

A Comparative Analysis of a Direct Interpretation and an Intermediary Interpretation in American Sign Language

Carolyn I. Ressler, M.A., CI and CT
Gallaudet University, Washington, D.C.

Abstract

Deaf relay interpreters and hearing intermediary interpreters have been teamed up to provide interpreting services at many conferences and workshops. Although widely used, no research to date has been conducted determining what, if anything, the hearing interpreter must do differently while functioning in this intermediary role.

The goal of this research was to determine if there were differences between the direct interpretation, where the hearing interpreter was working directly from the source into the target language, and the intermediary interpretation, where the source message was "fed" to a Deaf interpreter. The hearing interpreter's direct interpretation of a source message was videotaped. This product was then compared to an intermediary interpretation of that same text. Differences were noted in the areas of pausing, eye gaze, head nodding, the number of signs produced per minute, the use of fingerspelling versus signs, and in how clarifications were made.

Introduction

In years past, sign language interpreters have been viewed as simply having the responsibility of relaying messages from a source language into a target language. Although at first glance this task may seem to be a simple, straightforward one, much more is involved in this process. Inherent in this definition of interpreting is the notion of bilingualism. In order for a message to be communicated accurately from one language to the next, fluency in both languages is necessary. Yet, for many sign language interpreters, mastery of American Sign Language (ASL) as a second language is difficult to achieve. Not only does an aspiring interpreter have to learn the grammatical rules of the

language as well as their applications, the interpreter is additionally challenged by the task of having to learn how to communicate through an entirely different mode or channel of message exchange. Whereas spoken languages make use of speech and auditory channels for sending and receiving communication, ASL relies upon a visual and manual mode of communication. This significantly increases the level of difficulty encountered when trying to master this language. This is the primary reason that, according to Charlotte Baker-Shenk (1986), "... the majority of hearing people who work as 'interpreters' are far from fluent in ASL" (p. 43). Baker-Shenk further states that the output that most interpreters produce is one resembling more of a transliterated product where the target message incorporates linguistic features from both English and ASL rather than a linguistically pure ASL product. From this understanding, the definition of sign language interpreting can be refined to include the task of extracting meaning and semantic intent of the source message from its form, and then formulating a target language message that expresses a near equivalent meaning according to the linguistic and cultural norms of the target population.

Nida and Taber (1974) captures the importance of meaning over form as such: "... it is the content which must be preserved at any cost; the form, except in special cases, such as poetry, is largely secondary, since within each language the rules for relating content to form are highly complex, arbitrary and variable..." (p.104). Yet, for most interpreters whose second language is ASL, the form of the English utterance often takes precedence over content. As a result, pieces of the English form often appear in these second-language learners' ASL rendered product.

In an effort to remedy this situation, the notion of using Deaf relay interpreters, particularly at large conferences, has emerged. This idea provides a way to satisfy audience members desiring a culturally appropriate, accurate interpretation from English into ASL. At first thought, the concept of using a Deaf person to interpret a spoken English speech might seem somewhat preposterous. Yet logistically, it can be easily arranged; a spoken English text is channeled to a hearing interpreter who in turn signs, or "feeds," the message to the Deaf interpreter on stage. The Deaf interpreter then re-formulates the message and produces an ASL interpretation. It is hoped

that, because of their native competencies in ASL and membership within the Deaf community, the Deaf interpreter will be better able to produce an interpreted message that is free of English-based grammatical structures and is similar in affect, meaning, and intent to the original spoken text. As described by Nancy Frishberg (1990) in her book *Interpreting: An Introduction*, interpreters who are Deaf have had a long history of interaction with other Deaf people. Although only 10 percent of Deaf children are born to Deaf parents, many Deaf children attend residential schools for the Deaf where ASL is the primary language of communication. As a result, Deaf people gain familiarization with a wide variety of communication and language styles including gestures, ASL, and other sign varieties. This exposure occurs often at all stages of development and growth. Because of this life-long exposure, Deaf interpreters often inherently possess necessary language competencies beneficial to the interpreting process.

Statement of the Problem

Although hiring Deaf relay interpreters seemingly resolves many concerns that arise when hearing interpreters work alone, Deaf interpreters are not being hired for conferences in the same numbers as their hearing colleagues. There are many reasons for this. Agencies and individuals hiring interpreters, for example, are often reluctant to cover costs and fees associated with the service. This becomes even more of a concern when additional interpreters are added, thereby doubling the expenses for the service.

Another factor contributing to the reluctance of hiring Deaf/hearing teams is that there is no evidence verifying the assumption that messages produced in ASL by Deaf relay interpreters are, in fact, more linguistically accurate and culturally appropriate than those produced by their hearing counterparts. Valid concerns are raised regarding the potential for information to be skewed and/or omitted when it is channeled through, not only one, but two interpreters.

Yet, above all these concerns, one of the most significant reasons why Deaf and hearing relay teams are not being hired is the difficulty in identifying qualified, experienced teams. The process of producing a direct interpretation when Deaf interpreters are not present is a complex one in and of itself. Extensive training is required for hearing interpreters before

they are able to function in this role effectively.

In addition to being responsible for comprehending, processing, and communicating the source message to the target audience, the interpreter assumes numerous other responsibilities as well. S/he must assess the audience to determine the language needs. While in process, the interpreter must continually monitor audience comprehension based on explicitly stated and implicitly noted consumer feedback. The rate of flow of the source message must be controlled so as to ensure equivalency between it and the target message. Logistical concerns such as sufficient lighting, amplification, seating arrangements, and clear sight lines must also be handled. Continual adjustments are made by the interpreter as these areas are assessed and changes deemed necessary. These are just a few examples of the kinds of multiple tasks the interpreter is responsible for while producing a direct interpretation of the message.

The level of complexity is raised to even greater heights when Deaf and hearing interpreters are hired together. Not only do the above mentioned tasks have to be attended to, but in addition, the dynamics of the relationship within the Deaf/hearing team necessitates additional responsibilities. The "feed" language must be negotiated by the team. Depending on the bilingual skills of both interpreters involved, more or less processing of the source message may be necessary. The hearing interpreter must closely monitor the Deaf interpreter's comprehension of the "fed" message and adapt his/her work accordingly. Differences in the amount of processing time needed may require the hearing interpreter to alter his/her typical pace. Clarifications may need to be made between the hearing interpreter and the speaker, between the hearing interpreter and the Deaf interpreter, between the Deaf interpreter and the speaker, as well as between the audience and the interpreters and speaker.

The complexity of the task increases dramatically when Deaf and hearing interpreters work together. It is for this reason that few qualified teams exist. Training on how to work successfully in this capacity is rarely, if ever, offered. In fact, there are no guidelines or standards suggesting techniques for effectively interpreted exchanges with Deaf and hearing relay teams. Because no research currently exists on this topic whatsoever, it was to provide baseline data for the development of

such standards that this research was undertaken.

Research Question

The intent of this descriptive case study was to determine if there are physically observable differences between a direct interpretation, where the hearing interpreter is working directly from the source into the target language, and an intermediary interpretation, where the source message is "fed" to a Deaf interpreter. Figure 1 graphically represents the research design.

The source language in this study was English. The top portion of this diagram represents the hearing interpreter producing an intermediary interpretation to a Deaf relay interpreter who then reformulates the message for the target audience. The bottom portion represents that same interpreter at a different time, directly interpreting the source message to the target audience. For the purposes of this research, the hearing interpreter's signed interpretations in the two different settings was compared and analyzed. Differences noted between the interpreter's product when working with a Deaf interpreter as opposed to when working independently will be discussed.

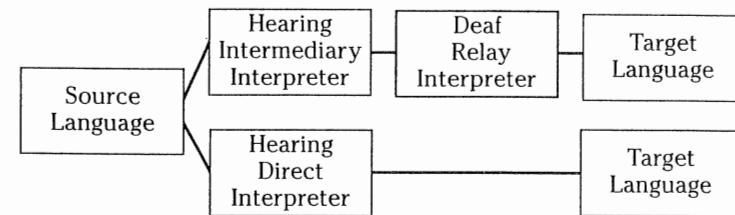


Figure 1
Research Design

Review of Literature

At the time of this study, no research had been done examining the relay interpreting process to determine effective strategies and techniques for relay teams. A review of existing research does, however, offer support for ASL based interpretations and provide information on effective strategies for successful interpretations for hearing interpreters.

Sign language interpreting as defined in the Introduction of this paper is a process by which messages from a source lan-

guage are restructured and reproduced into a target language such that near equivalent meaning and affect are maintained. Studies by Fleischer (1975), Fleischer and Cottrell (1976) and Murphy and Fleischer (1977) investigated comprehension levels of Deaf consumers exposed to messages that were interpreted compared to those that were transliterated (messages signed in English word order by using manual signs for individual words and concepts). The first two studies, however, found no statistically significant differences in comprehension attributed to the differential treatments. However, individual student preferences for ASL or English based interpretations were not controlled for. The third study also did not control for language preference and its findings contradicted earlier research. In this study, the Deaf students involved scored significantly higher on tests when the material was presented to them in ASL as opposed to English. A flaw common to all three studies is that the material presented to the students was above their current knowledge base. Therefore, missed items on the administered tests may be a result of the subjects' lack of familiarity with the topic as opposed to language comprehension levels. In addition, the interpreters had the opportunity to rehearse the lecture material in advance. This is considered a luxury and rarely occurs outside of the testing environment. Finally, students' comprehension levels were based on questions they responded to in written English form. In light of the fact that English functions as a second language for many Deaf students, an additional literacy factor was introduced into the study. A study conducted by Livingston, Singer and Abrahamson (1994) attempted to correct for earlier research design flaws. In this study, Deaf students were grouped according to stated language preferences into two groups, those preferring ASL and those preferring English based signing. Depending on which group they were in, subjects viewed either an ASL interpretation or transliteration of a 10-minute videotape. Comprehension levels were determined by responses to questions regarding the material in the message. Both the questions and answers were communicated in ASL. Results indicated that subjects achieved higher scores when the material was presented in ASL rather than transliterated. This was found to be true even for students who expressed a preference for a transliterated message but received the material in ASL. From this, Livingston, Singer and Abrahamson (1994) concluded that

"ASL works better for all Deaf students in mainstreamed college classes" (p. 1).

As indicated by these studies, there are advantages to interpreted messages over those that are transliterated. Research has been conducted in an effort to determine what interpreters must do in order to produce a clear and accurately interpreted message. For example, Llewellyn-Jones (1981) investigated the effect that interpreted messages had on the amount of information understood by the Deaf consumers. Successful interpretation that resulted in consumer comprehension occurred when the meaning of the source message was extracted and restructured into the target language. It was only when this occurred that consumers were able to understand the material. Cokely (1992) went one step further to examine errors that result in miscues or deviations from the source message. He identified five significant types. Each of these is defined by Cokely (pp. 74-75) in the following manner:

- 1) Omissions: Information that is found in the source language that is absent from the target language message.
- 2) Additions: Information that is not intended or produced in the source message that appears in the target message interpretation.
- 3) Substitutions: Information contained in the source message that has been replaced by information in the interpretation that is at variance with the intent of the source language message.
- 4) Intrusions: Source language syntactic structures in the interpretation that result in a transliteration of the source message rather than an interpretation. These result in an adherence to the syntax and lexical semantics of the source language.
- 5) Anomalies: Utterances that are meaningless or confused and cannot be accounted for by other miscue types.

He found the number of resulting miscues (errors) produced in the target language to be a direct result of the interpreter's target language incompetence among other factors. Cokely's research further concluded that simply transferring the form of

the source language without regard for its meaning resulted in linguistic difficulties for the consumers. From these studies, several conclusions can be drawn. Effective interpretations are produced when the interpreter is, first, able to extract the meaning from the form of the source message and, second, able to reproduce it in the target language.

Even for qualified, experienced interpreters who are fluent in both English and ASL, unfamiliar and subtle nuances of the language can impede their ability to produce native-like interpretations in ASL. For example, a study by Zimmer (1989) examined the interpretation of an interactive speech event between two hearing and one Deaf individual. Exchanges made between the two hearing women were compared to those between the hearing and Deaf women. Although issues of comprehension and message equivalence were not of concern in this study, significant differences were observed when comparing the interpreted and non-interpreted exchanges. These differences occurred at the discourse level in the areas of pauses, pause-filling devices, and repair strategies. As evidenced by this study, even when the language factor is not of concern, specific in-group norms that are inherently understood by members of a culture play an important role in the communication process. Winston (1990) attributes these subtle non-native errors made by interpreters to "accents" they possess. She narrowed the accented features into two categories: those pertaining to articulation problems (handshape, movement, location, and palm orientation) and those she refers to as gestalt problems (use of appropriate amounts of space, head nods, head and body rotation, eyebrow movement, eye gaze, mouth movements, rhythm, and pacing). Through an intense training process, Winston was able to show a marked decrease in the "thickness" of the interpreter's accents in the study. Unfortunately, the amount of time and the materials necessary for this type of accent reduction training does not make this remedy one easily attained.

In summary, although sign language interpreting has been occurring for decades, it has only been within the last 10 years that there has been an interest in the study and analysis of the interpreting process. In general terms, interpreting research conducted has indicated better comprehension levels by Deaf individuals when ASL based interpretations were produced. Interpreters fluent in both ASL and English are more capable of

taking the source language message and reproducing it into the target language with fewer miscues occurring than interpreters who are less bi-lingual. However, even when an interpreter is competent in ASL, unfamiliar, subtle language nuances may never be acquired by an interpreter learning ASL as a second language. "Hearing accents" are noted to exist that result in non-native errors being produced by hearing interpreters. Although research to date indirectly supports the need for Deaf relay interpreters who are native ASL users, Deaf/hearing working teams are rarely seen. Because research analyzing this intermediary interpreting process is not available, there is no data that explains or investigates the effectiveness of Deaf/hearing interpreting teams.

Methodology

Subjects

Currently in the United States, few experienced, conference-level Deaf/hearing relay teams exist. One of these teams was geographically local and therefore was selected to produce the data for this research. Information obtained prior to the start of this research indicated that both of the interpreters had been certified by the Registry of Interpreters for the Deaf at the highest level. The Deaf interpreter had been certified for 10 years and holds a Reverse Skills Certificate (RSC). The hearing interpreter had been certified for 13 years and holds a Comprehensive Skills Certificate (CSC), a Specialized Certificate in Legal Interpreting (SC:L), and a Certificate of Interpretation (CI). The Deaf interpreter has been interpreting professionally for 15 years and the hearing interpreter for 14 years. Their experience working together as a team in this type of a setting in addition to their level of certification and accessibility made them suitable subjects for the purposes of this study.

Data Collection

It was important for the interpreters to have audibly clear, unambiguous stimulus materials to work from in the laboratory setting. The Department of Interpreting and Linguistics at Gallaudet University has professionally produced videotapes of spoken English dialogues made for the purpose of simulating live spoken presentations. These tapes were produced for

training interpreters and, as a result, have been determined a close replica of a true-to-life presentation.

The interpreters were asked to interpret one of these videotaped spoken English monologues. The tape was approximately 16 minutes long. During the videotaping, the interpreters were seated such that they were facing one another so as to allow direct, clear communication between the two of them. Their interpreted products were videotaped in a split screen format so that both interpreters' outputs could be seen simultaneously.

In a natural setting, the interpreters would typically have access to the speaker's notes or outline to help them prepare for the interpreting task. This information alerts the interpreter to any specific jargon or complex terminology the speaker may cover during his/her remarks. In an effort to simulate this in the laboratory, a summary of the English text was given to them outlining the key points of the presentation. They were instructed that they were to work as if they were interpreting for an audience primarily made up of ASL users attending a large conference.

A few months later, the hearing interpreter was then asked to return and interpret the monologue a second time. It was necessary to allow several months to pass before asking the interpreter to repeat the interpretation. Had the interpreter been asked to sign the taped message immediately following the first taping, she may have retained some of the information discussed on the video. Having this prior knowledge to work from she may have been able to predict upcoming information and adjust her product accordingly. In order to minimize this learning affect, it was necessary to wait several months before re-taping the piece a second time. The interpreter was given the same outline and instructions; however, this time she was asked to work independently, rather than as a "feed" in a relay team. Her direct interpretation was videotaped.

Analytical Process

It was important to have a native user of ASL assist in the analysis of the data and, therefore, a native ASL Deaf linguist was hired to assist with the transcriptions of the hearing interpreter's signed products. The beginning 10 minutes of the interpretation was not analyzed so as to give the interpreter(s) adequate time to become accustomed to the speaker, pace, and

content. Each ASL sign produced by the hearing interpreter after the initial 10 minutes was described using an English gloss and supplemented with conventional symbols used for transcribing signed texts. These individual sign glosses were then arranged into ASL sentences (see Appendix A for example of direct interpretation transcriptions and Appendix B for example of intermediary interpretation transcriptions). A general comparison of the two transcribed interpretations and videotapes was conducted by the researcher and linguist to determine if differences between the two existed. In an effort to make this determination, it was assumed that, if variations between the two interpretations existed, they would fall into certain categories of linguistic features. These categories include such indicators as sign choices, pausing/timing, fingerspelling versus production of a sign, eye gaze signals, and other aspects of the language. These particular categories were selected because they are most often referred to when describing prominent features of ASL and when comparing differences in direct interpretations. These features and others in the two interpretations were then observed and compared.

Results

The process of writing an English gloss for a visual language such as American Sign Language has not yet been perfected. For this reason, the five minutes of transcriptions produced for each of the two interpretations required a total of nearly 100 hours of work on the part of this researcher and the Deaf linguist. Each frame of the videotape was frozen on the television screen so that manual and non-manual information could be recorded. Individual signs were broken down into movements produced by the right hand and movements produced by the left hand. After viewing both of the interpretations and reviewing the recorded data, several prominent, observable differences between the two interpretations became evident. Once these differences were noted, the videotapes were further analyzed. Again, by viewing each still-frame of the videotapes, these particular features were documented and described. These differences fell into the following six categories: 1) pausing, 2) eye gaze, 3) head nods, 4) the number of signs produced per minute, 5) fingerspelling versus signs and, 6) clarifications between the two interpreters. Findings in each of these areas are presented and discussed below.

Pausing

Spoken messages, as well as signed messages, are typically fragmented and discontinuous in their natural form. These hesitations and stops in the flow of spoken and signed messages are often referred to as pauses. Pausing also occurs within the interpreting process. The data collected on the videotape, however, indicated differences in how long and how often the interpreter paused in the two interpretations. In an effort to document and describe the pausing differences, all of the pauses used by the interpreter were noted and timed in the targeted sections of each videotape. These pauses occurred in one of two forms and thus were categorized into two distinct types: pauses and pause/holds.

Instances when the interpreter was not actively engaged in signing and her hands were at a rest position are referred to in this research as pauses in the interpretation. Research by Cokely (1992) suggests that these pauses are often purposefully and strategically produced by the interpreter so that s/he can lag behind the speaker. This lag time is spent understanding and processing the incoming source message before producing the target interpretation.

Pause/hold is the term coined by this researcher to describe specific times when the final position of a sign was held beyond what would seem to be standard length of time before moving on to produce the subsequent sign. The point of distinction between a pause and a pause/hold is whether or not the hands are at rest. In a pause, the final sign is produced and then the hands typically lower to a rest position in front of the body. However, in a pause/hold, the end position and handshape of the last sign produced remain in place and are held for an extended period of time before the production of the subsequent sign occurs. Although, as mentioned above, pauses in an interpretation have been noted in only a few studies, nowhere in existing research has mention been made of the pause/hold phenomena observed in the data collected for this study.

Analysis of the targeted segment of the direct interpretation video revealed that, of the total running time of 343 seconds, a total of 8 pauses and 16 pause/holds occurred. Each of these was timed with a stop watch to determine the duration. In the direct interpretation, the interpreter paused (without a hold) for a total of 11.80 seconds. In addition, for 34.46 seconds, the interpreter paused while holding the last sign produced.

Therefore, of the 343 seconds of video examined, in 46.26 seconds, or 13.5% of the time on task, the interpreter was pausing with or without hold.

The intermediary interpretation was also examined for the number of and length of pauses and pause/holds. Pauses (without hold) occurred 17 times lasting a total of 45.49 seconds, and pause/holds occurred 30 times amounting to 64.61 seconds. In this interpretation, the interpreter was pausing with or without hold 32.1% of the time.

In addition to interpreter pauses, the speaker also naturally paused between thoughts or ideas, or as he was gathering his thoughts. In the targeted segment, speaker pauses were determined by timing with a stopwatch the length of time between the last word spoken before a pause and the beginning of the following utterance. All pauses 0.80 seconds or longer were noted and timed. Of the 343 total seconds of data analyzed, the speaker paused 45 times for a total of 51.73 seconds. In this segment then, the speaker was not speaking but rather pausing approximately 15% of the time. Table 1 summarizes the pauses (P) and pause/holds (P/H) for both interpretations and for the speaker.

Table 1
Pauses (P) and Pause/Holds (P/H)

	# of Pauses	# of Pauses/ Holds	Total P time (sec)	Total P/H time (sec)	% of time P and/or P/H
Direct Interpretation	8	16	11.8	34.46	13.40%
Intermediary Interpretation	17	30	45.49	64.61	32.10%
Speaker	45	NA	51.73	NA	15.10%

Eye Gaze

Eye gazing refers to instances when an individual's eyes are directed towards a person, object, or location in space. Movements of the eyes serve particular functions in daily interactions. Kendon (1967) identified four functions of eye gazing. These functions are 1) cognitive—individuals tend to look away when they are having difficulty encoding information; 2) moni-

toring—individuals may look at the person they are addressing to indicate the conclusion of thought units and to check for alertness and reactions; 3) regulatory—individuals may look at a person in an effort to demand or suppress a response; and 4) expressive—individuals can use eye gaze to express a certain degree of involvement or arousal. In addition to these functions, eye gazes in ASL also play an important role in the grammatical structure of the language. Eye gazes are used, for example, to establish referents in space, mark pronouns, and indicate emphasis, as well as other grammatical functions. Typically, an interpreter's eye gaze will also shift between several target points throughout a direct interpretation. In order to determine if eye gaze behavior was different in an intermediary interpretation, the videotaped data of both interpretations were analyzed.

Although it is very difficult to determine precisely where the interpreter's eyes are focusing, six general locations were noted in the tapes. These locations are not mutually exclusive and are as follows: up, down, right, left, audience, and classifier. Most are self explanatory with the exception of the "classifier" and "audience" locations.

Eye gazes listed as being at "classifier" locations referred to instances when the interpreter's eyes locked in on the sign classifier being produced. Classifiers are common in the grammatical structure of ASL. They are particular signs that represent whole categories of words and, in addition, also are used to indicate size, shape, or movement of objects. The structure of ASL necessitates eyes gaze to be directed at the classifier when it is produced by the signer. For this reason, it was necessary to indicate eye gaze at the classifier location when observed.

The audience location indicates that the interpreter made direct eye contact with the audience. In the direct interpretation, the audience was the camera and the individual operating the equipment. For the intermediary interpretation, an eye gaze listed as audience in the glossed transcription refers to instances when the interpreter made direct eye contact with the Deaf interpreter.

Examination of the interpreter's eye gaze in the direct interpretation indicated that the interpreter's eyes naturally shifted between the various locations in space. Particular attention was given to the location of the eyes during pauses and

pause/hold times. Of the eight pauses observed in the direct interpretation, during six of those pauses the interpreter's eyes were gazing downward. In one instance the interpreter's eyes were gazing upward and in the other to the right. In this segment, 16 pause/holds were noted. During nine of those pause/holds, the interpreter's eyes were gazing downward. Although eye gazes for the remaining seven pause/holds were found to be directed towards various other locations, eye gazes directed at the audience did not occur. In summary, for both pauses and pause/holds in the direct interpretation, the interpreter's eyes were typically observed to be directed downward. Although eye gazes were noted in other locations, the interpreter's eyes were never observed to be directed at the audience during a pause or a pause/hold time.

Eye gaze results were very different in the intermediary interpretation. During the 17 pause times in this interpretation, the interpreter's eyes were primarily fixed directly on the Deaf interpreter (noted as the "audience" location). Of the total 17 pauses, the interpreter's eyes were found to be directed at the audience 12 times, at the audience/down location twice, and at the audience/right location twice. On only one occasion did the interpreter pause while looking directly downward and not at the audience. Analysis of eye gazes during the pause/hold times produced similar results. Of the 30 pause/holds observed, the interpreter's eye gaze locations were noted as follows:

Audience (Deaf interpreter) - 20 occurrences
 Audience/Down - 3 occurrences
 Audience/Right - 2 occurrences
 Audience/Left - 1 occurrence
 Downward - 3 occurrences
 Right - 1 occurrence

In summary, in the intermediary interpretation, during both pause times and pause/hold times, the interpreter primarily made direct eye contact with the Deaf interpreter, whereas analysis of eye gaze in the direct interpretation revealed that, although the interpreter's eyes were noted in various locations, in general, they were directed downward. In addition, in the direct interpretation, the interpreter's eyes were never observed to be directed at the audience during a pause or a pause/hold time.

Head Nodding

ASL incorporates head nods as part of the grammatical structure of the language. Grammatical head nods in ASL serve as indicators of affirmative statements, distinguish one sentence type from another, and also function as a means for adding emphasis to spoken statements. In both interpretations, these grammatical head nods were noted. In the direct interpretation, two typical grammatical head nods were observed. Both were accompanied by a sign in an effort to emphatically communicate the spoken message. Likewise, in the intermediary interpretation, three similar grammatical head nods were observed.

In addition to the standard head nodding described above, a different type of head nodding was also observed in the intermediary interpretation only. These head nods can best be described as being monitoring head nods since they are not a necessary part of the source or target messages and were only produced as a monitoring technique. In the intermediary interpretation, 10 of these monitoring head nod types were observed. These head nods were noted as occurring only during times when the hearing interpreter paused while holding a sign (pause/hold times). In addition, in each of these pause/hold instances where head nodding occurred, the interpreter's eye gaze was focused directly at the audience (Deaf interpreter) location. In each of these instances, during the pause that occurred after the hearing interpreter had fed a portion of the spoken message to the Deaf interpreter, the hearing interpreter watched and nodded as the Deaf interpreter produced in ASL the fed information. Once the information had been successfully interpreted by the Deaf interpreter, the hearing interpreter ceased the nodding behavior and continued on with the feed process. The head nods in these instances were not required in order to communicate the source message but only occurred as a monitoring strategy.

In summary, grammatical head nods were observed to exist in both the direct and intermediary interpretations. No clear differences were noted in the frequency or function of these nodding behaviors. However, an additional type of head nodding was noted in the intermediary interpretation that was not present in the direct interpretation. These head nods functioned as a means by which the fed message was monitored by the hearing interpreter while the Deaf interpreter produced the target message

Signs/Words Per Minute

Using a stop watch, the number of words spoken per minute by the speaker and the number of signs produced per minute by the interpreter were calculated. False starts made by the speaker and the interpreter were eliminated and only the actual signs and words were counted. In the 5 minutes and 43 seconds of the video segment analyzed, the speaker spoke 949 words or an average of 166 words per minute. Likewise, the number of signs produced per minute in the direct and intermediary interpretation were also computed. In the direct interpretation, approximately 611 signs were produced by the interpreter in the target segment. This averages out to approximately 107 signs produced per minute. Only 500 signs were noted in the intermediary interpretation resulting in approximately 88 signs used per minute. It is important to note with the intermediary interpretation that, on several occasions, the hearing interpreter made comments directed to the Deaf interpreter for clarification purposes. These comments, although outside of the source message, are included in the above calculated signs per minute. If, however, the signs produced in the dialogue between the two interpreters were to be excluded from the calculation, the total adjusted number of signs would be approximately 473 or an average of 83 signs per minute. A summary of the signs/words per minute is provided in Table 2.

Table 2
Signs/Words per Minute

	Total # of words/signs	Avg. words/signs per minute
Speaker	949	166
Direct Interpretation	611	107
Intermediary Interpretation	473	83

In summary, more words per minute were spoken by the speaker than signs produced by the interpreter in the direct and intermediary interpretations. When comparing only the interpreted products, the interpreter produced an average of 24 signs more per minute in the direct interpretation than was produced in the intermediary interpretation.

Fingerspelling Versus Signs

Although there are certain English words that can be fingerspelled when interpreting into ASL, interpreters typically have the option of using a sign or cluster of signs to communicate an intended concept. Both of the videos were examined to determine if the use of fingerspelling occurred more frequently in one than in the other. The interpreter fingerspelled words 21 times in the direct interpretation and 29 times in the intermediary interpretation. Although this initially did not seem to indicate a significant difference between the two products, differences were noted in the actual number of individual words fingerspelled. In the direct interpretation, the interpreter fingerspelled only seven different words. Several of these words though were fingerspelled repeatedly. For example, although the English word "door" was spelled out five times by the interpreter it was counted as only one occurrence of fingerspelling. In the intermediary interpretation, 20 different words were fingerspelled to the Deaf interpreter with only a few being spelled more than one time. Also, when comparing the actual words that were fingerspelled in both interpretations, only one word, "airbag," was fingerspelled by the interpreter in both situations.

Clarifications

In order for interpretation accuracy to be achieved, it was necessary for the Deaf and hearing interpreters to dialogue with one another throughout the course of the spoken message. In that the hearing interpreter is working alone in a direct interpretation, no such dialogue can occur. Three instances of clarification dialogue were observed in the intermediary interpretation. Each of them occurred for different reasons. The first dialogue was initiated by the hearing interpreter when she realized erroneous information had been fed to the Deaf interpreter. The source and target messages were as follows:

Source Message: "I will give you the bad news and then end with the good news."

Fed Message: "PRO-1 START WITH GOOD NEWS . . ."

(Backtranslation: I will start with the good news . . .")

Once the hearing interpreter realized the error, a lengthy pause occurred followed by an explanation, intended for the Deaf interpreter only, correcting the mis-fed information.

The second dialogue was much shorter in length. The hear-

ing interpreter fed the number "150,000" to the Deaf interpreter. The need for clarification in this instance was prompted by the Deaf interpreter who through the use of subtle, non-coded facial grammar quickly asked for repetition of the number from the hearing interpreter. The number was repeated and the process continued.

The third interpreter dialogue took place towards the end of the session. Due to the hearing interpreter's lag time, the source tape ended before the information was entirely fed to the Deaf interpreter. The hearing interpreter wanted to turn off the machine and rather than simply doing so, alerted the Deaf interpreter to the fact that the tape was over and the message remaining to be fed was nearly completed.

Dialogue between the Deaf and hearing interpreters was observed to have occurred in the intermediary interpretation only. These discussions were opportunities for the interpreters to clarify misunderstood and mis-fed information. Requests for clarifications were initiated by both interpreters for several different reasons.

Discussion and Conclusions

Results from this study indicate that clear differences between a direct and an intermediary interpretation exist. These differences have been noted in, but are not limited to, the areas of pausing, eye gaze, head nodding, signs per minute, fingerspelling, and clarifications. Speculations as to how and why these differences occur can result in a clearer understanding of the Deaf/hearing interpreting team process.

Pausing was one area where significant differences appeared between the two interpretations. First though, it is important to compare the percentage of time the speaker paused (15.1%) with the percentage of time the interpreter paused in the direct interpretation (13.4%). These numbers would indicate that the speaker paused slightly more time overall than the interpreter did. Cokely (1992) found this to be true as well in his temporal analysis of interpreter and speaker pause times. He determined that interpreters consciously make use of speaker pauses to reduce the portion of time simultaneously listening and processing the source for understanding and producing the target message. This then would affirm the findings of this research when the speaker pauses

are compared to the direct interpretation pauses. However, a very different phenomenon exists when introducing a Deaf interpreter into this process. A significantly higher percentage of time (32.1%) is spent by the intermediary interpreter either pausing or in a pause/hold state. Analysis of the data collected offers plausible insight into why and how this may occur.

The data related to eye gaze indicate that, in a direct interpretation, the interpreter's eyes are averted downward during the majority of the pause and pause/hold times. The downcast eye gaze appears to reflect a listening and processing state. The interpreter seems to be making use of this time by intently listening and comprehending the incoming source message. The same is not true for pause and pause/hold eye gazes in the intermediary interpretation. During these pauses, the interpreter's eyes are fixed on the Deaf interpreter ensuring comprehension of the fed message, watching for requests for clarifications, and checking for accuracy. This monitoring of the fed message is also evident through the observation of the greater number of head nod occurrences. The number of head nods occurring during the pause/hold times while the interpreter's eyes were directed to the Deaf interpreter would seem to reinforce the idea that the hearing interpreter is checking for accuracy, monitoring comprehension, and providing feedback to the Deaf interpreter. The necessity of this type of monitoring in a fed interpretation was made evident as clarifications were made and dialogue took place between the two interpreters. It was imperative, for example, that the hearing interpreter be watching the Deaf interpreter closely when the source message was mis-fed. The hearing interpreter made clear indications that the error was made in the fed information, re-stated the information correctly, and then watched to make sure the intended concept was delivered. Likewise, later in the interpretation the hearing interpreter was asked to restate a number per the request of the Deaf interpreter. This again supports the finding that more time is spent regularly monitoring the fed message and the final message as produced by the Deaf interpreter. All of these factors, the fixed eye gaze, increased and directed head nods, and dialogue over clarifications, substantiate the necessity for the increased pausing and pause hold times in intermediary interpreting settings.

Now, the question of "How?" arises. If the hearing interpreter is managing the exact same source message in both set-

tings, how can the total time spent pausing be nearly tripled in the intermediary interpretation and still achieve source/target message equivalence? The data analyzed suggests several plausible strategies initiated by the hearing interpreter to achieve equivalence despite the increased pause time.

The first of these proposed strategic solutions to the question of message equivalence in spite of increased pause time can perhaps be found in the number of signs produced per minute. As described earlier, results indicate that on average the interpreter in the feed position produced 24 fewer signs per minute than when interpreting that same information for the direct interpretation. The total average number of signs per minute (107) produced when the Deaf interpreter was not present parallels results found in Cokely's (1992) research. Cokely reported an unadjusted average rate of 100.45 signs per minute being produced by interpreters in direct interpretation settings. The finding that only 83 signs per minute occurred in the fed interpretation seems to reflect an alternative means by which source information is being relayed to the Deaf interpreter. One technique the interpreter in the feed setting used to reduce the total number of signs was to fingerspell certain concepts instead of using a cluster of signs to communicate the concept. Typically in direct interpretations, interpreters utilize expansion techniques to communicate ideas and concepts rather than simply fingerspelling the English word. These expansions require several signs to be strung together in such a way so that the conceptual meaning behind the single English word is understood. Often in the intermediary interpretation, the interpreter chose to spell out specific words as opposed to using an expansion technique. The expansion of the concept was then left up to the Deaf interpreter to produce. For example, the source message introduced the concept of "automatic restraint systems." There is no single ASL sign that would communicate with conceptual accuracy this term. In the intermediary interpretation, the hearing interpreter fingerspelled the words, "automatic restraint." However, in the direct interpretation the interpreter expanded the concept by signing, "PRO-rt HAVE CL:belt shoulder CL:belt waist UNDERSTAND+ CL:belt shoulder ATTACH-dir fs:door CL:U on IX, sliding outwards, then back to IX" Clearly from this one example, the length of time needed to fingerspell the term as opposed to produce the expanded sign cluster is much less. Significant amounts of time

could be saved by the hearing interpreter fingerspelling terms and allowing the expansions to occur through the Deaf interpreter. The time conserved here then could be used in pauses so that monitoring, clarifications, and accuracy checking could occur, thus accounting for the increased pause and pause/hold times in intermediary interpretations.

Limitations of the Study

Although the findings of this study reveal some indications of differences between direct and intermediary interpretations, there are limitations to the results reported. Most noticeable is the fact that data collected came from only one Deaf/hearing relay team. Results observed may be specific to this particular team and not generalizable to other teams in other settings. Sadly, not many teams are trained and available for this type of analysis. Analysis of data collected for other Deaf/hearing teams may help to support or refute results obtained in this study.

In addition, the data were collected in a nonnaturalistic setting. The interpreters were videotaped in a laboratory setting and did not have access to what might be considered a live audience. This can affect the interpreters' work in that they were not able to incorporate feedback from audience participants and accordingly adjust their interpretation as is typically done. Taping done in "live" settings would result in more naturally occurring products.

Although several months transpired between the first taping of the intermediary interpretation and the second direct interpretation, the hearing interpreter had heard the source material before producing the direct interpretation. Although the intermediary interpretation could be considered a "cold" interpretation, the direct interpretation was not. This raises a problem because, despite the passage of time between the two tapings, some of the source message may have been retained by the hearing interpreter. It is often the case that information heard a second time is easier to interpret because initial understanding and processing have already taken place during the first hearing. Ideas and concepts are more familiar the second time around allowing the interpreter to be more prepared. In real-world settings, interpreters rarely have the luxury of hearing a source message in its entirety before producing an interpretation for the target audience. Another factor that may have

influenced the data collected for the direct interpretation is that the hearing interpreter had already observed the Deaf interpreter's target interpretation during the intermediary process. The Deaf interpreter's style and language use may have influenced the sign choices and signed concepts of the hearing interpreter in her direct interpretation.

Although the hearing interpreter had previously heard the spoken text and had seen the Deaf interpreter's rendition of the spoken message prior to producing the direct interpretation, major differences between the two products still existed. Had the taping been done in the opposite order (direct interpretation before intermediary interpretation), the hearing interpreter would not have had the benefit of seeing the material modeled by the Deaf interpreter. Yet, even with the fact that the hearing interpreter may have retained and incorporated some of the Deaf interpreter's work into the direct interpretation, major differences between the two interpretations still existed. It can be presumed that reversing the order of the tapings would only magnify the differences observed here because the hearing interpreter would then be working without any language modeling from which to draw.

Not having access to high-tech equipment also may have resulted in some skewing of the data collected. Optimally, equipment that recorded and displayed minutes, seconds, and tenths of seconds digitally on the tape should have been used. Greater accuracy in the calculations of pause times, pause/hold times, words/signs per minutes, and other temporal aspects could have been achieved had this type of equipment been used. Calculations based on data recorded through timings with the stop watch indicated clear and distinct differences in the two interpretations. Although some minor variances in the numerical data collected may be noted if a more precise data collection technique were used, major variances in overall results and noted differences would most likely not be found.

Implications and Areas of Suggested Future Study

No research has been conducted to date studying the intermediary interpretation process. As result, Deaf/hearing interpreter teams are often brought together to complete a task that neither has received instruction on performing. Although typically hearing interpreters have experience working indepen-

dently in providing a direct interpretation, often they are uncertain whether or not the process followed in a direct interpretation can simply be applied to the intermediary interpreting process. Findings noted in this research, however, clearly indicate that the process is quite different. Techniques used in direct interpretations are altered when functioning in the intermediary role, and other additional strategies may need to be employed. Increasing pause and pause/hold times, direct eye gaze, head nods, fingerspelling concepts without expansions, and other techniques noted in this study offer some concrete suggestions for how direct interpretations can be altered in intermediary interpreting settings. Interpreters functioning in the intermediary role can apply the techniques described in this study as they begin to shape their interpretations to meet the demands inherent in this process. The discoveries observed in this research serve only as a starting point for future discussions and explorations into this complex task.

Evidence generated in the analysis of the data in this research indicates a clear distinction between how interpreters function in intermediary as opposed to direct interpretation settings. Although some of these distinctions were observed and documented, they do not represent the entire range of differences that exist. Assuredly, data collected from other Deaf/hearing teams would reveal additional alterations that have been made by the hearing interpreter when functioning in this role. Future research that includes more Deaf/hearing interpreting teams is necessary. Findings from these studies may help to distinguish team-specific alterations as opposed to alterations observed across the board. These types of studies can help to establish the validity and reliability of the findings observed in data collected for this research. Once observable patterns across other Deaf/hearing teams are documented, greater generalizability of results can be suggested.

Studies of specific aspects of the intermediary interpretation can be undertaken to document other techniques specific to the intermediary interpreting process. For example, one specific area of recommended future study relates to decisions about the intermediary target language. Does the hearing interpreter follow a more English-based word order when in this role? How do the Deaf interpreter's bi-lingual skills impact the decision to use English or ASL syntax? Is the intermediary interpreter functioning more as an intermediary transliterator

by producing more English grammatical structures? These questions as well as others related to the target language deserve more investigation.

Additional research related to the interpersonal and intercultural relationship formed between the Deaf and hearing interpreter would be insightful as well. How do issues of oppression affect this working relationship? What relational issues, such as trust, are inherent to a successful, well-functioning team? What kind of dialogue should take place between the two interpreters prior to the start of the task?

The stimulus material selected for the interpretation in this study was nearly culturally neutral. The hearing speaker did not use any culture-specific terms, or phrases, nor were any references made that could be considered culturally bound. It would be interesting to analyze data collected in a similar experiment where the source message contained specific references to cultures other than the Deaf culture. Hearing interpreters have typically been responsible to facilitate the understanding of this type of information across cultural boundaries. Analysis of data in a setting such as this may reveal the extent to which the hearing interpreter relies on the Deaf interpreter to function as a cultural mediator instead of performing this task themselves. Future research in this area is also necessary.

Well beyond the scope of this research are other questions related to the overall effectiveness of Deaf/hearing relay teams. One often stated concern is that of message equivalence and accuracy. Once the source message is channeled through not one, but two interpretations, how close is the target message to the intended source? Future studies may also be directed at audience satisfaction levels. Are Deaf consumers able to better understand a message from a Deaf/hearing team than from an interpreter working independently? Are message comprehension levels higher when more native-like, cultural interpretations are delivered?

The findings of this research only begin to uncover some of the unique characteristics of intermediary interpretations. Much more research in this area is necessary to better understand how interpreters function as members of a relay team. The results and suggestions offered in this study are only catalysts aimed at initiating future dialogue and scholarly research on this topic.

Conclusions

Although research indicates a desire by Deaf audience members for interpretations in ASL to occur, non-native, hearing interpreters often produce a target message that contains much of the form of the English language. The introduction of native ASL Deaf relay interpreters into the interpreting process, would seem to rectify this dilemma. However, due to the lack of research in this area, Deaf/hearing relay teams are not being hired in many instances. The goal of this research study was to determine if there are physically observable differences between a direct interpretation, where the hearing interpreter is working directly from the source into the target language, and an intermediary interpretation, where the source message is "fed" to a Deaf interpreter. Differences were observed in six areas: 1) pausing, 2) eye gaze, 3) head nods, 4) the number of signs produced per minute, 5) fingerspelling versus signs, and 6) clarifications between the two interpreters.

In the comparison of the two interpretations, an increased pause time with or without hold was observed to have occurred in the intermediary interpretation. Unlike in the direct interpretation, where the interpreter's eyes were typically gazing downward during these pauses, in the intermediary interpretation, the interpreter's eyes were directed at the Deaf interpreter. The focused eye gaze accompanied with an increase in monitoring head nods indicate an intentional effort on the part of the hearing interpreter to regulate the Deaf interpreter's source message intake and target message output.

Analysis of the two interpretations also revealed that the interpreter in the intermediary position used 24 less signs per minute than were used in the direct interpretation. One way the interpreter was able to reduce the number of signs produced per minute and yet continue to strive for message equivalency was by fingerspelling particular signs and concepts rather than utilizing expansion techniques. The expansion of the concept then became the responsibility of the Deaf interpreter.

Finally, dialogues between the two interpreters for clarification purposes were observed to have occurred several times during the intermediary interpretation. It was during these instances that mis-fed information was corrected and requests for repetition were made. Both the Deaf and hearing interpreters initiated these clarification dialogues.

Clearly, the question of whether or not differences exist

between a direct interpretation and an intermediary interpretation has been answered. The results of this research have shed some light on how the two processes differ from one another. These findings offer baseline data that can be used in the training of Deaf/hearing relay teams. It is hoped that this research as well as any future research that follows in this area will provide the training tools necessary to increase the pool of qualified Deaf/hearing relay teams.

Appendix A - Example Transcription of Direct Interpretation

Entry No.	Sentence Gloss	Right hand Gloss	Left hand Gloss	Eye Gaze	Pause Hold	Pause
				aud = audience		
				d=down		
				rt=right		
				lf=down		
				u = up		
				mid = middle		
				cl = classifier		
1		NOW				
2		IX	IX	mid		
3		NEW		mid		
4	NOW IX NEW #CAR	#CAR		rt/up	0.96	
5		#CO	IX	rt/up		
6		PRO		rt/up		
7		NEW		rt/up		
8	#CO PRO NEW #CAR	#CAR	elbow point	rt/up		
9		st		rt/up		
10		HAVE		aud		
11		CL: belt		aud		
12		ADD		aud		
13		PRO		up		
14		#COMPANY		up		
15		START		aud		
16		NOW		aud		
17		ADD		aud		
18	HAVE CL: belt ADD PRO #CO START NOW ADD CL: BELT	CL: belt	touch lf shoulder	d		
19		itches cheek	WAIT-A-MINUTE	d	1.30	
20		PRO		aud		
21		SAY		aud		
22		IMPORTANT		aud		
23		FOR		mid		
24	PRO SAY IMPORTANT FOR CHILDREN	CHILDREN		aud		
25		BACK		rt		
26		ALL(?)		aud		
27		CHILDREN		aud		
28		SIT		aud		
29		BACK		aud		
30		RIGHT		aud		
31		MEAN		d		
32		CHILDREN		d		
33		CL: waist belt	lf waist	d		
34		ONLY-ONE		d		
35	BACK ALL(?) CHILDREN SIT BACK RIGHT MEAN CHILDREN CL: waist belt ONLY-ONE SILLY!	SILLY!		aud		
36		ADD		aud		
37		CL: belt	touch lf shoulder	d		
38		GOOD		d		
39	ADD CL: belt GOOD gesture: "a-ok"	gesture: "a-ok"		d		
40	rest	rests		d	0.9	
41		PRO-IF		rt		
42		NOW++++		d		
43		STILL		aud		
44		LEAVE+ (bs?)		d		
45		OLD		d		
46		#CAR	elbow point	d		
47		NONE		aud		
48		CL: belt	touch lf shoulder	aud		
49		BACK		d		
50		MEAN		d		
51		TOTAL-OF		d		
52		1		d		
53		HUNDRED		d		
54		FORTY		d		
55		THOUSAND		aud		
56		CAR		d		
57		LEFT		d		
58		STILL		d		

59		NONE		aud		
60	PRO-IF NOW++++ STILL LEAVE+ OLD #CAR NONE CL: belt BACK MEAN TOTAL-OF 1 HUNDRED FORTY THOUSAND CAR LEFT STILL NONE CL: belt	CL: belt	touch lf shoulder	aud		
61		STILL		d		
62		USE+		aud		
63	STILL USE+ EVERYDAY	EVERYDAY		aud		
64		rests		d		2.07
65		nms: topic?		d		
66		PRO		d		
67		#CAR		d		
68	PRO #CAR NOW NEW	NEW		d		
70		SINCE		d		
71		19		up/rt		
72		80		up/rt		
73		19	(left)	up/rt		
74		90		up/rt		
75	SINCE 19 80 19 90 PRO-rt	PRO-rt		d		

Appendix B - Example Transcription Of Intermediary Interpretation

Entry No.	Sentence Gloss	Right hand Gloss	Left hand Gloss	Eye Gaze	Pause Hold	Pause
				aud = audience		
				d=down		
				rt=right		
				lf=down		
				u = up		
				mid = middle		
				cl = classifier		
1		hn		aud		
2		NOW		d		
3		RECENTLY		rt		
4		BACK		rt		
5		HAVE		aud		
6	NOW RECENTLY BACK HAVE CL: BELT	CL: BELT		aud	3.30	
7		hn		aud		
8		hn		aud		
9		hn		aud		
10		hn		aud		
11		IMPORTANT		aud		
12		sf		aud		
13		SPECIAL		aud		
14		FOR		aud		
15	IMPORTANT SPECIAL FOR CHILDREN	CHILDREN		aud		
16		I-F		aud		
17		PRO		rt		
18		HAVE		rt		
19		FAMILY		rt		
20		HAVE		rt		
21	I-F PRO HAVE FAMILY HAVE CHILDREN	CHILDREN		more rt		
22		MEAN		rt		
23		CL: seated	CL: seated	rt		
24	MEAN CL: seated BACK	BACK		rt		
25		CHILDREN		aud		
26		WHO		aud		
27		CHILDREN		aud		
28	CHILDREN WHO CHILDREN BACK	BACK		aud		
29		MEAN		d		

30		CL: belt	shoulder-lf	aud		
31	MEAN CL: belt IMPORTANT	IMPORTANT		emphasis		
32		rests		d/aud	2.60	
33		STILL		aud		
34		NOW+		rt		
35		CAR		rt up		
36		HOW-MANY		u		
37		TOTAL		u		
38		#CAR		u		
39		NOW		aud		
40	STILL NOW+ CAR HOW-MANY TOTAL #CAR NOW STILL	STILL		aud		
41		ONE		aud		
42		HUNDRED	touch elbow	aud		
43		FORTY		aud		
44		MILLION		aud		
45		NONE		aud		
46	ONE HUNDRED FORTY MILLION NONE CL: belt	CL: belt	If shoulder	aud	2.51	
47		rests		aud/d	3.77	
48		NOW+		d		
49		#CAR	IX	d		
50	NOW #CAR SINCE	SINCE		d		
51		fs: late		d		
52		19		d		
53		80		d		
54		S		d		
55		TO		d		
56		19		d		
57		90		d		
58	L-A-T-E 19 80 S TO 19 90 S	S		aud	2.13	
59		FRONT++		aud		
60		HAVE		aud		
61		sf		aud		
62		fs: automatic	IX elbow	aud		
63		fs: restraints		aud		
64	FRONT++ HAVE fs: automatic fs: restraints	fs: restraints		aud		
65		rests		aud	5.51	
66		PROBLEM		d		
67	PROBLEM DIFFERENT+++	DIFFERENT++		d		
68		SOME		d		
69		WOW	WOW	d		
70		TRUE	IX	d		
71	SOME WOW TRUE AWFUL	AWFUL		d		

References

- Baker, C., & Cokely, D. (1980). *American sign language: A teacher's resource text on grammar and culture*. Silver Spring, MD: T. J. Publishers.
- Baker-Shenk, C. (1986). Characteristics of oppressed and oppressor peoples: Their effect on the interpreting context. In M. McIntire (Ed.), *Interpreting: The art of cross cultural mediation. Proceedings of the Ninth National Convention of the Registry of Interpreters for the Deaf* (pp. 43-54). Silver Spring, MD: RID Publications.
- Cokely, D. (1992). *Interpretation: A sociolinguistic model*. Burtonsville, MD: Linstock Press.
- Fleischer, L. (1975). *Sign language interpretation under four interpreting conditions*. Unpublished doctoral dissertation, Brigham Young University, Salt Lake City, Utah. (University microfilm).
- Fleischer, L., & M. Cottrell (1976). Sign language interpretation under four interpreting conditions. In H.J. Murphy (Ed.), *Selected readings in the integration of deaf students at CSUN*. (Center on Deafness Publication Series No. 1). Northridge, CA: California State University.
- Frishberg, N. (1990). *Interpreting: An introduction*. Silver Spring, MD: RID Publications.
- Kendon, A. (1967). Some functions of gaze-direction in social interaction. *Acta Psychologica* 26, 32-49.
- Livingston, S., Singer, B. and Abrahamson, T. (1994). Effectiveness compared: ASL interpretation vs. transliteration. *Sign Language Studies*, 82, 1-54.
- Llewellyn-Jones, P. (1981). Simultaneous interpreting. In *Perspectives on British Sign Language and deafness*. London: Croom Helm Ltd.
- Murphy, H., & Fleischer, L. (1977). The effects of Ameslan versus Siglish upon test scores. *Journal of Rehabilitation of the Deaf*, 2, 15-18.
- Nida, E. & C. Taber (1974). *The theory and practice of translation*. Leiden: E.J. Brill.
- Winston, E. (1990). Techniques for improving accent in sign language interpreters. In A. Wilson (Ed.), *Looking Ahead: Proceedings of the 31st Annual Conference of the American Translators Association*. (pp. 47-57). Medford, NJ: Learned Information Inc.
- Zimmer, J. (1989). ASL/English interpreting in an interactive setting. In D. Lindberg-Hammond (Ed.), *Proceedings of the 30th Annual Conference of the American Translators Association* (pp. 225-231). Medford, NJ: Learned Information, Inc.