Two Factors Related to Effective Voice Interpreting

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In this study, 32 subject interpreters were divided into two groups based on their interpreting experience and professional certification. A deaf story-teller presented two different stories, each in two different sign language types—Pidgin Signed English (PSE) and American Sign Language (ASL)—and each interpreter was measured on accuracy and quality of voice interpreting under each of two different treatment conditions. Results showed that experience with interpreting does play a significant role in the effectiveness of voice interpreting both PSE and ASL conditions. Generally, interpreters can voice interpret PSE conditions better than ASL conditions. This demonstrates the importance of improving voice interpretation of ASL messages into spoken English for deaf individuals who possess minimal English and speaking skills.

Large numbers of deaf people need help in making themselves understood when neither their speech nor their manual communication is understood by their hearing listeners. On such occasions, deaf people often rely on interpreters to interpret or translate orally for them, a practice commonly known as voice interpreting.

Research has not investigated methods for meeting the voice interpreting needs of people. Although voice interpreting is used in a wide variety of situations for deaf individuals, little is known about its general effectiveness for conveying information from deaf people to their hearing counterparts. It follows that even less is known about factors influencing the effectiveness of voice interpreting.

Manual communication occurs along a continuum ranging from American Sign Language (ASL) at one end to English at the other end. Along this continuum are found Manual English Fingerspelling and Pidgin Signed English (PSE). PSE may drift more toward ASL or more toward the word order or grammatical patterns of spoken English, depending on the users and the situation (Caccamise & Newell, 1978; Garretson, 1978; Hatfield, Caccamise, Brewer, Menkis, & Siple, 1978). Because of constraints on this study and because of widespread use by deaf people, only ASL and PSE were selected for this study.

The operational descriptions of ASL and PSE adhered to in this study were those offered by Caccamise and Newell (1978):

American Sign Language (ASL): A language in which arbitrary, but rule-governed, combinations of hand shapes, positions, orientations, and movements are the meaningful units (morphemes), comparable to words and affixes in spoken language. Use of space and movement, along with facial expression and body language serve primary roles in the structure (syntax) and meaning (semantics) of the language. ASL is now generally recognized as a separate language distinct from English, with its own grammar, inflections, and idioms.

Pidgin Signed English: PSE involves the use of ASL signs in English word order with the proportions of ASL and English varying according to the practitioners. This may include speaking, word-mouthing (with or without voice), fingerspelling (abbreviations and "slur-rings" are tolerated), gestures, ASL grammar occasionally, "new" signs, body language, facial expressions, etc.

Many hearing people, including interpreters, have suggested that it is helpful for a deaf person to approximate English in signing rather than use ASL. This is, presumably, because it is easier to transliterate into spoken English a signed communication approximating the interpreter's own native language than to interpret into spoken English the less familiar language of deaf native signers. The more English the signs, the less cognitive effort needed to interpret. In other words, the interpreter is simply voicing what he or she sees, not really interpreting (changing the message) at all. If this is the case, most interpreters can be expected to have less difficulty voice interpreting from Pidgin Signed English than from ASL; however, this will vary as a function of the interpreter's fluency with ASL.

This study examined three basic hypotheses:

1. Interpreters who have extensive interpreting experience are more effective in their accuracy and quality of voice interpreting than those who have limited interpreting experience.
2. The accuracy and quality of voice interpreting is higher when interpreting from PSE than when interpreting from ASL.
3. Experience in interpreting plays a greater role in voice interpreting from ASL than from PSE.

PARTICIPANTS

Participants were selected from among 69 interpreters employed at the National Technical Institute for the Deaf (NTID). Information was collected from all these interpreters pertaining to their Registry of Interpreters for the Deaf (RID)

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certification and their hours of classroom and/or community interpreting experience.

Two groups of 16 interpreters were selected from this larger group. Each group comprised 14 females and 2 males, the same male to female ratio found in the full group of 69 interpreters.

The interpreters in one group had less than 600 hours of classroom interpreting experience, and some had only one basic RID certification: Expressive Translation Certification (ETC). This group was designated the low experience, or LO group. The mean number of years of experience with sign language was slightly over 2 years, and their interpreting experience extended over a period of less than 1 year. None of the LO group had deaf family members.

The interpreters in the other group, called the high experience, or HI group, had at least 1800 hours of classroom interpreting experience and had advanced RID Comprehensive Skills Certification (CSC). Fourteen of the subjects in the HI group possessed a mean of 10 years sign language experience; the remaining two had used sign language all of their lives. Members of this group had an average of approximately 5 years of interpreting experience. Eight of the HI group had deaf persons in their families, and six of the eight indicated that they regularly used sign language to communicate with their deaf relatives.

All but 2 of the 32 interpreters in the study had had more experience in the use of PSE than of ASL.

MATERIALS

A deaf adult noted for his storytelling ability generated four short stories, two of which were subsequently selected as treatment materials. Details of the development and evaluation of their materials are described elsewhere (Hurwitz, 1979). The two stories selected for the study each contained 14 "events," and an equal number of propositions (a sentence or clause containing an active or stative verb) and were judged by a panel of staff members to be equivalent in degree of difficulty, with particular reference to vocabulary and level of abstraction. Their syntactic features when expressed in standard English were judged to be comparable, as were features such as directionality, use of space, and time order when expressed in ASL. Story X was entitled "Running Out of Gas," and Story Y was called "Progressive Deafness."

Videotapes were prepared of the storyteller relating each of his two stories from the outline, first in ASL and second in PSE. It should be added that the storyteller himself holds the RID Reverse Skills Certificate, has often served as a member of the RID evaluation teams, was an adjunct instructor in an interpreter training program, and communicates comfortably in both ASL and PSE. Table 1 shows a comparison of the four presentations.

DEPENDENT VARIABLES

The dependent variables were the accuracy and the quality of the voice-interpreted messages as spoken by the interpreters. Accuracy was measured by the percentage of correct voice-interpreted propositions (Thorndyke, 1977). A mean score on the accuracy measure for each interpreter was computed from scores based on the independent judgments of two raters.

The quality of the voice-interpreted messages was measured as a composite mean score taking into consideration four factors believed to determine how well the actual intent of the original message is communicated by the interpreter's interpretation of it. Quality was measured independently on a five-point scale by three raters using a condensed version of the RID interpreter evaluation instrument (Pimentel, 1972). The highest possible score for each qualitative factor in the condensed instrument was 5.

The following factors were included in the qualitative evaluation.

1. **Understanding the message:** This factor includes the ability to follow and comprehend a deaf person's thoughts to the extent that these thoughts are actually expressed through manual communication forms, ranging from sign language used in its own natural fashion to Signed English.

2. **Transmission of the message:** This factor evaluates how the voice interpreter re-expresses what he or she has received from "reading" the deaf person.

3. **Language used to transmit the message:** Here the evaluation is concerned with how completely the intent of the original message is conveyed.

4. **Conveying the storyteller's attitude and feeling adequately:** This factor conveys both the nature of the emotional content of the message and the full extent of the deaf person's expression of affect.

DESIGN AND TREATMENT

A factoral, posttest-only experimental design with repeated measures on the treatment factor was used. This permitted comparison of both groups (HI and LO) on their ability to voice interpret stories presented in both ASL and PSE.

Half of the interpreters received Story X in PSE and Story Y in ASL; the other half received Story X in ASL and Story Y in PSE. Furthermore, treatment order (i.e., PSE-ASL, ASL-PSE) was randomly assigned to interpreters stratified by experience level within the story-treatment combinations. After each participant completed the experiment, he or she was asked to fill out a questionnaire stating his or her estimated performance for both sign language systems and giving relevant facts about his or her background and experience with sign language and interpreting.

Participants individually viewed two of the four randomly assigned videotaped treatments on a TV monitor and concurrently voice interpreted their contents into an audiotape recorder. These audiotapes were transcribed by a secretary and verified by an assistant secretary. Each transcript was compared for correspondence with the propositions in the original script, and the number of correct or equivalent voice-interpreted propositions was counted and recorded for data analysis (Thorndyke, 1977). As a reliability check, these scores were compared with those assigned by two individuals who reviewed the transcripts independently and scored them separately for accuracy.

A panel of three NTID staff members who hold CSCs but are not employed as interpreters judged the quality of the voice-interpreted messages. Each judge rated all interpreters in random order on all four factors in the 1-to-5 rating scale. The judges listened to the audiotapes made of the voice interpreting and recorded their ratings on the modified version of the RID interpreter evaluation instrument. The panel viewed the respective videotapes concurrently during this evaluation to ensure appropriate judgments.

Table 1. Duration and Number of Propositions in Four Videotaped Presentations.

	Duration in Seconds		Number of Propositions	
Story	PSE	ASL	PSE	ASL
X	161	143	57	61
Y	174	172	55	64

FINDINGS

Accuracy of Voice Interpreting

Interrater reliability between the two raters who judged the accuracy measure independently was .98, indicating almost perfect agreement.

The mean score of the accuracy measure for a story is expressed as a percentage of the total propositions contained in the story as expressed in PSE or ASL (see Table 1). Means and standard deviations of the accuracy scores (percentage correct) for the HI and LO groups are indicated in Table 2.

An analysis of variance with repeated measures of the primary independent variables (HI/LO experience groups and voice interpreting of PSE and ASL) relative to the accuracy measures was also conducted. Significant differences were found for the HI/LO groups ($F = 24.18, p < .001$) and between PSE and ASL ($F = 402.62, p < .001$). No significant difference was found in performance as a function of story order, nor did story order interact significantly with either of the two primary variables.

The more experienced group of interpreters clearly was more accurate than the less experienced group in voice interpreting a combination of PSE and ASL signed information. Overall, the percentage accuracy of the two groups on PSE signed information was 83.64% and 58.21% on ASL signed information (see Table 2). Interpreters were considerably more accurate in voice interpreting PSE than ASL.

Post-hoc statistical comparisons of the pairwise means indicated in Table 2 were performed using Tukey's statistic (Q) test. Differences between the HI and LO groups in voice interpreting PSE and ASL were statistically significant. It is noted that, although both the HI and LO groups dropped off in their accuracy from PSE to ASL (88% to 68% for the HI group), the LO group fell off more severely (79% to 48%) than the HI group. The difference between the HI and LO groups is more apparent in voice interpreting ASL than PSE.

Quality of Voice Interpreting

The pairwise interrater reliability of the three judges who rated quality of voice interpreting varied between .48 and .72. Intercorrelations of the part-scores of the four factors of the measure of quality described earlier ranged between .80 and .94.

Interrater reliability for the quality measure was much lower than for the accuracy measure, but internal consistency across the part-scores of the four factors of the quality measure was high. The quality score was derived from combining the four-part scores, based on the mean of the three judges' scores, into a composite mean score for each subject on the 1-to-5 rating scale. The correlation between the composite accuracy score and the composite quality score for each subject was .83.

Table 3 indicates means and standard deviations of the composite ratings of three judges for quality of voice interpreting for the HI/LO groups and the PSE/ASL treatments.

Table 3 shows clearly that the HI group (4.36) obtained significantly higher ratings than the LO group (3.41) on the quality of their voice interpreting, as indicated by their combined composite PSE/ASL score. It can also be seen that both groups obtained higher quality ratings for voice interpreting PSE (4.14) than ASL (3.63).

One notable difference in the manner in which the treatment by experience-level interactions are manifested is that, for the measure of voice-interpreting quality, both HI group performances exceeded either of the LO group performances. This was not true for the accuracy measure.

Self-Appraisal of Performance

Immediately following the experiment, each of the 32 subjects was asked to rate his or her relative voice-interpreting performance under the PSE and ASL conditions.

Within the total group, 25 of the participants rated their PSE performance better than their ASL performance; only 2, both members of the HI group, gave a higher rating to their ASL performance. Four, all from the HI group, rated their two performances equally; and one, a member of the LO group, rated her performance poor under both conditions. A chi-square analysis supported the subjective observation that, as a group, the interpreters felt that they had done better under the PSE condition than under the ASL condition. Interpreters' self-appraisals were consistent with the independent ratings of their voice-interpreting performance.

Table 2. Accuracy Scores for Two Treatment Conditions.

	PSE		ASL		Combined Percentage	
Group	M	SD	M	SD	M	SD
HI						
Story order XY	85.08	(5.52)	74.90	(6.90)	79.99	(6.21)
Story order YX	91.13	(3.82)	61.27	(9.06)	76.20	(6.44)
Combined story orders	88.10	(4.67)	68.08	(7.98)	78.09	(6.33)
LO						
Story order XY	78.94	(11.31)	59.48	(14.43)	69.21	(12.87)
Story order YX	79.43	(9.28)	37.19	(12.17)	58.31	(10.73)
Combined story orders	79.18	(10.30)	48.34	(13.30)	63.76	(11.80)
Total for both groups	83.64	(7.49)	58.21	(10.64)	70.92	(9.07)

Table 3. Composite Quality Scores for Two Treatment Conditions.

Group	PSE		ASL		Combined Composite PSE/ASL Score	
	M	*SD*	*M*	*SD*	*M*	*SD*
HI						
Story order XY	4.36	(.43)	4.34	(.35)	4.35	(.39)
Story order YX	4.56	(.15)	4.19	(.17)	4.37	(.16)
Combined story orders	4.46	(.29)	4.26	(.26)	4.36	(.28)
LO						
Story order XY	3.84	(.62)	3.43	(.76)	3.64	(.69)
Story order YX	3.80	(.50)	2.57	(.74)	3.18	(.62)
Combined story orders	3.82	(.56)	3.00	(.75)	3.41	(.66)
Total for both groups	4.14	(.43)	3.63	(.51)	3.88	(.47)

DISCUSSION

The results of this investigation indicate that experience level is a factor in the relative effectiveness of voice interpreting under either treatment. Additionally, the results suggest that the PSE condition is easier to voice interpret than the ASL condition for both HI and LO groups.

Further study seems warranted on voice interpreting for deaf persons and on the usefulness of skilled voice interpreters. More knowledge is needed about the effects not only of experience but also of specific elements of different manual communication systems that may contribute to the performance of skilled, effective voice interpreters. Although interpreters cannot be expected to meet all of the interpreting needs of deaf people under all circumstances, questions related to voice interpreting should be investigated in many different settings, especially in relation to differences in communication skills possessed by deaf persons for whom such services are provided.

The first research hypothesis for this study stated that the HI group would do better than the LO group in both treatments. The results of the investigation, shown in Tables 1 and 2, supported the hypothesis.

The second research hypothesis suggested that both HI and LO groups would do significantly better in the PSE treatments than the ASL treatments. The results of the investigation (see Tables 1 and 2) showed that, as predicted, both groups performed better on the PSE treatments than on ASL.

It can, therefore, be concluded from the findings in this study that interpreting experience does play a significant role in the effectiveness of voice interpreting under both PSE and ASL conditions and that, independent of experience, interpreters receive and voice interpret information better under PSE conditions than under ASL conditions.

LIMITATIONS OF THE STUDY

Several limitations of this study should be explained so that inappropriate generalizations are not made. The participants in this study cannot be said to represent the interpreter population as a whole. As NTID employees, their experience as interpreters has been generally limited to academic interpreting in courses offered by the Rochester Institute of Technology, even though some of the HI group members had experience with community interpreting. Furthermore, the student population the interpreters currently serve does not represent the deaf population as a whole; therefore, caution should be used in applying the findings of this study to groups of interpreters serving students who vary in their educational and communication skills (e.g., legal, community, medical, and artistic).

Although a number of the interpreters stated that they had more experience with and did better with PSE than with ASL, it is doubtful that such knowledge was sufficient to contribute specific information about their abilities to interpret either sign language version.

The participants in this study varied in their background and relevant experiences. A less efficient deaf presenter or the use of additional deaf individuals in this study might also have affected the results. The qualities of the deaf presenter in this study were high articulation and consistency in story presentation and emotive expressions, even though the study did not use a sophisticated means of measuring the story equivalents in both treatments. Few deaf persons have the ability to present stories effectively in both sign language versions.

This study represents an investigation of a specific problem on which no previous research has been conducted. Because of a lack of supporting research, it is necessary to avoid generalizing the results of this study beyond the sample of interpreters on whom the investigation was conducted. Caution must also be exercised against generalizing the results to conditions different from those under which this study was conducted. Additional research into the area of voice interpreting and interpreting for deaf people would help clarify the results of this study.

IMPLICATIONS

Because the sample in this study is not representative of the total population, it cannot be generalized from this study that most interpreters for deaf people need more experience with understanding ASL and with effective voice interpreting of the ASL signed message into spoken English. However, it can be assumed that interpreters with strong skills in understanding ASL and effective voice interpreting from the ASL signed message into spoken English can assist classroom teachers in regular schools where mainstreamed deaf students are dependent on sign language interpretation. Interpreters would facilitate improved appreciation of deaf students' efforts to express themselves. Such an educational

tool can help deaf students improve their English skills and will provide a feedback mechanism so that interpreters and teachers can better understand deaf students who express themselves in a language (e.g., ASL) that is not understood by the general population. Hence, school administrators should consider providing highly experienced interpreters, taking into account the importance of voice interpreting in regular classes in which deaf students are enrolled as well as the need for direct interpreting services.

This implication, moreover, should not be confined to an educational setting but extended to other situations (such as legal and medical/clinical settings). Usually deaf clients experience negative encounters if they are unable to use speech or written methods in standard English adequately to convey their special needs or problems to a doctor or a lawyer. The impact is obviously profound for those individuals who lack adequate standard English language skills.

RECOMMENDATIONS FOR FURTHER RESEARCH

The topic of voice interpreting and provision of interpreting services to deaf students who are heavily dependent on reverse interpreting should be explored in greater depth. A need remains to address many of the questions raised in this study. Some suggestions for further research follow.

1. The value of voice interpreting should be further studied by conducting research in settings that are similar to typical classroom situations, for example, situations in which discussion occurs within the classroom and in which significant factors inhibit understanding of the sign language and/or speech used by deaf students.
2. The effects of using voice interpreters with a variety of different populations in various educational settings should be investigated. Elementary-aged deaf children, secondary-aged deaf children, deaf persons with minimal

or no sign language skills, and deaf persons with minimal standard English language skills are examples of populations that might be considered for further research investigation.
3. A separate study should focus on the impact of deaf persons using their voices during the voice-interpreting process. The use of voice by a deaf person may enhance or hinder the voice-interpreting process; for instance, a different speech pattern of a deaf person may distract the interpreter's concentration from the signed presentation. It is also possible that getting two voice signals at the same time may be distracting to the audience.

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