

Deaf Professionals' Views on the Importance of Features of Simultaneous Communication

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Focus group discussions with 36 professionals who are deaf/hard of hearing and "consumers" of Simultaneous Communication (SC) were conducted which resulted in differentiation of 42 categories of comment related to SC further classified into seven major domains of comments. Participants' rankings of most important features of SC indicated recognition of the bimodal and complex nature of SC. The results provided some insight into participants' perceptions of the relationship between the oral/aural and sign components of SC. In addition, other domains related to "attitude, sensitivity, and culture" as well as general "communication strategies" were suggested as important considerations for effective SC.

Simultaneous Communication (SC), which involves simultaneous use of speech, signs, and fingerspelling, is currently widely used in educational programs for deaf students at all levels (Akamatsu, Stewart, & Bonkowski, 1988; Caccamise & Newell, 1984). In practice, SC occurs in two forms: (a) a more-or-less literal mapping of manual signs for English morphemes (e.g., in SEE-like systems; Luetke-Stahlman & Moeller, 1989) or (b) a "conceptually accurate" or semantically based use of signs representing the meanings and co-occurring with the spoken message. This study involved SC of the second variety. One reason for its widespread use may be that it can accommodate the wide range of communication preferences and skills of deaf and hard-of-hearing students (Mallery-Ruganis & Fischer, 1991; VanBinsbergen, 1990).

Simultaneous Communication can be more or less successful with respect to its comprehensibility and aesthetic qualities. Previous research and discussion has suggested that at least six factors influence the effectiveness of SC.

1. *Grammaticality of sign production.* Some studies such as those by Kluwin (1981), Marmor and Pettito (1979), Swisher and Thompson (1985), and Strong and Charlson (1987) have focused on the adequacy with which the visual/gestural

component of SC represents English. The studies have demonstrated that there is a tendency to omit from the sign channel certain elements that were spoken. Many people find it difficult to sign exactly everything that is said (Maxwell, 1990). One reason persons may not sign everything is because they have not undergone sufficient training or practice. Luetke-Stahlman (1988) reported that teachers with extensive training and practice in manually coded English can learn to simultaneously provide a manual code that corresponds to their speech. She found that all seven teachers in her study were able to simultaneously sign the elements of their spoken sentences with above 90% accuracy.

A second reason certain elements in the spoken message are often not signed may be that a visually effective production of the corresponding signs does not necessarily include all the spoken elements. In using SC, people tend to mix features of both English and American Sign Language (ASL) (Lucas & Valli, 1989; Maxwell, 1990). Stewart (1989) suggests that in using SC, teachers include features of ASL, such as negative incorporation (e.g., DON'T-WANT), and such signing results in a sequence of elements somewhat different than the spoken one. Other features of ASL that may be incorporated into SC have also been noted (Stewart, 1989; Winston, 1989).

2. *Semantic congruity of the spoken and sign components of SC.* Maxwell and Bernstein (1985) examined the adequacy of the semantic representation of signing in relation to speech. They concluded that the two channels are overwhelmingly equivalent in terms of meaning when used in the hands of skilled communicators. Although there is generally not a one-to-one match between the spoken and signed elements of the utterance, the message can still be coherent and comprehensible (Maxwell, 1990; Maxwell & Bernstein, 1985).

One important aspect of the correspondence between the meanings of the spoken and signed messages appears to be the conceptual accuracy of the sign, which should indicate the meaning of the word (Winston, 1989). For example, the word "get" would be signed differently for the sentences "I got the book" (GET), and "I got sick" (BECAME) (Winston, 1989).

3. *Effective use of speech and mouth movement.* Simultaneous Communication requires speaking or mouthing the message as well as signing it. Winston (1989) discusses mouthing of English words during transliteration by interpreters, and her analysis seems applicable to SC. The spoken (or mouthed) channel provides a more complete, linguistic representation of the literal English message, while the signed channel provides an efficient representation of its meaning. For example, for the phrase "groups of people," the interpreter might mouth all of the words, but signs GROUP PEOPLE (Winston, 1989, p. 161). In addition, the speech or mouthing can reduce ambiguity when the sign has multiple meanings.

Simultaneous Communication may be both speech-driven and sign-driven. Akamatsu et al. (1988) reported that the SC of teachers was basically speech driven in the sense that sign production was modified to fit with a relatively unmodified speech channel. However, the choice of words spoken and the way

they are pronounced is influenced by the sign channel. Davis (1989) has noted that interpreters often alter the mouthed words to be congruent with the message produced on the hands, and it seems likely that people using SC select words and expressions that are compatible with their signing. The addition of signing may also alter features of speech, such as rate, phrasing, rhythm, stress, and intonation (Maxwell, 1990; Whitehead & Whitehead, 1988).

4. *Body language and facial expression.* Body language and facial expression are important for conveying information that is carried by stress and intonation in speech (Kluwin & Kluwin, 1983; Winston, 1989). These non-manual behaviors may convey emotional qualities, such as happiness, sadness, and so forth. In addition, body language and facial expression can serve to modify the meaning of the sign (Winston, 1989). Body language and facial expression are also used to convey grammatical information, such as question form (Baker & Padden, 1978; Baker-Shenk, 1985).

5. *Communication strategies.* Successful communication involves strategies to increase the effectiveness of communication for particular situations (Foster, Barefoot, & DeCaro, 1989; Roth & Speckman, 1984). One strategy is to use fingerspelling to support signs, such as to indicate a particular English word when the sign may have multiple translations (Akamatsu et al., 1988; Davis, 1989). Another strategy is to switch from simultaneous speech and sign, with English-like word order, to sign alone, with greater emphasis on ASL features for a limited segment of a passage (Akamatsu et al., 1988; Lucas & Valli, 1989; Stewart, 1989). A strategy that appears to be important in an extended discussion is to clearly indicate the transition from one subtopic to another by using pauses (Kluwin & Kluwin, 1983).

6. *Affect.* Effective communication also involves transmission of appropriate affect (Robinson, 1972; Woolfolk & Brooks, 1983). Cues such as distance, posture, facial expression, and hesitation contribute to the aesthetics and comfort of the communication (Woolfolk & Brooks, 1983). Showing respect for and knowledge of Deaf culture also increases the likelihood that deaf people will respond positively (Kannapell, 1989).

Purpose

One way to assess the importance of the various features of SC would be to ask knowledgeable consumers (i.e., deaf people who have experience communicating with SC signers) for their perceptions. The approach of asking deaf consumers, however, has rarely been used. One of the few exceptions was Kautzky-Bowden and Gonzales' (1987) survey of deaf adults' preference regarding sign systems used in the classroom with deaf students. This approach is in contrast to what has often been done. Typically, researchers have analyzed samples of SC and then, on the basis of a theoretical framework (e.g., linguistic theory), drawn conclusions regarding its effectiveness, such as adequacy in conveying an English message (e.g., Marmor & Petitto, 1979).

What features of SC would deaf persons identify as important for effective

communication? The present study obtained information on categories of descriptors of SC provided by deaf professionals, and rankings of these categories in terms of importance. For purposes of this work, effective communication was defined as that which is "easy to understand" and "comfortable and enjoyable to watch." A focus-group interview methodology was employed to generate categories of SC and a ranking procedure was used to obtain opinions regarding the relative importance of different categories (Calder, 1977).

METHOD

Characteristics of Participants

Deaf and hard-of-hearing faculty and staff at the National Technical Institute for the Deaf participated in the focus groups. (Hereafter, we will use the term "deaf" to refer to all participants.) Each person was asked to fill out a questionnaire about his or her hearing loss, communication preference, and educational background. Ten of the 36 participants described their unaided hearing level as moderate to severe (40-95 dB) while 26 reported a profound hearing level (95 dB or greater). Seventeen reported that they wear a hearing aid "all the time"; 2, "sometimes"; 14, "never"; and 3 did not respond.

Signing was learned by 8 respondents before age 5, by 5 between 6-15 years, and by 23 at the age of 16 or older. When asked how they most like to communicate with other deaf people, many of the participants selected more than one response: 14 selected ASL, 20 selected sign English without voice, 16 selected sign English with voice, and 1 selected speech only. This information was used to help sort people into six different focus groups based on degree of preference for and background in signing. Those assigned to Groups 1, 2, and 3 had stronger preferences for signing than did those assigned to Groups 4, 5, and 6.

To assist further in selection of participants for the focus groups respondents were asked about the schools attended (residential school or public schools – either in special classes or mainstreamed), years of enrollment, and availability of support services if enrolled in a school with hearing students. Those assigned to Groups 1 and 2, except for one person, had most of their education experience in schools where there was a stronger communication preference for signing. The average proportion of educational time spent in residential schools was 79% in Group 1 and 87% in Group 2 (Group $n = 5$ and 4, respectively). Those in Groups 3, 4, 5, and 6 had most of their education in schools where there was a stronger preference for oral communication. The average amount of time in public schools was 96% for Group 3, 100% for Groups 4 and 5, and 64% for Group 6. (Four of the 6 participants in Group 6 spent a significant portion of time in oral day or residential schools.) (Group $n = 5, 6, 7,$ and 8, respectively.)

Procedure

Six focus groups held discussions of approximately 2 hours that were com-

prised of three parts (Bogdon & Biklen, 1982; Calder, 1977). The first part was a general brainstorming session, which lasted approximately 1 hour. Participants were asked to think about persons who express themselves very well using sign and speech together and to "picture" these persons communicating. With this context, participants were asked the following questions:

1. What is the person doing that makes his/her communication clear and easy to understand?
2. What is the person doing to make his/her communication enjoyable to watch, "read," and perhaps, hear.

In the second part, which lasted about 50 minutes, participants watched three videotapes, each 3 minutes in length, of signers using SC. Participants sat approximately 2-to-3 m from the 19 in. (48 cm) monitor. The playback showed the upper body of the signer with the hands, fingers, and mouth movements clearly visible. The first signer was deaf and had been signing for approximately 55 years. The second signer was a hearing child of deaf parents who had been signing for approximately 50 years and the third was a hearing professional who had been signing for approximately 20 years. After each videotape, participants were asked to further discuss ideas regarding the strengths and weaknesses of each signer as related to the two questions posed in the first part. Participants viewed one of the first two videotapes *with sound* and the other *without sound* in counterbalanced order. Participants also viewed half of the third videotape with sound and half without it. These variations were included to elicit further discussion of features of SC.

The third part of each focus group discussion, which lasted about 10 minutes, consisted of asking the participants to rank in order of importance on a blank sheet of paper the three most important aspects of SC that had been suggested during discussions in parts one and two. The moderator of the focus groups was a deaf professional.

The information generated during the focus groups was recorded in three ways: (a) a notetaker standing in front of the focus group took notes on newsprint which was taped to the walls for easy review, (b) the discussion was voice interpreted and recorded on audiotape, and (c) a videotape recording was made with two cameras. Typed transcripts were made from the audiotapes and were compared to the videotapes and revised as necessary. An analysis of these typed transcripts is presented in a separate report (Newell, Stinson, Castle, Mallery-Ruganis, & Holcomb, 1990).

RESULTS

Categories of Comments about SC

The approximately 400 statements written by the notetaker on the newsprint for all six focus group discussions were reviewed by two members of the project team to develop an initial list of categories, to which participants' comments

regarding SC could be assigned. This original list of categories was then revised after two other project team members independently read the typed transcripts of the six focus group discussions with the aim of refining the categories. This revised list was comprised of 42 comment categories which were grouped into the following seven domains:

1. *Expressive sign production features.* Clear sign production; position of hands and use of signing space; pausing; smoothness of signing; overall signing, overall intelligibility of signal; correct choice of sign vocabulary to represent meaning; grammatical features of visual/gestural modality; use of space; directionality; use of other ASL principles such as sign inflection; clear fingerspelling production.

2. *Aural/oral features.* Clear lip movement; use of voice.

3. *Simultaneous production features.* Match between fingerspelling, signs, facial expression, and voice intonation; match between fingerspelling and mouth movements; simultaneity of speech and sign; pace.

4. *Non-manual features.* Maintain eye contact, face one another while signing, cultural expectations regarding eye contact; body language, body movement; body shifts; facial expression.

5. *Relationship of English and ASL.* ASL mouth-movements versus speech mouth movements; relationship of English syntax to ASL syntax; degree of English representation in SC; sign systems; definitions of simultaneous communication.

6. *Communication strategies.* Distance between communicators as it affects sign production; ability to use both ASL and English signing, code switching; providing visual breaks when making a presentation; organization and presentation of thoughts and ideas; setting as it affects signing – classroom presentation versus one-on-one; strategies for reception of speech and sign and of ASL and English; use of fingerspelling to specify English words for emphasis and reinforcement.

7. *Affective domain: Attitude, sensitivity, and culture.* Internalization of deaf culture, cultural expectations; confidence when signing, relaxation level, comfort level; signing clearly communicates mood and attitude; sensitivity and respect for audience, is approachable; sensitivity toward communication level and intelligence; sensitivity toward audience, awareness of importance of visual feedback; style of expression – interesting, enthusiastic, attractive, dull, or exaggerated; personal appearance/visual distractors – clothing, jewelry, mannerisms, mustache, lipstick; inappropriate moving around when signing; use of sophisticated, appropriate vocabulary.

Rank Scores

The following analysis procedure was used to determine what features of SC the deaf participants ranked as most important. Each of the statements written in ranking the three most important aspects of SC were assigned by a coder to 1 of the 42 comment categories. The category-coded statements were then given

values of 3 (most important), 2 (second in importance), or 1 (third in importance). Participants sometimes wrote more than one statement for a given rank. Consequently, a weighting procedure was employed. The value for each statement, that is, category, was divided by the number of categories listed for the three rankings. If only one category was listed for each of the levels, the category given the highest rank received a weighted value of 1; that is, 3 (value of highest rank) divided by 3 (number of categories listed for the three ranks). If a participant wrote in two categories instead of one for the highest rank, for example, "clear signs" and "fingerspelling," and one item for each of the other two ranks, there would be four categories altogether for the three levels. In this case, the two categories assigned to the highest rank would receive a value of .75, that is, $\frac{3}{4}$. The one category assigned to the second highest rank would receive a value of .5, that is, $\frac{2}{4}$, and the one assigned to the third rank would receive a value of .25, that is, $\frac{1}{4}$.

The scores were analyzed in two ways. First, these scores were analyzed for the highest ranking categories listed by all individuals. Table 1 presents the sums for the weighted ranks for each category of SC for all participants. The higher the sum score, the more frequently and highly the item was ranked. The three items that were most frequently and highly ranked were (a) "clear lip movement," (b) "facial expression," and (c) "body language, body movement." "Clear lip movement" referred to mouth movements that were natural and easy to "read," and not exaggerated. Participants tended to describe body language and facial expression together and indicated these two features were important for signing that was "animated, dramatic, and expressive." They also said that certain body postures and body shifts were important for indicating grammatical features.

A second way the ranking data were analyzed was for the individual focus groups. Since Groups 1, 2, and 3 had a relatively stronger preference for sign communication and Groups 4, 5, and 6 had a stronger preference for oral communication, it was possible that the first three groups might emphasize sign features of SC, whereas the latter three groups might emphasize oral features. In this analysis, the five most highly ranked categories of comments about SC within each focus group were examined. For example, for Group 1 the five highest categories in rank order were "maintain eye contact," "clear sign production," "clear fingerspelling," "confidence when signing," and "clear lip movement." These highly ranked categories were then compared across groups in order to determine whether there were any features that were highly ranked by all groups and to also determine whether certain features were only highly ranked by those with a certain communication preference. Table 2 shows in summary form the major results of this comparison across groups. It shows categories that were highly ranked by four different focus groups regardless of communication preference or that were highly ranked by groups with a particular communication preference.

Two categories, "clear lip movement" and "correct choice of sign," were

Table 1
Sum of Weighted Rank Scores for Each Category of Comments about Simultaneous Communication

Items Receiving a Rank from at Least One Participant		Sum of Rank Scores	Sum of Rank Scores
1. Clear lip movement		21.3	
2. Facial expression		18.3	
3. Body language, body movement		16.1	
4. Grammatical features of visual/gestural modality		14.9	
5. Clear sign production		14.3	
6. Correct choice of sign vocabulary to represent meaning		14.1	
7. Pace		12.8	
8. Clear fingerspelling production		9.0	
9. Maintain eye contact; face one another when signing; cultural expectations		8.6	
10. Signing clearly communicates mood and attitude		7.8	
11. Match between fingerspelling, signs, and facial expressions and voice intonation		7.2	
	12. Confidence when signing		6.6
	13. Overall signing skill; overall intelligibility of signal		5.3
	14. Use of fingerspelling to specify English words for emphasis		4.6
	15. Use of voice		4.2
	16. Position of hands and use of signing space		3.0
	17. Match between fingerspelling and mouth movement		2.4
	18. Internalization of deaf culture		2.4
	19. Use of space		2.0
	20. Organization and presentation of thoughts and ideas		1.8
	21. Simultaneity of speech and sign		1.8
	22. Personal appearance/visual distractors		1.7
	23. Sensitivity and respect; approachable		1.2

Continued on next page

Table 1 *Continued*

	Sum of Rank Scores	Sum of Rank Scores
24. Body shifts	1.2	.6
25. Pausing	1.2	.4
26. Distance between communicators as it affects sign production	1.1	.3
27. ASL mouth movements vs. speech mouth movements	1.0	.3
Items Not Ranked by Any Participants		
32. Sensitivity toward communication level and intelligence		
33. Sensitivity toward audience; awareness of visual feedback		
34. Ability to use both ASL and English signing		
35. Smoothness of signing		
36. Style – exaggerated, interesting, etc.		
37. Relationship of English syntax to ASL syntax		
38. Inappropriate moving around when signing		
39. Use of sophisticated/appropriate vocabulary		
40. Directionality		
41. Sign systems		
42. Definitions of simultaneous communication		

Table 2
 Categories That Were Highly Ranked by the Different Focus Groups
 Regardless of Communication Preference or That Were Highly Ranked by Groups
 With a Particular Communication Preference

	Highly-Ranked Categories ^a				
	Clear Lip Movement	Correct Choice of Sign	Grammatical Features	Pace	Facial Expression
Groups with Relative Preference for Signing					
#1 ^b	X ^c				
#2		X	X		
#3	X	X	X		
Groups with Relative Preference for Oral Communication					
#4				X	X
#5	X	X		X	X
#6	X	X		X	X

^aThe category was either among the five most highly ranked by at least two groups of the three who had a relative preference for signing and two with a relative preference for oral communication; or the category was highly ranked by at least two groups with a preference for one of the forms of communication, but by none of the groups who preferred the other form.

^bNumbers refer to focus group number (see text). Groups 1, 2, and 3 had a relative preference for signing and Groups 4, 5, and 6 had a preference for oral communication.

^cThe X means that the category was one of the five most highly ranked for the particular focus group.

highly ranked, regardless of the group's communication preference. As noted, "clear lip movement" pertained to mouth movements that were natural and easy to follow. "Correct choice of sign" referred to choosing signs that communicate the meaning of the message while at the same time speaking or mouthing English.

Other categories appeared to be favored only by groups with a particular communication preference and background. The category "grammatical features" was highly ranked by two of the groups with a preference for sign communication. "Grammatical features" included comments related to features such as use of space to establish referents and use of directionality of movement. In addition, analyses with a Mann-Whitney *U* nonparametric test (Siegel, 1956) revealed that the mean rank for "grammatical features" for the three groups with a preference for sign communication was significantly higher than that for the three groups with a preference for oral communication ($U = 72.5$, $z = 2.20$, $p = .02$).

The categories "pace" and "facial expression" were highly ranked by groups with a stronger preference for oral communication. By "pace," participants generally meant an unhurried, "comfortable" rate that provided for a good match

in the timing of mouth movements and signs. "Facial expression" is important for speechreading (Lesner, 1988) as well as for showing emotions, modifying the meaning of signs, and conveying grammatical features. In addition, the mean rank for "pace" for the three groups with a preference for oral communication was higher than that for the groups with a preference for sign communication ($U = 60.5$, $z = 2.57$, $p = .01$); also, the mean rank for "facial expression" for the groups with a preference for oral communication was significantly higher ($U = 65.0$, $z = 2.42$, $p = .02$). Thus, groups with different communication preferences ranked different features of SC as important.

DISCUSSION

Participants in the focus groups appeared to recognize the complex bimodal nature of SC, as well as the multi-faceted nature of the communicative act in general. One feature of SC that was viewed as highly important was "clear lip movement." This feature was ranked among the five most important categories of SC by four of the six focus groups and received the highest overall ranking. It should be noted that lip movement is by definition an essential feature of SC. Attention to this feature is consistent with conclusions of other investigators of SC who have stated that people are not expected to understand SC without the speech channel (Akamatsu et al., 1988; Maxwell & Bernstein, 1985). While "clear lip movement" received the highest ranking, "use of voice" received a substantially lower ranking, fifteenth overall. It would appear, in regard to the oral/aural component of SC, that these focus group participants generally considered the visual signal more important than the auditory.

This conclusion is supported by the analyses of transcripts of the focus group discussions described earlier in the study and reported by Newell et al. (1990). In the Newell et al. (1990) analyses, few participants indicated that listening to the voice of the individual enhanced comprehension of SC. Those participants who benefitted from listening indicated that they used the speech sounds to supplement comprehension of signs and mouth movement.

While "clear lip movement" and "use of voice" are the only two categories in the overall ranks that appear to be exclusively related to the oral/aural component of SC, many categories are important to both the oral/aural and sign components. Examples of categories related to both components are "facial expressions, body language, body movement"; "pace"; and "match between fingerspelling and mouth movement." Numerous other categories are related to the sign component of SC. Examples of such categories are "grammatical features of the visual/gestural modality" and "clear sign production." In addition there are general comments related to "sensitivity to deaf culture" and "communication strategies."

With respect to the sign component of SC, analyses of the transcripts indicated that participants viewed this component as complex and multifaceted (Newell et al., 1990). Participants provided numerous concerns and details regarding what

must occur in the visual/gestural modality in effective SC.

The category "match between fingerspelling signs, and facial expressions and voice intonation" was one of the more highly ranked (11th highest); this result, however, does not adequately convey the importance of different components of SC carrying a consistent message. For example, in the transcripts comments were made regarding the importance of the message produced on the mouth matching that conveyed by the signs (Newell et al., 1990). As one participant indicated:

I really depend on watching both the lip movement and the signs and sometimes if they're not congruent between the two, if the signs don't match the lip movement, I really get confused and then communication breaks down.

The importance of consistency among different components of SC has been noted by others (Maxwell & Bernstein, 1985).

Although most of the 15 more highly ranked categories of SC pertained to competent production of the signal, two of them pertained to affective and cultural issues. According to the rankings and the transcripts (Newell et al., 1990), communicators who appeared confident while signing appeared to demonstrate qualities such as friendliness, acting "naturally and pleasantly," using body language, and being dramatic when necessary. Furthermore, the highly-ranked "eye contact" category referred to extent of awareness of deaf culture, as well as sensitivity to the visually-oriented communication of deaf individuals.

CONCLUSIONS AND IMPLICATIONS

It is clearly important to address the multiple factors that constitute effective SC. Effective users are able to convey a sense of the voiced message. Semantically appropriate signs are necessary, as is the inclusion of accurate fingerspelled support for signs for which there are several English synonyms. This is critical in the case of technical terms, whether they are specialized terms or ordinary words used with specialized meaning. In addition, effective users of SC incorporate facial expression, eye contact, and other non-manual behaviors (Mallery-Ruganis & Fischer, 1991).

One of the authors, an experienced sign language instructor, has suggested that the skills for SC must be *taught* to adult learners. One strategy she uses is to video-record students signing and speaking at the same time and then to have the students view the recording of themselves without sound to see what they can (and often cannot) understand (Mallery-Ruganis & Fischer, 1991).

Groups with a relatively greater preference for oral communication gave greater emphasis to pace and facial expression. This is not surprising given the benefit of pace and facial expression to lipreading (Castle, 1987, 1988; Lesner, 1988).

The variation in the communication preferences of the participants and the relation of these preferences to the importance of particular features of SC seems consistent with the work of Kannapell (1989). She found that there is a wide

spectrum of linguistic/communication repertoires among deaf college students, and her work suggests that this variation is related to individual preferences regarding the extent that communicators use features of ASL, pidgin sign English, and spoken English. Presumably, these preferences apply when a person is using SC.

It should be noted that participants in this study were primarily college educated and professional employees of a postsecondary program for deaf students with primarily "oral" and mainstream educational backgrounds. As a group, however, they overwhelmingly preferred that signing with or without speech, as compared to speech alone, be used when communicating with them. They generally preferred sign English, with or without voice, rather than ASL. Deaf persons (adults and students) with different communication, educational, occupational, and social backgrounds might provide different perspectives on SC than the participants in this study.

ACKNOWLEDGEMENTS

We thank the 36 deaf faculty and staff at NTID who generously took time to participate in discussion groups and to share their insights about simultaneous communication.

We also thank Judy Braeges, Jill Baylow, and Yufang Liu for their assistance in summarizing the data.

Also our sincerest thanks to Charlie Johnstone and Peter Reeb for their technical advice and assistance and to Cindy Sinsebox for transcription of the audio recordings of the focus group sessions and word processing assistance with this manuscript.

This research was conducted in the course of an agreement with the U.S. Office of Education.

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