryauf-Bertschy, University of Iowa Hospital, Iowa City, IA
Lisa L. Tonokawa, California Ear Institute, Palo Alto, CA

Soda Bottles and Submarines: Essential Speech Acoustics — CC-Highland A
Mary Eager Koch, Helen Beebe Speech and Hearing Center, Easton, PA
Sylvia Rotfleisch, auditory-verbal therapist in private practice, Los Angeles, CA

Dysfunctional Family Environment and Hearing-Impaired Students with Additional Disabilities (3:00 - 3:45 pm) — CC-Highland B
Ann R. Powers, Ed.D., College of Education, University of Alabama, Tuscaloosa, AL

The Double Whammy: ADHD and Deafness (3:45 - 4:30 pm) — CC-Highland B
Joanne O'Connell, Clarke School for the Deaf, Northampton, MA
Jaclyn Gauger, Clarke School for the Deaf

Implant Center and Local School Collaboration: A Formula for Success (3:00 - 3:45 pm) — CC-Highland C
Mary Ellen Nevins, Ed.D., Manhattan Eye, Ear and Throat Hospital, New York, NY
Laura S. McKirdy, Ph.D., Lake Drive School for Deaf and Hard of Hearing Children, New York, NY
Patricia M. Chute, Ed.D., Manhattan Eye, Ear and Throat Hospital

Cochlear Implant Education/Rehabilitation: No Need to Reinvent the Wheel (3:45 - 4:30 pm) — CC-Highland C
Carol V. Zara, New York League for the Hard of Hearing, New York, NY
Diane Brackett, Ph.D., CHIP Hearing Center, University of Connecticut, Storrs, CT

Empowering Hearing-Impaired Students in the Mainstream (3:00 - 3: 34 pm) — CC-Highland D
Anne M. West, Saginaw Public Schools, Saginaw, MI

Including Everyone (3:34 - 4:30 pm) CC-Highland D
Marilyn Wessel, Schenectady, NY

Poster Sessions CC-Galleria

Science Fun Nights at St. Joseph Institute for the Deaf
Sr. Laura Gruber, St. Joseph Institute for the Deaf, St. Louis, MO

Auditory-Verbal Students: An Update on Mainstream Classroom Performance
Denise Wray, Ph.D., School of Communicative Di rs, University of Akron, Akron, OH
Carol Flexer, Ph.D., School of Communicative D ers, University of Akron

Around the United States in 180 Days: A Social Studies Curriculum
Karen Kupper, Central Institute for the Deaf, St. Louis, MO
Deborah Miller, Central Institute for the Deaf

Video Theater Presentations (continuous viewing) CC-Promenade

Wednesday, June 29, 1994, 1:30 - 5:00 pm
Thursday, June 30, 1994, 8:30 - 12 noon
Thursday, June 30, 1994, 1:30 - 5:00 pm

"I Can Hear"
Beth Hamersley, president, Natural Communications, Inc., West Lafayette, OH

"Do You Hear That?"
Warren Estabrooks, clinical director, Auditory-Verbal Therapy Programme, North York General Hospital, Toronto, Ontario, Canada

"Coming Together and Aiming Higher"
Christine Wilber, San Marino School Centralia School District, Buena Park, CA
Linda Ralph, San Marino School Centralia School District

"Speech for the Deaf Child: Reading to Speak"
John K. Duffy, Ph.D., Hearing and Speech Clinic, Kings County Hospital, Brooklyn, NY

"Marching to the Beat of Another Drummer"
Susan F. Abrams, Kingston, PA

"Speaking for Ourselves: Interviews with Hearing Impaired Teens and Young Adults"
Anne Kearney, speech-language pathologist, private practice, Sea Cliff, NY

Third Annual Editors' Award

Nancy Tye-Murray

Nancy Tye-Murray Wins Editors' Award

The Volta Review Editorial Board is pleased to announce that Nancy Tye-Murray is the winner of the Editors' Award for her article, "Articulatory organizational strategies and the roles of audition." Dr. Tye-Murray is a Senior Research Scientist in the Department of Otolaryngology-Head and Neck Surgery at the University of Iowa Hospitals, Iowa City, Iowa.

The Editorial Board selected her as the award recipient at its annual meeting in 1993. Dr. Tye-Murray's winning article appeared in the July 1992 *Volta Review*. The article reviewed data from ten years of research with talkers who are deaf. In particular, Dr. Tye-Murray focused on the role of audition in acquiring and maintaining adequate speech production.

In addition to this and other articles published in *The Volta Review*, Dr. Tye-Murray has published extensively in the *Journal of Speech and Hearing Research*, *Journal of the Acoustical Society of America*, and *Ear and Hearing*. She is also the author of *Communication therapy for hearing-impaired children and teenagers: Speechreading, listening, and using repair strategies* (1992, Pro-Ed) and *Children with cochlear implants: A handbook for parents, teachers, and speech and hearing professionals* (1992, Alexander Graham Bell Association for the Deaf), among other titles. A frequent presenter at conventions, Dr. Tye-Murray has also developed audiology test materials and aural rehabilitation training materials.

Methodology, innovation of research design, relevance of topic, and importance and applicability of results are all criteria considered by the Editorial Board in selecting the award recipient. The Editorial Board of *The Volta Review* congratulates Dr. Tye-Murray for her outstanding contribution to the field of research on deafness.

Association Report

Bylaws: Alexander Graham Bell Association for the Deaf, Inc.

(November, 1993)

Article I: Members

Section I. The Association shall be composed of life, regular, student, and affiliate group members.

Section II. Any person eighteen (18) years of age or older who is interested in the purposes of the Association shall be eligible for life or regular membership.

Section III. Any person who is a fulltime college or university student and who is interested in the purposes of the Association shall be eligible for student membership.

Section IV. Any organization or group that is interested in the purposes of the Association shall be eligible for affiliate group membership. Affiliate groups shall be entitled to receive such publications of the Association as the Board of Directors may from time to time determine.

Section V. Each life, regular, and student member in good standing shall be entitled to attend meetings of the members of the Association, to vote on matters to be acted upon by the members of the Association, and to receive such publications of the Association as the Board of Directors may from time to time determine, provided that each affiliate group member shall for all purposes be counted as one member regardless of the number of persons comprising such affiliate group. The Board of Directors shall from time to time fix the amount of dues for each class of membership and may establish such additional requirements and privileges for each class of membership as are not inconsistent with these Bylaws. Membership shall not be transferable.

Section VI. The Board of Directors may establish subclasses of membership within the class of regular membership for contributors to the Association and fix the amount of contributions for each subclass.

Section VII. A meeting of the members of the Association shall be held in each even-numbered year and may be held in each odd-numbered year at 4:00 p.m. on the first Monday in June at the Volta Bureau, 3417 Volta Place NW, Washington, DC, or at such other time and place as may be fixed by the Board of Directors and stated in the call issued by the president.

Section VIII. Dues paying members of the Association shall be called national/international members. Dues paying members of the chapters will be called state/province members of the Association.

Article II: Directors

Section I. The affairs and property of the Association shall be managed by a Board of Directors consisting of nineteen (19) voting Directors and two (2) nonvoting Directors as follows: nine (9) voting Directors elected by ballot by the voting members of the Association from among the life and regular members of the Association, each of whom shall assume office upon announcement of his/her election as hereinafter provided and shall serve for three (3) years and thereafter until a successor assumes office; three (3) voting directors elected by the voting directors then in office from among the life and regular members of the Association, each of whom shall assume office at the same time as provided for the directors elected by the voting members of the Association in Article II, Section II (to be phased in over a three (3) year period with one such Board-elected director elected for a term of three (3) years commencing with the 1990-91 year and one (1) additional director elected by the Board each for the years 1991-92 and 1992-93, respectively) and shall serve for three (3) years and thereafter until a successor assumes office; the president, the president-elect, and the

chief executive officer of each of the three sections of the Association, ex officio, each of whom shall be a voting Director provided he/she is not otherwise a voting Director; the immediate past president, who shall be a voting Director provided he/she is not otherwise a voting Director; one (1) voting director elected by ballot by the duly designated representatives for each of the Chapters at a Council of Chapters held at the biennial convention of the Association from among the life and regular members of the Association, who shall assume office upon election and shall serve for two (2) years until the next election by the Council of Chapters; and the Executive Director, and the Chairperson of the Foundation Board, or a member of the Foundation Board chosen by its chairperson, ex officio, who shall be nonvoting Directors.

Section II. Three (3) Directors shall be elected by the members each year. Nominations for the office of member–elected Director shall be made no later than the first day of February by the Board, acting upon the report of the Committee on Nominations and Elections. Nominations may also be made by written petition, signed by at least one hundred (100) voting members, and received at the Volta Bureau no later than the first day of February. The election of Directors shall be conducted by mail ballot under the supervision of the inspectors to be appointed by the president. The names of all persons duly nominated and the number of elective Directorships to be filled shall be stated in the ballot. Ballots shall be mailed to voting members no later than the first day of April and shall be accompanied by a brief biographical sketch of each person duly nominated. Ballot returns, to be valid, shall: (a) contain no more votes than the number of elective directorships to be filled, (b) contain no more than one vote for any one nominee, and (c) be received in the Association's office no later than the fifteenth (15th) day of May. The three (3) nominees receiving the highest number of votes shall be certified by the inspectors, and their election shall be announced at the annual meeting of the members of the Association to be held that year. If, in any year, no such annual meeting is to be held, the election results shall be announced to the members of the Association by mail, effective as of the first Monday in June next following the election.

Section III. No elected Director shall be eligible for nomination for a third consecutive term as elected Director after having been elected to two consecutive three–year terms as elected Director.

Section IV. The Board of Directors shall have power to fill any vacancy in its number, such successor Director to serve for the unexpired term of his/her predecessor.

Section V. The annual meeting of the Board of Directors shall be held at 9:00 a.m. on the third Friday in October at the Volta Bureau or at such other time and place as may be fixed and stated in the call issued by the president. Special meetings of the Board may be called at any time by the president, any six (6) voting Directors, or the Executive Committee, on at least three (3) days notice. Notice of any special meeting shall state the purposes of the meeting and no other business than that so stated shall be transacted at the meeting. Special meetings may be held by telephone conference call and the Board may take action by mail ballot.

Section VI. Absence from three (3) consecutive annual Board meetings shall bar a Director from election or reelection to the Board for one (1) year after the expiration of his/her term of office as Director.

Section VII. The Association shall have an advisory board, known as the Foundation Board, the purposes of which are to advise and assist the Association in raising endowment and other funds for the Association. The Foundation Board shall be subject to the direction of, and shall report to, the Board of Directors. The Foundation Board shall be organized and shall operate as follows:

(a) The Foundation Board shall be composed of one person appointed by the president and such additional persons, without limitation in number, who are appointed from time to time to the Foundation Board by the Board of Directors. Subject to the provisions of Subsection (c) of this Section, all persons, including Directors, officers, and employees of the Association, who are deemed influential and committed to contributing and raising funds for the Association, shall be eligible for appointment to the Foundation Board.

(b) The chairperson of the Foundation Board shall be appointed as such by the Board of Directors from among the members of the Foundation Board. The chairperson shall preside at all meetings of the Foundation Board. The Foundation Board shall meet at the call of the chairperson on reasonable notice. The Foundation

Board shall not be subject to any quorum as may be adopted by the Foundation Board and approved by the Board of Directors.
(c) The chairperson and each member of the Foundation Board shall serve for three (3) years from the date of his/her appointment and shall be eligible for reappointment, except that no person shall be eligible for a third consecutive term as a member of the Foundation Board after having served two consecutive three-year terms. The chairperson and any member of the Foundation Board may be removed from office by the Board of Directors with or without cause.
(d) Each member of the Foundation Board shall be entitled to all the privileges of a regular member of the Association during his/her term as a member of the Foundation Board, including the right to vote and hold office, but shall not be required to pay dues.
(e) The chairperson of the Foundation Board and one member of the Foundation Board chosen by the chairperson shall each be an ex officio, nonvoting member of the Board of Directors.

Article III: Powers of the Directors

Section I. The Board of Directors shall manage the affairs and property of the Association; shall establish Association policy and from time to time modify the same; and, in addition to the powers expressly conferred upon it by these Bylaws, may exercise all powers and perform all acts permitted by law to be exercised or performed by the Association, subject, however, to the provisions of the Articles of Incorporation, the Constitution, and these Bylaws.

Section II. Without limiting the general powers of the Board of Directors otherwise conferred by these Bylaws, the Board of Directors shall have the following Powers:
(a) To purchase, accept by gift, bequest or devise, or otherwise acquire for the Association; and to grant, sell, convey, mortgage, lend, pledge as security, deliver in trust, or otherwise dispose of any property, rights, or interests of the Association, on such terms and conditions and for such consideration as it may determine.
(b) To enter into contracts, agreements, and undertakings of any nature.
(c) To appoint employees and agents of the Association and to fix their compensation.
(d) To remove or suspend, with or without cause, any officer, employee, or agent of the Association, permanently or temporarily.
(e) To delegate from time to time such of the powers of the Board of Directors to any committee, officer, employee, or agent of the Association, upon such terms, as it may determine.

Article IV: Officers

Section I. The Association shall have a president and a president-elect who shall be elected or designated and who shall serve as hereinafter provided. The Association shall have the following additional officers, who shall be elected by the Directors from among the life and regular members of the Association at a special meeting of the Board of Directors held immediately prior to the annual meeting of the members of the Association held each even-numbered year, who shall assume office immediately following such annual meeting, and who shall serve for two (2) years and thereafter until their successors assume office: one or more vice presidents; a secretary and if desired, one or more assistant secretaries; a treasurer and if desired, one or more assistant treasurers; and an Executive Director. The Board of Directors shall have power to fill a vacancy in any office, such successor officer to serve for the unexpired term of his/her predecessor.

Section II. The office of the president shall be assumed by the president-elect upon expiration of such term as president-elect as hereinafter provided. The president shall serve for two (2) years and thereafter until a successor assumes office. The president shall serve as chairperson of the Board of Directors and the Executive Committee and shall preside at meetings of the Association. The president shall be responsive to the

membership but responsible solely to the Board; shall be an ex officio member of all committees except Nominations and Elections; shall make all appointments to boards and standing and special committees required or permitted by these Bylaws; shall consult with the Executive Director concerning interpretation of Board policy; shall, in conjunction with the Executive Committee, annually appraise the work of the Executive Director based upon established written criteria specifying the duties and responsibilities of the position; and shall communicate to the members such matters and make such suggestions as may tend to promote the welfare and increase the usefulness of the Association; and shall perform such other duties as are necessary or incident to the office of the president or as may be prescribed by the Board of Directors.

Section III. The president-elect shall be elected by ballot each even-numbered year by the voting members of the Association from among the life and regular members of the Association, shall assume office upon the announcement of election at the annual meeting of the members of the Association held that year, and shall serve for two (2) years and thereafter until a successor assumes office. Nominations for the office of president-elect and the election of the president-elect shall be conducted at the same time and in the same manner as the nomination and election of Directors, conducted in each even-numbered year. The president-elect shall perform all the duties of the president in his/her absence; and shall perform such other duties as the Board may direct. Upon expiration of his/her term of office, the president-elect shall succeed to the office of president without standing for further election.

Section IV. The vice presidents shall be designated numerically, i.e., first and second vice president shall successively be vested with such powers and perform such duties as the Board may direct.

Section V. The secretary shall make careful records of all meetings of the Association and of the Board and any committees when required; shall preserve the same at the Volta Bureau together with the Certificate of Incorporation, Constitution, Bylaws, and Corporate Seal of the Association; shall see that proper notice is given of all meetings of the Association and of the Board; and shall perform such other duties as may be prescribed from time to time by the Board of Directors or the president. Any assistant secretary shall have such powers and perform such duties as the Board may direct.

Section VI. The treasurer shall keep full and accurate accounts of receipts and disbursements in books belonging to the Association and shall deposit all monies and valuable effects in the name and to credit of the Association in such depositories as may be designated by the Board of Directors; at his/her discretion, he/she shall invest nonrestricted funds not required for near-term operations directly or through an investment trust in savings accounts, certificates of deposit, short term obligations of the United States Government, or high grade commercial notes to obtain the maximum interest on such funds; shall make such disbursements as may be ordered by the Board or the president upon taking proper vouchers; shall prepare and present at each meeting of the Board of Directors a full statement of accounts; shall give a bond if required by the Board of Directors for the faithful performance of his/her duties; and shall perform such other duties as may be prescribed from time to time by the Board of Directors or the president. Any assistant treasurer shall have such powers and perform such duties as the Board may direct.

Section VII. The Association's books and records of account shall be audited annually by a certified public accountant, whose report shall be presented to the Board of Directors.

Section VIII. The Executive Director shall be the chief executive officer of the Association. He/she shall be responsive to the membership but responsible solely to the Board of Directors; shall have full responsibility for the administration and operation of the Association and the work of its employees; shall consult with the Board of Directors and the president on matters of policy; shall be responsible for the daily operation of the Association, including the establishment of employee goals and priorities to further the Association's policies; shall annually propose a budget for approval by the Board; shall serve, ex officio, without vote, on the Board and may participate fully in the preparation of reports; shall facilitate communications among Board members, committees, and employees. His/her work shall be appraised annually by the president and the Executive Committee, based upon established written criteria

specifying the duties and responsibilities of the position. He/she shall be responsible for performance appraisals of all other Association employees, and shall have complete authority over the employment, duties, and termination of all employees, with the understanding that the Executive Committee or the Board of Directors shall be consulted prior to any action involving the termination of a department head.

Section IX. No person may hold more than one office at the same time. Neither the president nor the president-elect may succeed himself/herself in the same office.

Article V: Committees

Section I. The standing committees of the Board of Directors shall be the Executive Committee, the Committee on Nominations and Elections, and such other standing committees, with such duties, as the Board may from time to time determine. Each standing committee shall report to the Board.

Section II. The Executive Committee shall have the following eight (8) members: the president, ex officio, who shall be the chairperson of the Executive Committee; the president-elect, ex officio; the chief executive officer of each of the three sections of the Association, ex officio; the immediate past president; and two (2) members appointed by the president from among the voting Directors, who shall serve concurrently with the president. The Executive Director shall be an ex officio, nonvoting member of the Executive Committee. The Executive Committee may, between meetings of the Board of Directors, exercise the full power and authority of the Board of Directors, except that the Executive Committee shall not alter or amend these Bylaws or any action previously taken by the Board. The Executive Committee shall perform such other duties as are assigned to it from time to time by the Board.

Section III. The Committee on Nominations and Elections shall have the following seven (7) voting members: one (1) member appointed by the Executive Committee from among the members of the Association who shall be the chairperson of the Committee on Nominations and Elections and who shall serve concurrently with the president; one (1) member appointed by the chief executive officer of each of the three sections of the Association who shall serve concurrently with such chief executive officer; and three (3) members appointed by the chairperson of the Committee on Nominations and Elections from among the members of the Association who shall serve concurrently with the chairperson. The Committee on Nominations and Elections shall recommend candidates for the offices of elected Director and president-elect as provided in these Bylaws and shall perform such other duties as are assigned to it from time to time by the Board.

Section IV. Appointive memberships on the Executive Committee, the Committee on Nominations and Elections, and, unless otherwise provided, on all other standing committees, shall be filled immediately following the annual meeting of the members of the Association held each even-numbered year. Appointees shall assume office upon their appointment.

Section V. All standing committees, subcommittees, and special committees may meet by telephone conference call and take action by mail ballot.

Section VI. Except as otherwise provided in these Bylaws, each standing committee shall have one member appointed by the chief executive officer of each of the three sections of the Association who shall serve concurrently with such chief executive officer, and such additional members as the president may appoint who shall serve concurrently with the president.

Article VI: Sections

Section I. The sections of the Association shall be the Parents' Section, the Oral Hearing Impaired Section, and the International Organization for the Education of the Hearing Impaired Section. The affairs, property, and business of the sections of the Association shall be subject to management by the Board of Directors.

Section II. Each section of the Association shall have bylaws compatible with the objectives of the Association and approved by the Board of Directors. The bylaws of each section of the Association shall contain provisions that, among other things, (a) set forth the objectives of such section, (b) establish eligibility requirements for

membership in such section, which shall include the requirement that each member of such section be a member in good standing of the Association, and (c) establish procedures for the election of a chief executive officer of such section, and such other officers as may be desired. The sections of the Association shall not have boards of directors. The chief executive officer of each section of the Association shall be a voting member of the Executive Committee, ex officio, and he/she shall appoint from among the members of his section a person to be a voting member of each other standing committee of the Board of Directors, such power of appointment to be exercised in accordance with the provisions of Section IV of Article V.

Section III. Each member in good standing of the Association, upon satisfying the eligibility requirements for membership in one or more sections of the Association, shall be entitled to membership in such section or sections.

Article VII: Chapters

Section I. Definition and Purpose—A Chapter shall be a locally organized unit of the Association, so constituted that its membership includes parents (or persons in parental relationship) and grandparents, oral hearing impaired adults, professionals, and other interested individuals. At least one professional, one oral hearing impaired adult, and one parent (or person in parental relationship) shall have membership on the Chapter's Board of Directors, unless good cause is shown why that is unfeasible. Each Chapter in North America will be organized within state or provincial boundaries; Chapters in other parts of the world will be defined within boundaries determined by that local area. The purposes of Chapters are to further the charitable, educational, scientific, and other goals of the Association at the local level and the international level as well, to provide opportunity for the involvement of more individuals in furthering these goals, to develop more and effective leadership to enhance the Association and to create more visibility for the Association with its membership.

Section II. Membership—All persons interested in the goals and purposes of the Association may form the local Chapter. At least fifty-one percent (51%) of Chapter membership with a minimum of 10 (or the total Chapter membership if such is less than 10) shall be national/international members of Alexander Graham Bell Association for the Deaf. The minimum requirement for fifty-one (51%) in national/international membership may be waived for a given chapter by a two-thirds (2/3) vote of the Association Board of Directors based upon good cause shown. Members shall be defined, rolls maintained and a roster of members (names, addresses, and status) sent annually to the national office of the Association. All Chapter members are to be highly encouraged to join the Alexander Graham Bell Association for the Deaf. The members of the Alexander Graham Bell Association shall be deemed full members of the Chapter; those individuals who are not Alexander Graham Bell Association for the Deaf members shall be deemed associate members of the Chapter. All Board members and officers of the Chapters must be members of the Alexander Graham Bell Association for the Deaf.

Section III. Charter of Chapter—A request for issuance of a charter shall be made by written application to the Association, to include or be accompanied by such documents and information as the Board may require. A charter may be issued only to a nonprofit organization which satisfies each of the following requirements: (a) it is expressly organized and operated exclusively for one or more of the following purposes, namely, "charitable," "educational," and "scientific" as those terms are used in Section 501(c) (3) of the United States Internal Revenue Code of 1954 (or the equivalent codes of other countries), as amended and, therefore, is tax exempt; (b) its articles of incorporation reflect that it is a Chapter of the Alexander Graham Bell Association for the Deaf and that the corporation's purposes are to be co-extensive with the purposes of the Alexander Graham Bell Association for the Deaf; (c) it has not been determined to be a "private foundation" within the meaning of Section 509(a) of the United States Internal Revenue Code of 1954 (or equivalent codes of other countries), as amended; and (d) it has entered into a Chapter agreement with the Association as follows: (1) to operate exclusively for all objects of the Association as set forth in the Association's Constitution and Bylaws, as the same may be amended from time to time; (2) to limit its membership to persons who reside within the state or

province (or defined area of countries besides U.S. and Canada); (3) to submit to the Association for prior approval or disapproval each proposed amendment to its governing instruments; (4) to submit to the Association within sixty (60) days after the close of each of its fiscal years current statements of its financial operations, sources and application of funds, financial position, and operating budget; (5) to submit membership rolls (names, addresses, and status) by October 1 of each year to the national offices; (6) to conduct all fundraising activities, conferences, and meetings within such guidelines as may be established by the Association; and (7) to submit such additional documents and information and conduct its affairs and finances in such a manner as the Association may from time to time require or direct.

All Chapters in good standing shall include the name of the Association as part of its name (example, ____ Chapter of the Alexander Graham Bell Association for the Deaf). No Chapter shall have the power to incur any debts, liabilities, duties, or obligations whatsoever in the name or on behalf of the Association. No Chapter shall have or exercise any right, benefit, or privilege of the Association not expressly conferred on Chapters by the provisions of this Article.

Subchapters within states or provinces may be formed, subject to the oversight of their respective Chapters; they shall have no formal charter or structure and, in cases where they exist in metropolitan areas that cross state or provincial boundaries, may cooperate and jointly sponsor and participate in activities, but shall remain subject to each Chapter's supervision, wherever such Chapters are involved.

Section IV. Approval and Revocation—The Board, upon the vote of at least two-thirds (2/3) of those Directors present and voting, may authorize issuance of a provisional or permanent charter to an organization, thereby conferring upon such organization the status of a Chapter of the Association. Charters shall be issued in the name of the Association, signed by the president or the president-elect, and attested and sealed by the secretary or an assistant secretary. The first charter issued to a particular organization shall be a provisional charter which shall by its terms expire two (2) years from the date of issuance unless a sooner expiration date is fixed by the Board. A subsequent charter issued to such organization may be provisional or permanent, as the Board may direct. The Board, upon the vote of at least two-thirds (2/3) of those Directors present and voting, may at any time with or without cause revoke any charter, such revocation to be effective immediately upon mailing to the Chapter involved of a certified copy of the Board's resolution of charter revocation.

Section V. Representation—Each Chapter will be encouraged to send one elected delegate to the Biennial Convention of Alexander Graham Bell Association for the Deaf to an appropriate forum where opportunity for communication, expressions of concern, and recommendation of resolutions for Board action will result.

Article VIII: Miscellaneous

Section I. The Association considers that the promotion of the maximum use of residual hearing in the education of deaf children is included among the objectives of the Association as set forth in Article II, Section I of the Constitution.

Section II. These Bylaws may be amended by the Board of Directors at any annual or special meeting upon the vote of at least two-thirds (2/3) of those Directors present and voting, provided that notice of the proposed amendment shall have been submitted in writing to the Directors at least fifteen (15) days prior to the meeting.

Section III. The Board of Directors may adopt such standing rules for the Association as it may deem necessary and proper and it may amend, alter, or suspend the same.

Section IV. Roberts Rules of Order (newly revised edition) shall govern the Association in all cases in which they are applicable and in which they are not inconsistent with these Bylaws, and any special rules of order the Association may adopt.

Section V. For purposes of these Bylaws, the singular number shall be deemed to include the plural number, and vice versa, and a reference to any one gender shall be deemed to include both genders.

Section VI. Each person who is or becomes a party to a legal proceeding or who is threatened with becoming a party to a legal proceeding by reason of his/her having

been or being an Association official shall, if he/she acted in good faith and so long as he/she cooperates fully with the Association and its attorneys and insurers, be indemnified against all costs of the legal proceeding. As used in this Section VI: The term "legal proceeding" includes any judicial, administrative, or investigative suit or action, whether civil or criminal; the term "Association official" means Director, officer, employee, committee member, agent, or appointee of the Association, but it does not include a person whose only affiliation with the Association is that of Association member, section member, or Chapter member; the term "acted in good faith" means acted in a manner reasonably believed to be in the best interest of the Association and without reasonable cause to believe that the conduct was unlawful; and the term "costs of the legal proceeding" includes all costs, expenses, attorney's fees, judgments, damages, fines, and penalties incurred by reason of, or imposed as a result of, the legal proceeding, and amounts paid to settle the legal proceeding.

Standing Rules (Revised: August, 1992)

Alexander Graham Bell Association for the Deaf, Incorporated

1. Annual Membership Dues

Membership Class	*Dues*
a. Regular Member	$ 40
b. Husband/Wife Members	$ 50
c. Two year individual membership	$ 74
d. Parent of hearing-impaired child (no *Volta Review*)	$ 30
e. OHIS renewing member (no *Volta Review*)	$ 30
f. Student Member	$ 20
g. Retired Member (over 65)	$ 20
h. Life Member	$750
i. OHIS Junior Member	$ 0

2. Any member shall be free to apply for membership in IOEHI, OHIS, and/or the Parents' Section.

3. Benefits for most categories of membership shall include:
   a. 15% discount on all Bell Association publications
   b. Voting privileges
   c. *Volta Review* subscription
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   f. Finance and Investment Committee, the chairperson of which shall be the Treasurer, *ex officio*
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   h. Financial Aid Committee
   i. Library and Information Services Committee
   j. Membership Committee
   k. Oral Interpreters Committee
   l. Personnel Policies Committee
   m. Planning Committee
   n. Public Relations Committee
   o. Publications Committee
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Book Reviews

Independence Without Sight or Sound: Suggestions for Practitioners Working with Deaf-Blind Adults, Dona Sauerburger, American Foundation for the Blind, 1993, 194 pages, soft cover, $35.00.—This book begins with a very apt statement. The author says, "We can never know what it is like to be both deaf and blind unless we are. I believe that it is both more awesome and less awesome than we imagine." On the other hand, the process of serving deaf-blind clients can be awesome to the person who has never done so before. The author, an orientation-mobility specialist for the deaf-blind, has prepared this book to help service providers gain insights and information on serving the unique needs of these special clients.

Dona Sauerburger writes in a clear and practical manner on topics that have immediate practical value to orientation-mobility instructors and others who serve persons who are both deaf and blind. This book is particularly valuable since there have been few major publications that concentrate on techniques for serving this special population.

This valuable book begins with a well written chapter on communication with deaf-blind persons, including strategies and courtesies for use when working with them, and a well stated philosophy of teaching people who are deaf-blind. The descriptions of various forms of sign language and the uses of interpreters are particularly insightful.

Chapter two is a clearly written treatise on methods of communication with persons who are deaf-blind. Various strategies are presented in clear and descriptive terms. The methodologies are accurately presented and immediately useful. The sections in chapter two that present strategies for problem-solving "when communication breaks down" and various methods for communication are valuable in their practicality.

Chapters three, four, five, and six present insightful information that has immediate application for deaf-blind persons and those who serve them. Chapter three presents practical information on communication with strangers and the public. Information on anticipating responses of the public to deaf-blind persons and methods for successful communication is presented in a straightforward and practical manner.

Chapter four is written on the topic of interaction with the public. The information has immediate practicality in terms of going about one's daily life on an independent basis, including establishing guidelines for O and M lessons in public, situations to be avoided, if possible, and being identified as deaf-blind.

Chapter five, on the topic of isolation, provides strategies on avoiding isolation and, on the other hand, adjusting to isolation since it is sometimes unavoidable. The discussion of hallucination and isolation is important, and it will provide solace to those who experience these disconcerting episodes.

Chapter six provides important information on assertiveness and its impact on one's independence, and the need for significant others in the deaf-blind person's life to assist in promoting his or her independence. This is a well expressed chapter, and one that should be read by all who serve people who are both deaf and blind, including their families.

Chapters seven, eight, and nine provide practical guides for orientation and mobility instruction on behalf of deaf-blind persons. Chapter seven presents specific strategies that can be utilized by O and M instructors including sighted guide techniques, cane techniques, coping with balance difficulties, the use of remaining senses, and other information, including the use of electronic travel aids, and orientation and mobility in specific situations including shopping, public transportation, the use of guide dogs, and others.

Chapter eight presents comprehensive information on street crossings for O and M training. The topics include detecting vehicles, decisions about crossing without assistance, soliciting aid to cross streets, the use of electronic devices, and other pertinent topics.

Chapter nine is a treatise on teaching orientation and mobility to people with limited language skills. This practical chapter provides insights on strategies for instruction on behalf of deaf-blind persons who may also be developmentally disabled, or otherwise possess limited language skills, including the important topics of assessment, orientation and mobility, and teaching the client to handle an emergency.

The remaining sections of this book involve three appendices that include information on instructions for making a mobility muff, experiments in sensory deprivation, and a survey of guide dog schools. A valuable glossary is the final section of the book.

This book is a must for all those who serve, or will be serving, persons who are both visually and auditorilly disadvantaged. It may become a classic.—*Raymond H. Hull, Ph.D., is professor of communicative disorders and sciences, audiology and director of Speech-Language-Hearing Clinics, The Wichita State University, Department of Communicative Disorders and Sciences, Wichita, KS.*

Psychological Development of Deaf Children, Marc Marschark, Oxford University Press, Inc., 1993, 275 pages, hard cover, $39.95.—As a professor at the graduate level, I have long searched for a book on psychological aspects related to deafness suitable for masters and doctoral level students. It is gratifying to come across such a book that addresses crucial issues covering the psychological development of deaf children in a scholarly, yet thought-provoking manner through critical examination and integration of research data. The perspective is that of an empirical psychologist using a cognitive orientation to refine what is known and clarify research needs. The oral-manual diatribe is abandoned in favor of thoughtful exploration of the implication of research findings in terms of what works and what does not work, taking into account methodological considerations in the research process with deaf children.

Chapters of this book cover the following areas: the nature and scope of deafness, the social-emotional context of development, social and personality development during the school years, language development/language acquisition, intelligence and cognitive development, development of memory coding for short term and long term memory, issues of creativity and flexibility, and learning to read and write. The language portion covers both oral and sign language considerations, with particular focus on the latter. Social, cognitive, and linguistic development is explored from the perspective of how processing occurs.

In all areas covered, the author notes that generalized findings are subject to a multitude of intervening variables, including but not limited to whether parents are deaf or hearing, parental education, level of parent-child communication, and child rearing patterns, all of which prevent definitive answers at present. The fact that there are successful achievers in various research groupings who academically achieve on par with hearing peers, including oral and signing groups, deaf children of hearing or deaf parents who use either speech or signs, mainstream and specialized school populations, etc., seems to be obfuscated by group findings which come across as deficient despite the presence of basic, universal capacities for optimal development and despite attempts to use a difference instead of a deviance model. The existence of very real problems is noted in light of the remarkable resiliency of many deaf children.

The author sums up the book by noting three crucial factors for deaf children's competence in dealing with the world. The first factor is the need for early accessible language experience, regardless of mode. The second factor focuses on diversity of experience to facilitate the acquisition of knowledge. The third prerequisite is that of social interaction which leads to the ability to benefit from experience. All these are facilitated by mothers attuned to a child's needs and participating in early parent intervention programs, the presence of optimal parent-child communication, and communicative access to peers.

This book is not a typical "how to do" book for parents and professionals. Rather, it poses questions for educators, psychologists, speech and hearing specialists, and other professionals, as well as parents involved in the development of deaf children regarding the best means of facilitating that development. As such, it is a valuable contribution to the field.—*Irene W. Leigh, Ph.D., is an associate professor in the Department of Psychology at Gallaudet University in Washington, DC.*

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Donald R. Calvert, Ph.D.
Foreword by Hallowell Davis, M.D.

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CALIFORNIA

Auditory-Verbal Services, Karen Rothwell-Vivian, M.S.Ed. M.A. CCC, 10645 Costello Drive, Tustin, CA 92680, (714) 573-5825.

ECHO Center, Educational Centers for Hearing Opportunities, 3430 McManus Ave., Culver City, CA 90232, (310) 838-2422 voice and (310) 202-7201 TTY, Connie Rubsamen, Director.

HEAR Center, 301 East De' Mar Blvd., Pasadena, CA 91101, (213) 681-4641, (818) 796-2016.

Listen and Learn, Marsha A. Haines, M.A., CED, 4340 Stevens Creek Blvd., Suite 107, San Jose, CA 95129, (408) 345-4949.

Oralingua School for the Hearing Impaired, Inc., An Auditory/Oral Program Serving Children from Infancy to 10 years, 7056 South Washington Avenue, Whittier, CA 90602, (310) 945-8391, (714) 523-4570.

Richard G. Lewis, Ph.D., Auditory-Verbal Therapist, 1330 San Bernardino Rd., Ste. K, Upland, CA 91786, (909) 946-6476.

Sylvia Rotfleisch, Aural Habilitation/ Auditory-Verbal Therapist, 133 S. LaJolla Ave., Los Angeles, CA 90048, (213) 653-8765.

John Tracy Clinic, 806 West Adams Blvd., Los Angeles, CA 90007, (800) 522-4582 or (213) 748-5481, Dr. James H. Garrity (birth-5 years).

Jean Weingarten Peninsula Oral School for the Deaf, 2525 Buena Vista Avenue, Belmont, CA 94002, (415) 593-1848, Kathleen Daniel Sussman, Director.

CANADA

Institut Raymond-Dewar, 3600 Berri Street, Montreal, Quebec, H2L 4G9, CANADA, Anne de la Durantaye.

Auditory-Verbal Therapy Programme (VOICE, Toronto Chapter & N.Y.G.H.), North York General Hospital, 4001 Leslie Street, North York, Ontario (Toronto), CANADA, M2K 1E1, Warren Estabrooks, B.A., M.Ed., Dipl. Ed. Deaf, Clinical Director, PH. & TDD (416) 756-6354 FAX (416) 756-6727.

CENTRAL SPEECH & HEARING CLINIC, Auditory-Verbal Services for Hearing Impaired Children, c/o Victoria General Hospital, 2340 Pembina Highway, Winnipeg, Manitoba, CANADA R3T 2E8, (204) 477-3298.

Language and Speech Services for the Hearing Impaired, Department of Communication Disorders, Glenrose Rehabilitation Hospital, 10230-111 Avenue, Edmonton, AB, Canada TG5 0B7 (403) 471-2272, (403) 471-7976 (FAX), (birth to 5 years).

Montreal Oral School for the Deaf, 5851 Upper Lachine Rd., Montreal, Quebec, H4A 2B7, CANADA, (514) 488-4946, FAX (514) 488-0802.

Saskatoon Public School Programs for Hearing Impaired, Saskatoon Board of Education, 405 Third Ave. South, Saskatoon, Saskatchewan, S7K 1M7, CANADA, (306) 244-2211, (preschool through high school).

The Vancouver Oral Centre, An Auditory-Oral Program for Hearing-Impaired Children, 4824 Commercial St., Vancouver, British Columbia, V5N 4111, CANADA, (604) 874-0255.

VOICE for Hearing-Impaired Children, 124 Eglinton Ave. W., Suite 420, Toronto, Ontario, M4R 2G8, CANADA.

COLORADO

HEAR AT HOME, 2374 South University Blvd., Denver, CO. 80210, (303) 777-6187.

The Listen Center, 3535 South Sherman, Suite 200, Englewood, CO 80110, (303) 781-9440.

CONNECTICUT

CREC Hearing Impaired Program, Stillman School, 129 Hartford Ave., Wethersfield, CT 06109, (203) 529-4260 voice/TDD.

DISTRICT OF COLUMBIA

Speech and Hearing Center, The George Washington University, 2201 G Street, NW, Suite 407, Washington, DC 20052, (202) 994-7360, Voice and TTY, Certified Audiologists offering a full range of hearing services, including: hearing and hearing aid evaluation and dispensing, aural rehabilitation, speechreading and auditory training.

FLORIDA

AUDITORY VERBAL INSTITUTE, INC., 180 Edinburgh Dr., Winter Park, FL 32792-4109, (407) 629-HEAR (4327).

Ralph J. Bauduin Oral School of Nova University, 3375 SW 75th Ave., Fort Lauderdale, FL 33314, (305) 475-7324.

BOLESTA CENTER: Auditory-Verbal Program, 7205 N. Habana Ave., Tampa, FL 33614, (813) 932-1184, Voice, FAX (813) 932-9583.

Orange County Auditory-Oral Program for the Hearing Impaired, Kaley Elementary School, 1600 E. Kaley Avenue, Orlando, FL 32806, (407) 897-6420,(407) 897-6450 (FAX).

GEORGIA

Auditory Education Center: Auditory-Verbal Program, 1447 Peachtree Street, Suite 210, Atlanta, GA 30309-3034, (404) 815-4321, (404) 815-4333 (FAX).

KENTUCKY

Lexington Hearing & Speech Center, Licensed Audiologist/Speech Pathologist, Hearing Impaired Preschool, 162 North Ashland Avenue, Lexington, Kentucky 40502,(606) 268-4545.

ILLINOIS

Susan J. Berlow, M.A. CED Ltd., Auditory Habilitation, 150 East Huron, Suite 907, Chicago, IL 60611, (312) 337-8060.

Hearing Education Program, Charles W. Christie Foundation, Jody A. Brekke, M.S., CCC-A, Coordinator, Licensed Audiologist, 147-000454, 101 W. University Avenue, Champaign, IL 61820, (217) 351-351-9669 voice, (217) 337-1387 TTY.

MARYLAND

Auditory Program, Montgomery County Public High Schools, Mark Twain Center, 14501 Avery Road, Rockville, MD 20853, (301) 279-4969 (V/TTY).

MASSACHUSETTS

Auditory-Verbal Communication Center, 544 Washington St., Gloucester, MA 01930, (508) 282-0025, James G. Watson and Lea D. Watson, (birth-adult).

Clarke School for the Deaf, Center for Oral Education, Round Hill Road, Northampton, MA 01060, (413) 584-3450 (V/TTY), (413) 586-6644 (FAX), Dennis Gjerdingen, president. Boarding and day school, Summer Programs for Hearing-Impaired Students, The Mainstream Center, The Assistive Devices Center, The Center for Audiological Services, The Harriette Short Smith Center for Families and Young Children, Comprehensive Educational Evaluations, Smith College/ Clarke Teacher Education Program.

Project Bridge, Inc., Comprehensive Program for Mainstreaming Hearing-Impaired Children, 10 Yale Blvd., Beverly, MA 01915, Jane E. Driscoll, (508) 887-8674, and June A. Reynolds, (508) 927-2765.

Perkins School for the Blind, 175 North Beacon St., Watertown, MA 02172, (617) 924-3434.

MICHIGAN

Grand Rapids Oral Deaf Program, 2036 Chesaning, SE, Grand Rapids, MI 49506, (616) 771-3070, Auditory/Oral Day Program, 125 Students Birth to 25 years, Staff: 30.

MISSISSIPPI

Magnolia Speech School, Inc., Services for Hearing, Speech/Language Impaired Children, 733 Flag Chapel Road, Jackson, MS, 39209, (601) 922-5530.

School for Children with Language Disorders, Maureen K. Martin, Director, AA/EOE, The University of Southern Mississippi, Box 10035, Hattiesburg, MS 39406-0035, (601) 266-5223.

MISSOURI

Central Institute for the Deaf, Hearing, Language and Speech Clinic, 818 South Euclid Ave., St. Louis, MO 63110, (314) 652-3200.

St. Joseph Institute for the Deaf, Private auditory/oral, day-residential program, 1483 82nd Blvd., University City (St. Louis), MO 63132, (314) 993-1507, Sr. Joyce Buckler, Ed.D., Principal (birth-grade 8).

NEBRASKA

Boys Town National Research Hospital, 555 North 30th Street, Omaha, NE 68131, (402) 498-6540.

Omaha Hearing School for Children, Inc., 1110 North 66th St., Omaha, NE 68132, (402) 558-1546.

NEW JERSEY

Summit Speech School for the Hearing-Impaired Child, 34 Upper Overlook Rd., Summit, NJ 07901, (908) 277-3353 (voice/ TDD), Claire Kantor, Executive Director (birth-5 years).

NEW YORK

Albert Einstein College of Medicine/ Montefiore Medical Center, Bronx Municipal Hospital Center, Division of Audiology, 1300 Morris Park Avenue, Room 5C8-Van Etten, Bronx, NY 10461, (718) 920-2333 (V/TTY), (718) 918-7710 (FAX), also a deaf relay number in New York state—(1-800) 421-1220.

AUDITORY-VERBAL SERVICES, Catherine McEnroe, CCC, 1428 Oneida Street, Utica, NY 13501, (315) 792-7638, FAX (315) 738-0513, Syracuse office: 1200 E. Genesee Street, Suite 307, Syracuse, NY 13210, (315) 442-3046.

BOCES Hearing Impaired Program, Bethpage High School Annex, Cherry Avenue, Bethpage, NY 11714. (516) 931-8507 or (516) 931-8596 TTY.

The Lexington Center, Inc., Lexington School for the Deaf, The Lexington Hearing and Speech Center, Inc., The Lexington Center for Mental Health Services, Inc., services to deaf, hearing and speech impaired from infancy to elderly, licensed by State of New York Mental Health Clinic and Hearing and Speech Center. Accredited School for the Deaf by New York State Education Department., The Lexington Center, Inc., 30th Avenue and 75th Street, Jackson Heights, NY 11370, (718) 899-8800 voice/TTY, (718) 899-3030 TTY only.

New York League for the Hard of Hearing, 71 West 23rd St., New York, NY 10010, (212) 741-7650 voice or (212) 255-1932 TTY, (212) 255-4413 (FAX).

Rochester School for the Deaf, 1545 St. Paul St., Rochester, NY 14621.

NORTH CAROLINA

Cued Speech Early Education Program - An Auditory/Oral/ Cued Speech Program for Deaf and Hard-of-hearing Children and Their Families, Cued Speech Center, P.O. Box 31345, Raleigh, NC 27622, (919) 828-1218 voice/TDD.

OHIO

The Cincinnati Speech and Hearing Center, 3021 Vernon Place, Cincinnati, OH 45219, (513) 221-0527 voice or (513) 221-3300 TTY.

St. Rita School for the Deaf, 1720 Glendale-Milford Rd., Cincinnati, OH 45215, (513) 771-7600 (birth-12).

OKLAHOMA

Auditory-Oral Therapy for Children and Adults, Gail P.Fine, M.A., M.S., CCC, Licensed Audiologist and Certified Teacher of the Hearing Impaired, Edmond, OK, (405) 340-9191.

Jane Brooks Oral School for the Deaf, 226 S. 7th, P.O. Box 669, Chickasha, OK 73018 (405) 224-3500.

OREGON

Tucker-Maxon Oral School, David DeWeese Hearing Center for Children, Children's Cochlear Implant Center, 2860 SE Holgate Blvd., Portland, OR 97202, (503) 235-6551.

PENNSYLVANIA

Archbishop Ryan School for Children with Hearing Impairment, Parent-Infant through Elementary Grades, 3509 Spring Garden, Philadelphia, PA 19104, (215) 387-1711 or (215) 386-1678.

Auditory-Verbal International, Inc. (AVI), Helping children who are hearing impaired learn to listen and speak., 305 First Fidelity Bank Building, 6 South Third Street, Easton, PA 18042, PHONE (215) 253-6616; FAX (215) 253-6709, TDD (215) 253-4434.

Delaware County Intermediate Unit#25, Programs and Services for the Hearing Impaired, Robert C. Gauntlet Comm. Ctr., 32 Media Line Rd., Newton Square, PA 19073, (215) 325-0396.

Helen Beebe Speech and Hearing Center, Non-profit organization, Auditory-Verbal Therapy, Five Day In-Residence Program known as the Larry Jarret House for families and professionals, Comprehensive Audiology Services, Hearing Health Care Services for all ages, 505 Cattell Street, Easton, PA 18042, (215) 253-5374, or (215) 252-3461, FAX (215) 253-9480, Satellite Office in Paoli, PA, (215) 644-5009.

The De Paul Institute, Castlegate Ave., Pittsburgh, PA 15226, (412) 561-4848.

TENNESSEE

Bill Wilkerson Center, Early Intervention Program, 1114 19th Ave. South, Nashville, TN 37212, (615) 320-5353.

The Memphis Oral School for the Deaf, 711 Jefferson, Memphis, TN 38105, (901) 577-8490.

TEXAS

Denise Gage, M.A., CCC, Speech-Language Pathologist, Auditory/Verbal Therapist, 5600 W. Lovers Lane, Suite 232, Dallas, TX 75209. (214) 357-4344 or (817) 460-0378.

Houston School for Deaf Children, Sheryl Jorgensen, Executive Director, 3636 West Dallas, Houston, TX 77019. (713) 523-3633 voice, (713) 523-8399 TDD.

Sunshine Cottage School, 103 Tuleta Dr., San Antonio, TX 78212, (210)824-0579 (birth-high school), Carolyn Walthall, Interim Director.

WASHINGTON

Carol Randall, M.Ed., ASHA, CCC-SPL, CCC-A, Auditory-Oral Teacher and Speech-Language Pathologist, 12500 Riviera Pl. NE, Seattle, WA 98125, (206) 364-7013.

Star Leonard-Fleckman, Auditory-Oral Education for Hearing-Impaired Children, 5041 Ivanhoe Pl. NE, Seattle, WA 98105, (206) 525-7256.

Schools, clinics, hearing societies, auditory-verbal therapists, and teachers of speechreading may be listed in these pages for $80 a year, payable in advance. Yearly deadline: November 6.

Alexander Graham Bell Association for the Deaf

1994

Financial Aid Award

For moderately to profoundly oral children and youth who are hearing impaired attending a nondiscriminatory independent school. (Note: public school programs do not qualify.)

Eligible Applicants:

- are enrolled full time in, or have been accepted by, a nondiscriminatory independent or parochial elementary, junior high, or high school for students with *normal hearing*;
- have been moderately to profoundly hearing impaired since birth or before acquiring language; (average 55 dB or greater hearing loss in better ear in speech frequencies of 500, 1000, 2000 Hz);
- use speech and residual hearing and/or speechreading as their primary form of communication;
- must be at least five years old by January 1, 1994 and less than 21 by December 31, 1994; and
- demonstrate financial need.

Note: college programs do not qualify, only elementary or secondary school programs.

Deadline for requesting applications is April 15, 1994.
All application materials must be postmarked by May 1, 1994.
For application forms, write:

Financial Aid Award
Alexander Graham Bell Association for the Deaf
3417 Volta Place, NW
Washington, DC 20007-2778