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**The effect of nonverbal communication training on the
acquisition of sign language**

Dilka, Karen Lynn, Ph.D.

The University of Arizona, 1988

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THE EFFECT OF NONVERBAL COMMUNICATION
TRAINING ON THE ACQUISITION
OF SIGN LANGUAGE

by

Karen Lynn Dilka

A Dissertation Submitted to the Faculty of the
DIVISION OF SPECIAL EDUCATION AND REHABILITATION

In Partial Fulfillment of the Requirements
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In the Graduate College
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ABSTRACT

The purpose of this study was to determine the effect of nonverbal communication training on the acquisition of expressive and receptive sign language skills. Thirteen skills were included.

Twenty-eight participants enrolled in the Beginning Interpreter Training Program (BITP) held at the University of Arizona were selected as subjects. The subjects were randomly assigned to two groups, a control group and an experimental group. The experimental group received ten hours of nonverbal communication training in the categories of kinesics, eye movement, facial expression, proxemics, chronemics, haptics, and artifacts, concurrently with their participation in the BITP.

A rating instrument was devised and administered that measured the subject's performance on thirteen expressive and receptive sign language skills. A comparison of pretest and posttest performances was made utilizing the analysis of covariance.

The results of the statistical analysis indicated that the experimental group improved significantly on the skills of receptive clarity and receptive fluency. No statistically significant differences were found between the experimental group and the control group on the other

eleven skills although the experimental group mean score values were consistently higher than the control group mean score values.

The importance of the results for the two groups of subjects involved in this study and the field of interpreting is that nonverbal communication training appears to enhance the receptive clarity and fluency abilities of sign language interpreters. This study should serve as an impetus and a reference point for others wishing to investigate the inclusion of nonverbal communication training in sign language interpreter training programs.

CHAPTER 1

INTRODUCTION

The role and function of nonverbal communication instruction within a sign language interpreter training program is largely vague and undefined. Although the encoding/decoding of nonverbal communication behaviors employed in an interpreting setting are viewed by professionals in the field as invaluable skills, nonverbal communication training activities are limited in scope and depth. Nonverbal communication represents a formidable component of sign language interpreter training which has essentially been unexplored and is in need of empirical examination.

Statement of the Problem

The generic term "sign language" encompasses several modes of visual-gestural communication spanning the sign language continuum from American Sign Language (ASL) to Manually Coded English. Analysis of the various components of sign language, and specifically ASL, reveals five unique building blocks of the language referred to as parameters (Cokely and Baker 1980). Four of these parameters are directly related to shape, location, movement, and orientation of the actual sign produced. The fifth

parameter involves the realm of facial expression and non-verbal communication. It is of this fifth parameter that little is known. While a growing amount of research is being conducted on sign language, the primary focus is on the grammatical, linguistical, and lexical composition of ASL (Battison 1978; Klima and Bellugi 1979). The same type of systematic inquiry is not being applied to the subject of sign language interpreter training curricula. Fewer studies are concerned with educational approaches, methodologies, and instructional techniques for the acquisition of sign language and interpreting skills by students.

Nonverbal communication behaviors associated with ASL have been investigated and acknowledged as critical units of linguistic information and emotional expression. Research studies by Baker (1976, 1980a, 1980b) and Liddell (1978, 1980) examined specific nonverbal activities, such as the orientation and movement of the head, face, eye, and body. These activities interfaced with ASL are termed "nonmanual components" and have been found to contribute significantly to the transmission and comprehension of ASL (Baker 1985). The findings presented by Baker and Liddell demonstrate the existence of a rich array of nonmanual components in ASL communication.

Numerous other references in the literature also recognize nonverbal communication behaviors of facial expression and body movements as an integral part of sign

language (Dicker 1978; Solow 1981; Hayes 1984; Frishberg 1986). Although the literature is replete with articles and books endorsing nonverbal communication as a sign language component, there remains a minimal amount of published information regarding the actual application of nonverbal communication or nonmanual components in the teaching and learning of sign language and interpreting skills.

Some interpreter training programs have established course work on nonverbal communication within their curricula (Fant 1972; Nowell and Stuckless 1974). The extent to which nonverbal communication is taught and the type of training provided varies for each program. The options available comprise a wide range of possibilities depending on the philosophy and emphasis of the program. Some training facilities choose to teach only the nonmanual components of ASL, as illustrated in Baker and Cokely (1980), with minimal reference to additional techniques. Other programs incorporate nonverbal communication classes into their curriculum as separate units of instruction.

Classes which offer activities in an interpreter training program to practice nonverbal aspects tend to emulate theatrical performances using mime and gesture as described by Eastman (1979-1980) and Warren (1982). The purpose of such a teaching approach is to elicit spontaneous responses of expression from the student interpreter.

However, these activities only introduce the subject of nonverbal behaviors and overlook the literary works generated from the field of nonverbal communication. Categories such as proxemics--the use and perception of space; chronemics--the structure of time; haptics--the study of touch; and artifacts--the study of objects in our environment which influence our thoughts, moods, and actions are but a few concepts virtually ignored by employing conventional teaching strategies in interpreter training programs.

Despite these variations of instruction, nonverbal communication training is an accepted parameter of interpreter training programs and recommended by The Registry of Interpreters for the Deaf, Inc. (1980) as an essential element. However, there has been no substantial empirical data in the research to link training in nonverbal communication to the acquisition of expressive and receptive sign language skills by student interpreters.

Significance of the Problem

It is imperative that students entering the field of interpreting become knowledgeable about the differences that exist between the hearing and deaf cultures' use of nonverbal communication techniques. As mediators of cross-cultural communication, it is important for interpreters to have an understanding of their "native" cultures' nonverbal

behavior prior to learning the norms employed by the deaf community (Sherwood 1987).

Variations in facial expression, for comparative discourse, have been reported by Padden and Markowicz (1976) and Scheff (1973) involving studies of deaf and hearing individuals. Baker and Cokely (1980) purport that these differences occur, in part, because facial expressions in ASL do not necessarily portray emotions; rather they can be strictly grammatical in function. In most spoken languages, facial expressions represent the emotional state of the conversant. Baker (1985) identified several facial expressions which demonstrate and substitute for parts of speech in ASL. Observed modifications in proxemic behavior and eye contact may also be due to the manual transmission mode of ASL. Stokoe and Battison (1981) aptly express their belief that:

"...hearing and deaf people also differ in their communication on the linguistic level and on the nonverbal level, and that such code differences can result in misunderstandings, and in mutual judgments of 'madness (craziness) or badness'" (p. 189).

Without an understanding and sensitivity to these distinctive cultural variations, the result will be successive misinterpretations of the nonverbal message.

Because of the increasing economic constraints and resource limitations encountered in the development of curricula within interpreter training programs, there is a

need for empirical data to validate the establishment, maintenance, or elimination of course work requirements. Interpreter trainers are therefore presented with the problem of designing an effective, systematic format of instruction based on the accessibility of research, materials and resources or the absence of them.

Embodied in the core of subject matter taught in interpreter training programs should be didactic nonverbal communication. The inclusion of this type of training may improve the ability of an interpreter to accurately perceive and precisely convey an interactive message. Also, it may significantly enhance the interpreter's qualifications and increase awareness of the communication event.

Another point of potential impact concerns the hearing-impaired consumer in routine situations where the use of an interpreter is required. If the interpreter had knowledge of nonverbal behaviors characteristically displayed by deaf people, he/she could function with less apprehension and, hence, greater competence. Communication between the hearing-impaired individual and the interpreter with increased proficiency would be enriched, benefiting all persons involved and facilitating a positive, rewarding interpreting experience.

Additional points of potential impact involve the specialized areas of educational, legal, and medical interpreting. In situations where the understanding of

technical information can affect the advancement, rights, or health of a hearing-impaired person, it is vital that the interpreter be well qualified. The utilization of interpreters who have the ability to depict and distinguish minute nuances of expression and the capacity to convey this precise information to the hearing-impaired person, would greatly facilitate the communication process for the hearing-impaired consumer.

Research Question

The following research question was addressed:
Does training of student interpreters in nonverbal communication significantly improve their expressive and receptive sign language skills?

Limitations of the Study

1. This study was limited to a population of university age (eighteen years and older), beginning sign language interpreting students attending the Summer 1986 Beginning Interpreter Training Program sponsored by the University of Arizona. All participants had previous sign language course work and minimal interpreting experience.
2. This analysis of data was limited to the skills as measured by the Expressive and Receptive Sign Language Rating Scale instruments presented and used in the study.

Assumptions of the Study

To determine the effect of short-term nonverbal communication training on the enhancement of expressive and receptive sign language skills, specific assumptions must be made. The first assumption relates to the attitude and purpose of the individuals participating in sign language training. It was assumed that these participants are preparing to become interpreters in sign language and therefore were motivated to obtain their goal.

The second assumption involves the skill level of participants. It was assumed that all the participants had previous training in sign language and minimal experience in interpreting.

Definition of Terms

The following terms have been defined for purposes of this study:

- artifacts: objects which constitute the environment and influence, guide or direct people.
- American Sign Language: a visual gestural language which possesses specific linguistic rules and particular sociolinguistic dynamics.
- chronemics: the study of the structure, organization, and perception of time.
- deaf: those individuals in whom the sense of hearing is nonfunctional for ordinary purposes.
- eye contact: the use and perception of eye gaze, pupil size, and eye movement.

<u>facial expression:</u>	portrayal of emotion on an individual's face.
<u>hearing impairment:</u>	the inability to detect and/or discriminate sound through the auditory mechanism.
<u>haptics:</u>	the study of touch.
<u>interpreter:</u>	a generic term for an individual who functions as a communication link between hearing-impaired individuals and hearing individuals.
<u>kinesics:</u>	the study of body movement.
<u>nonmanual components of ASL:</u>	aspects of sign language which are not signs but convey emotions, intentions, feeling and information consciously or unconsciously via the face, eyes, and/or body parts other than the hands.
<u>nonverbal communication:</u>	non-auditory presentations of emotions, intentions, feelings, and information consciously or unconsciously via the face, eyes, hands, or other parts of the body.
<u>proxemics:</u>	the structure, organization, and the perception of space.
<u>sign language:</u>	a generic term depicting the spectrum of visual "manual" communication utilized by and with hearing-impaired persons.

Summary

The need for and significance of nonverbal communication instruction within sign language interpreter training programs was identified and discussed in this chapter. A research question was presented and a definition of terms was provided. Additionally, research limitations and assumptions were delineated for the purposes of this study.

CHAPTER 2

REVIEW OF LITERATURE

Due to the paucity of information within the literature specific to the development and implementation of nonverbal communication training in sign language interpreter training programs, the present study draws from three principal bodies of knowledge: 1) the seven primary categories of nonverbal communication research (kinesics, eye movements, facial expression, proxemics, chronemics, haptics and artifacts); 2) nonverbal and nonmanual behaviors utilized by the deaf population; and 3) the scope of sign language interpreter training curricula. Considerable research is available relevant to these three areas; however, a deficit of information exists on the integration of the topics.

For most hearing individuals, acquiring sign language skills represents learning a second language and culture. It is important to understand various aspects of communication associated with one's first language before attempting to grasp similar complexities of a second language. Because nonverbal communication is an integral part of language and culture, research related to the seven primary categories provides a framework from which to examine

the perceptions and uses of nonverbal communication in the hearing culture. The inclusion of nonmanual components and nonverbal behaviors relating specifically to deaf culture allows for a study of similarities and differences between the cultures. A historical review and definition for nonverbal communication research, nonmanual/nonverbal behaviors utilized with the deaf, and sign language interpreter training programs are also included to provide background information and a rationale for the integration of these topics.

Nonverbal Communication

A comprehensive definition of nonverbal communication provides standardized criteria upon which the categories of kinesics, eye movements, facial expression, proxemics, chronemics, haptics, and artifacts can be examined. Nonverbal communication has been defined by various authors as "the process of discourse without the use of voice." This intimates that the distinction between verbal and nonverbal communication is dependent upon the ability to vocalize. In fact, numerous scholars take opposition to this viewpoint and suggest that the term nonverbal communication encompasses a broader domain of actions, behaviors, and/or attributes (Burgoon and Saine 1978). Ruesch and Kees (1956) proposed the following guidelines for the

identification and definition of variables associated with nonverbal communication (p. 189):

In broad terms, nonverbal forms of codification fall into three distinct categories:

Sign language includes all those forms of codification in which words, numbers, and punctuation signs have been supplanted by gestures; these vary from the "monosyllabic" gesture of the hitchhiker to such complete systems as the language of the deaf.

Action language embraces all movements that are not used exclusively as signals. Such acts as walking and drinking, for example, have a dual function: on one hand they serve personal needs, and on the other they constitute statements to those who may perceive them.

Object language comprises all intentional and nonintentional display of material things, such as implements, machines, art objects, architectural structures, and--last but not least--the human body and whatever clothes or covers it. The embodiment of letters as they occur in books and on signs has a material substance, and this aspect of words also has to be considered as object language.

The preceding work has served as a model codification system for the undertaking of research in the discipline. However, since the time of its origination in the 1950's, this definition has become obsolete. Basic problems in the terminology of sign, action, and object language result in severe restrictions on the boundaries of what might or might not be regarded as nonverbal behavior. For example, utilizing this definition, works of art or footprints are considered object language, whereas time is not included as a part of nonverbal communication (Burgoon and Saine 1978). A contemporary explanation of nonverbal

communication reflecting flexibility and direction is offered by Burgoon and Saine (1978, p. 9):

We consider nonverbal communication to be those attributes or actions of humans, other than the use of words themselves, which have socially shared meaning, are intentionally sent or interpreted as intentional, are consciously sent or consciously received, and have the potential for feedback from the receiver.

The development of the seven primary dimensions comprising nonverbal communication is feasible with this definition. The inclusion of the concept, "socially shared meaning," becomes especially significant when comparisons of cultural conduct and values among diversified groups are studied.

Historical Perspective of Nonverbal Communication

A brief synopsis on the history of nonverbal communication provides a chronological framework for the development of each specific category. Materials related to the study of nonverbal behaviors are available from various academic disciplines including anthropology, sociology, psychology, linguistics, and the field of communication. Preliminary exploration conducted in the preceding centuries provided the groundwork for continued efforts and advancements into the area of nonverbal communication. The majority of these writings are products of the past decade and have aroused a new wave of curiosity in the topic (Davis 1972; Spiegel and Machotka 1974).

Speculation by renowned authorities date the first attempts to recognize and record body action to early civilization (Scherer and Ekman 1982). Although these ventures are noteworthy, most were subjective writings incorporating nonverbal behaviors as poetic passages in composition. A change in perspective evolved around the nineteenth century when Sir Charles Bell, an anatomist, combined his artistic talent and his medical knowledge to illustrate how emotions were represented by facial features. Bell's fascinating sketches detailed an assortment of emotional responses such as laughter, weeping, pain, fear, rage, and admiration. His extensive commentary described the correlation between muscular arrangement, mind, and expressions on the face. From these initial endeavors by Bell and his contemporaries, the concept of nonverbal movement as a medium of communication emerged.

The most enlightening publication on nonverbal communication was released in 1872. It was Charles Darwin's book, The Expression of Emotions in Man and Animals. Although interest in nonverbal communication diminished after the release of this book, many of Darwin's proposed theories concerning emotional expression prevail today (Ekman 1973). His achievements linking facial patterns and emotions will be discussed in more detail in the section entitled facial expression.

In the beginning of the twentieth century, movement in the form of facial expression once again received widespread attention. Extremely popular at this time were experiments performed to detect and distinguish facial expressions (Langfeld 1918; Buzby 1924; Landis 1924; Jarden and Fernberger 1926; Dasheill 1927; Fernberger 1927; Guilford 1929; Frois-Wittmann 1930). Much of the research dealt with specific emotions and how they were exhibited on the face. Such concentrated interest disappeared after the 1930's until Ekman and Friesen reintroduced the subject of facial expression in the late 1960's (Davis 1979). Other important studies during this time period focused on social interaction (Allport 1924) and gestures (Wundt 1911/1973) as applicable to nonverbal communication.

Another surge of interest in nonverbal behaviors emerged in the 1950's when Ray Birdwhistell (1952) developed an innovative method for the analysis of body movement or what is currently labeled "kinesics." From the widely cited book written by Ruesch and Kees (1956) came the term "nonverbal communication" (Harrison and Wiemann 1983). Since the 1960's, all categories of nonverbal communication have undergone considerable experimentation (Davis 1979).

Kinesics. The label kinesics refers to the study of gestures and bodily movement. The term kinesics has also been used interchangeably with "body language" and nonverbal communication. Due to an interactive element,

however, a distinction between body language and kinesics can be noted. Von Raffler-Engel (1980) suggests that body language is limited only to "signaling an ego-state" and kinesics is "message related" and must be confined to the areas of the body which are "regulating that exchange or in supplying information about its message." Hence, an expressive modality for the validation of meaning is the determining characteristic of kinesics.

Several attempts have been made in the field of kinesics to analyze body movements. At first glance, this task seems impossible in light of the phenomenal number of motions exhibited by humans. In his book, Introduction to Kinesics, Ray Birdwhistell (1952) devised a system to accomplish this goal. He divided kinesics into three sections of study. The first section involved physiological examination of body movements, the second emphasized the use of kines (smallest segment of body movement) to separate and identify morphological units, and the last section specified the social aspects of interaction and kinesics. The conclusions cited from this publication have been extremely valuable to the science of kinesics.

Birdwhistell (1952, p. 10) asserts that:

A. No motion is a thing in itself. It is always a part of a pattern. There is no "meaningless" motor activity.

B. Until otherwise demonstrated, body motion patterns should be regarded as socially learned.

C. No unit of motion carries meaning per se. Meaning arises in context.

D. An informant's statement regarding his own motion should be regarded as data rather than explanation.

There are disadvantages to the classification and notation system developed by Birdwhistell because of the difficulty associated with the detection of minute changes in behavior and expressive actions. However, the procedure prevails as an investigative tool utilized by researchers (Barker and Collins 1970).

In contrast, another approach to the organization of body movement has been advanced by Ekman and Friesen (1969). Representative categories include: emblems, illustrators, affect displays, regulators, and adaptors. Emblems are nonverbal behaviors that are transmitted intentionally and can be changed directly into words or phrases. Emblems have a cultural origin and the members of that culture are aware of usage and subsequent meaning. Examples of emblems include: the peace sign, the hitchhiker's sign, the "up yours" sign, and the O.K. sign (Knapp 1978). Illustrators are nonverbal acts that are used simultaneously with speech. They are a visual representation of their verbal counterpart and are utilized in the following ways: pointing, sketches in space, and movements to dramatize or stress body motion (DeVito 1982). Affect displays are facial expressions which portray emotions. Individuals

may be unconscious or conscious of this display. Anger, happiness, shock, and fear are emotions representing affect displays (Knapp 1978). Regulators are nonverbal behaviors used to initiate speaking and elicit listening between individuals. They provide control and monitor interactional discourse and consist of eye contact, head nods, and paralinguistic vocalizations such as "mm-mm" and "tsk" (DeVito 1982). In the last category are nonverbal behaviors that comply with some type of need. They are called adaptors and are usually performed in private or are incompletely performed in public (Burgoon and Saine 1978). Such movements include scratching, nose picking, or pulling at one's clothing.

A major problem exists with all kinesic classification systems--people are not stagnant, inactive beings. Their gestures, body movements, and the messages attributed to these actions are intertwined and not frozen in time or motion. Also, most nonverbal behaviors are produced in conjunction with verbal patterns. Therefore, it is difficult to isolate one unique behavior. Ekman and Friesen (1969) acknowledged this problem and summarized their endeavor by stating, "The five categories are not exclusive; the same nonverbal act can and sometimes must be placed within multiple categories."

Eye Movements. The term eye movement refers to the study of eye contact, pupil size, and eye gaze. Throughout

the ages, numerous references to eye movement have been made in the humanities. Societies observed the eye's aesthetic and physical qualities and then recorded their perceptions in art, poetry, and prose. Philosophers also recognized the expressive nature of the eyes and committed their impressions to volumes of printed material. People were sometimes characterized as shifty, flirtatious, and innocent or described as sparkling, shallow, and mischievous based upon their eyes (Knapp 1972).

DeVito (1982) suggests that information conveyed through the eyes varies according to the "duration, direction, and quality of the eye behavior." Within each culture is a set of standard norms for conversational eye behavior. The length of time in which a person maintains, avoids, and sporadically or intermittently sustains eye contact is indicative of a variety of emotions, thoughts, and feelings depending on the customs practiced in a specific society. In our society, attention, fascination, and excitement are reflected by duration of eye gaze (Argyle and Cook 1976). Changes in the direction of the pattern of eye contact within an interaction may communicate embarrassment or uncertainty in our culture. Emotions may be portrayed through the quality of eye contact by the lift or droop of the eyelid.

Four interactive functions of eye contact have been proposed by Kendon (1967) and they include: "1) cognitive,

2) monitoring, 3) regulatory, and 4) expressive." An important finding of Kendon's research is that eye contact or gaze is directly correlated to speaking and listening. Eye contact, for the individual designated to listen in a conversation, is fixed on the speaker. However, the speaker may divert her/his eyes from the listener at key times during discourse. The cognitive activity associated with eye contact involves the awareness and recognition of situational cues and responses. The monitoring aspect is used to determine if the recipient or initiator of the dialogue is maintaining interest. The regulatory function pertains to the management of the conversation with respect to the control of responses through eye contact. The concept of turn-taking is linked to this function. The expressive function allows for emotional information to be sent in terms of interest and involvement.

A similar index of visual interaction was devised by Knapp (1972). The first function is to utilize eye contact to seek feedback from others. The second function is the use of eye contact to acknowledge that the person is open to the process of communication. The third function is to provide insight into the characteristics of and attitudes toward the relationship between the participants. The last function involves distance. If the participants are far apart, eye contact is increased.

Pupil size has been demonstrated by the scientific community as a reaction to light. Constriction results from exposure to excessive light and dilation is the result of reduced light. Research by Hess and Polt (1960) reveals the connection between pupil size, emotional reaction, and interest. The underlying premise is that pupils constrict when attitudes are negative and the pupils dilate when positive attitudes prevail. Although pupil size as an isolated phenomenon is not a sole indicator of meaning, in combination with other nonverbal behaviors it contributes to the overall expressive appearance of an individual.

Eye gaze can be defined as the continuance of eye contact over time. Liking has been found to be a vital component of eye gaze (Argyle and Cook 1976). Positive feelings prolong the length of eye gaze and negative experiences lead to avoidance or aversion of gaze. Exline (1974) asserted that with regard to interpersonal gaze, females tend to gaze more and longer at others than males. He has also observed a correlation between power and eye gaze. In Western culture, power is signified by an increase in eye gaze while speaking and reduced eye gaze when listening (Exline 1974).

Facial Expression. Zealous inquiry into the category of facial expression originated as a counterpart to the study of emotional reactions. The connection between facial movement and emotional expression is the

analysis of the corresponding, distinctive feature movements of the face. Many experts believe the face provides more cues and clues about emotions than any other part of the body (Collier 1985). Therefore, facial expression is regarded as an invaluable source of information within the communicative exchange process.

One of the first and most notable innovators in the field of facial expression was Sir Charles Bell. His intricate drawings of the face are superior in anatomical detail and represent a variety of emotions. Charles Darwin (1872/1965) credited Bell with establishing a foundation from which further scientific development has stemmed.

Another influential contribution was Darwin's 1872 book, The Expression of the Emotions in Man and Animals. In this publication, Darwin (1872/1965, p. 27-29) advanced the theory of an interrelationship between emotion and expression through the three following principles:

I. The principle of serviceable associated Habits.--Certain complex actions are of direct or indirect service under certain states of the mind, in order to relieve or gratify certain sensations, desires, &c. [sic]; and whenever the same state of mind is induced, however feebly, there is a tendency through the force of habit and association for the same movements to be performed, though they may not then be of the least use. Some actions ordinarily associated through habit with certain states of the mind may be partially repressed through the will, and in such cases the muscles which are least under the separate control of the will are the most liable still to act, causing movements which we recognize as expressive. In certain other cases the checking of one habitual

movement requires other slight movements; and these are likewise expressive.

II. The principle of Antithesis.--Certain states of the mind lead to certain habitual actions, which are of service, as under our first principle. Now when a directly opposite state of mind is induced, there is a strong and involuntary tendency to the performance of movements of a directly opposite nature, though these are of no use; and such movements are in some cases highly expressive.

III. The principle of actions due to the constitution of the Nervous System, independently from the first of the Will, and independently to a certain extent of Habit.--When the sensorium is strongly excited, nerve-force is generated in excess, and is transmitted in certain definite directions, depending on the connection of the nerve-cells, and partly on habit: or the supply of nerve-force may, as it appears, be interrupted. Effects are thus produced which we recognize as expressive. This third principle may, for the sake of brevity, be called that of the direct action of the nervous system.

Charles Darwin (1872/1965) assembled the data gathered by individuals living in different parts of the world in accordance with and based on these principles. Observations were collected for both nonhuman and human subjects, including children and blind individuals, as they responded to diverse emotional states. The principles Darwin established supported his overall theory of an innate characteristic which he attributed to the origin and uniformity of facial expression. Embracing his steadfast position on evolution, he wrote the following passage (p. 365):

We have seen that the study of the theory of expressions confirms to a certain limited extent

the conclusion that man is derived from some lower animal form, and supports the belief of the specific or subspecific unity of the several races; but as far as my judgment serves, such confirmation was hardly needed.

Interest in facial expression diminished after Darwin's book until the early 1920's when attention focused on techniques for judging and/or interpreting emotions portrayed on the face. A subjective means of recognizing and identifying emotions, with the aid of drawings, etchings, and photographs of facial expression, was employed by several researchers including Langfeld (1918) and Landis (1924, 1929). Self-report was symbolic of this model. One of the more extensive series of photographs was made by J. Frois-Wittmann (1930). He incorporated seventy-two pictures from which subjects were asked to distinguish the emotions represented. With this research the formula for recording shifted to the observer and her/his judgment of the emotion. Other scholars such as Sherman (1927) preferred actual observation through direct contact and/or motion pictures. Despite the type of media adopted for facial reproduction and the index elected for recording, the task of identification of expressions remained paramount.

The propensity to classify and categorize facial expressions continued into the 1960's and 1970's. An objective method for measuring facial and emotional changes was introduced by Rubenstein (1969). He proposed the

monitoring of facial waveforms in relation to change in a person's emotional states. Izard (1971) theorized that facial expressions were embedded in emotions and could therefore be the key to differentiating one emotion from another. Shortly thereafter, Izard (1972) constructed the Differential Emotions Scale which measured self-generated emotional experiences and combined this information with the results of physiological and neuromuscular activity. In 1971, Ekman, Friesen, and Tomkins developed the Facial Affect Scoring Technique. This tool analyzes three distinct facial components associated with six categories of emotion. The first component includes the brows and forehead; the second consists of the eyes, eyelids, and the bridge of the nose; and the last includes the cheeks, nose, mouth, chin, and jaw. The six categories of emotions referred to as primary affect displays are comprised of the following: happiness, sadness, anger, fear, surprise, and disgust. This evaluative system has received continual application since its origination. The results of several studies, conducted by Ekman and his associates utilizing this technique, support the positive identification of the six targeted facial expressions. Leathers (1976) suggests an addition of two affective states to the above mentioned system in his coding instrument, the Facial Meaning Sensitivity Test. Leathers inserted the emotions of bewilderment and determination.

Investigations into cultural similarities and differences of facial behavior were conducted by several researchers in an effort to discover if universal expressions existed. Speculation on the innateness of facial expressions flourished with the evidence, from eight separate cultures, accumulated by Izard (1971). Natives of a preliterate society in New Guinea were tested by Ekman and Friesen (1971) with results indicating the ability to match various facial expressions with the emotion represented. Vinacke and Fong (1955) found analogous responses in Hawaii. Eibl-Eibesfeldt (1974) elicited similar positive data from his numerous jaunts around the world. Recently, Australasian aborigines have recognized facial expressions without previous contact with members of the culture represented in the testing stimuli (Boucher and Carlson 1980).

Proxemics. The term proxemics was first coined by Edward T. Hall, the foremost authority regarding the study of man's spatial perception and communication (Leathers 1976). Hall's definition of proxemics is "the study of how man unconsciously structures microspace--the distance between men in the conduct of their daily transactions, the organization of space in his houses and buildings, and ultimately the layout of his towns" (Hall 1963, p. 1003). Feelings, thoughts, and attitudes are all expressed through an individual's use of space and distance in the communication event. Recent studies purport that the manner in

which distance is utilized by interacting individuals is dependent upon their relationship with one another and the type of discourse transmitted (Collier 1985). Sex, age, race, and familiarity have been factors associated with distance (Burgoon and Saine 1978; DeVito 1982). Dominance, submission, status, and power are also cited by Patterson and Sechrest (1970) and Burgoon and Saine (1978) as characteristics demonstrated through the manipulation of spatial organization. For example, people tend to stand farther apart from individuals of higher status and power.

Hall (1966) maintained that distance can be divided into four fundamental zones, within which the purpose and deportment of communication vary. The intimate distance zone spans the circumference around a person from zero to eighteen inches and is reserved for extremely private or close relationships. Sensations of touch and smell are heightened within this space. The personal distance zone extends from eighteen inches to four feet. This area allows for physical contact but is restricted to selected individuals. Sommer (1969) suggests that the invasion of one's personal space tends to bring about feelings of discomfort and stress. The third zone is social distance, measuring from four feet to twelve feet. This distance reflects business or professional interactions and usually demands sustained eye contact (DeVito 1982). Body movements can be readily detected and easily implemented as one

aspect of the process of communication. Public distance represents the final zone encompassing from twelve to twenty-five feet. At this range, distinctive features diminish and larger gestures become the mode for transmitting information. It is apparent that as distance increases interpersonal involvement in the communication process decreases.

Numerous observations of both Western and Eastern societies culminated in the origination of a notation system to analyze proxemic behaviors and interpret cultural variations (Hall 1963, 1966). Hall (1966) theorized that the following eight components influence, regulate and determine proxemic behaviors of space and distance:

- 1) Postural-Sex identifiers provide general knowledge regarding gender and positioning. These identifiers cover terms like prone, sitting, squatting, or standing, to name a few.

- 2) Sociofugal-Sociopetal Axis refers to the placement of the participants' shoulders to one another. Positions may include face-to-face, back-to-back, and seven angles in between.

- 3) Kinesthetic Factors represent the physical distance between the interactive participants. This distance ranges from physical contact to contact with the use of artificial extensions.

4) Touch Code is the term used to describe the type of body contact engaged in by the participants of the interaction. Body contacts may involve caressing, holding, accidental brushing, or no contact.

5) Visual Code suggests eye contact between two participants. It describes a continuum ranging from focused and sustained to no eye contact.

6) Thermal Code refers to the detection of body heat by participants. It delineates the degree of heat produced by the participants' body.

7) Olfaction Code describes the body and breath odors identified by participants in the interaction. It indicates a range of acceptable odor from pleasant to unpleasant.

8) Voice Loudness refers to the intensity of sound produced by participants to convey a message. The range extends from a silent voice to a very loud utterance.

In conjunction with the concepts of distance and space, territory has become an area of investigation. Territoriality is defined as an individual's conduct or actions to defend a specific area and to signify a sense of spatial "ownership" (Knapp 1976). Lyman and Scott (1967) denote four categories associated with this combination. They are: public, home, interactional, and body. These categories are hierarchically ordered in terms of tolerance to invasion by outsiders. Sommer (1959, 1965) administered

numerous inquiries into the relationship of territorial boundaries and a participant's reactions to violation of this established domain. The behaviors that consistently emerged were avoidance, departure, embarrassment, and annoyance. These results emphasize the significance that distance and space have as nonverbal tools of human communication.

Chronemics. Edward T. Hall (1959) first submitted that time was an important aspect of nonverbal communication in his book, The Silent Language. Later, he reintroduced the topic with the following commentary (Hall 1966, p. 1):

Time talks. It speaks more plainly than words. The message it conveys comes through loud and clear. Because it is manipulated less consciously, it is subject to less distortion than the spoken language. It can shout the truth where words lie.

In the field of nonverbal communication, chronemics is defined as the study of the application, management, and perception of time. Bruneau (1980, p. 114) expounds further upon this meaning, stating that "...chronemics involves the study of both subjective and objective human tempos as they influence and are independent with human behavior." Individuals who adhere to a form of subjective time view it as a flexible, changeable entity used to accommodate personal needs. In contrast, objective time is viewed as a structured, measurable commodity.

Psychological, biological and cultural time orientations are delineated in chronemics (Burgoon and Saine 1978). Past, present, future and timeline perspectives compose the psychological orientation. Lifestyles are shaped according to the perspective embraced by an individual. Three natural rhythmic cycles produced by the body constitute the biological orientation. These are the physical, intellectual, and sensitivity or emotional cycles (Burgoon and Saine 1978). Cultural orientation is divided into technical, formal, and informal time (Hall 1959). Technical time is measured by precise scientific units, whereas formal time is structured into hours, weeks, and etc. (DeVito 1982). Informal time is evident in casual phrases such as soon, sometime, later, in the near future.

Other classification systems for the analysis of chronemic behavior have also been developed. Bruneau (1980, p. 115-116) proposed the following distinctive taxonomy:

Temporal drives: involving biorhythmic activity; hormonal and metabolic periodicities...

Temporal cues: pertaining to the initial sensing and recognition of one's own temporal drives and those of others.

Temporal signals: involving the imposition of perceptual durations and intervals which give rise to individual sense of time...

Temporal estimates: concerning the sense of time and timing...

Temporal symbols: pertaining to the symbolic representation of succession and duration, change and permanence, or of perspective and orientation...

Temporal beliefs: pertaining to assumptions held about the nature of time and space...

Temporal motives: relating to psychological intention to influence temporal behavior...

Temporal judgments: pertaining to the validity of temporal beliefs, temporal motives, and temporal values (below) as exercised by individuals or groups of individuals in sociocultural contexts...

Temporal values: concerning valuation and evaluation of tempo, times (events), and timing as they relate to personal, social, and cultural behavior.

The organizational framework presented in this scheme provides a foundation for research in the nonverbal area of chronemics. It accounts for tempo variables formerly excluded from other models. Further studies by Hall (1959, 1966) utilizing guidelines as previously presented validate the bond between human interaction and the factor of time in verbal and nonverbal communication.

Haptics. Haptics is the study of touch through physical contact and/or tactile stimulation. It is hypothesized by Montagu (1971) that of the five senses to mature in the fetus, touch is the first. Touch sensitivity begins in the womb with the embryo experiencing sensations produced by mother's somatic system. After birth, the infant is held, caressed, and cuddled, continuing the awareness of touch from the internal to the external world. Later, as

the child grows, she/he begins to explore the environment, practicing what they have learned about the reciprocity of touch. Frank (1957) believes the patterns of touch fostered in childhood are exercised by a person throughout their lifetime.

The exchange (giving and receiving) of physical contact is psychologically and emotionally necessary for mental stability and a healthy attitude toward human interaction. Many studies focusing on deprivation of touch (Bakwin 1949; Rosenthal 1952; Yarrow 1963) validate this point by providing examples of high mortality rates, skin disorders, and developmental problems. An experiment that concurs with these findings was Harlow's 1958 sample of rhesus monkeys. The importance of a physically bonding tactile relationship was demonstrated through isolation of the infant monkey or the substitution of surrogate (cloth and wire) mothers for the baby monkey's real mother.

Touch is a basic avenue for communication. Physical contact is perceived by some societies as a welcomed gesture with few restrictions, while other societies are more conservative in their response to touch. Jourard (1966) reported the outcome of counting the number of times couples at eating establishments in various cities worldwide made physical contact for a period of an hour. Jourard's (1966) calculations revealed the following: London--zero (0); Gainesville, Florida--two (2); Paris--one

hundred ten (110); and San Juan, Puerto Rico--one hundred eighty (180) touches. Cultures which advocate copious tactile communication are referred to by Hall (1966) as contact societies, whereas cultures that reserve touch for specific circumstances are called noncontact societies. In the preceding illustration, England and America are considered noncontact cultures, establishing France and Puerto Rico as contact cultures.

Different touch norms also exist within societies in regard to gender and accessibility to particular segments of the body. Interested in the regularity and area of touch associated with male and female relationships, Jourard (1966) distributed a survey to solicit information on the subject. Respondents were asked to indicate where on the body they had been touched in the past twelve months by their mother, father, same-sex friend, and opposite-sex friend. The body was partitioned into fourteen segments. A summary of the findings depicted females as the gender most accessible to touch. Opposite-sex friends touch more than any other group and fathers touch the least. The head and hands receive the greatest amount of contact. Rosenfeld, Kartus, and Ray (1976) reproduced the above study and confirmed the results previously obtained by Jourard.

Many other significant aspects of touch have been reviewed in the literature. First, power and status

messages can be conveyed through the manipulation of touch duration, initiation, and frequency (Henley 1973, 1977). Higher status people tend to touch more than lower status people. Secondly, physiological aspects of contact can be measured. It has been found that temperature alterations, perspiration, and muscular resistance are related to touch (Collier 1985). Lastly, sex and age differences have been associated with touch (Lewis 1972; Henley 1973; Jourard and Rubin 1968). Men receive less contact than do women and men usually initiate the contact. Older individuals touch younger individuals with more frequency and, due to their assumed status, initiate the touch.

Artifacts. The final nonverbal communication category to be reviewed in this paper is artifacts, the study of physical appearance, apparel, environmental surroundings, and objects. Continual input of artifactual information is gathered through the five sense organs and then processed in the brain. A primary source for the transmission of artifactual details for analysis appears to be through the visual mode. However, environmental conditions of temperature, odor, and sound also provide the brain with valuable knowledge upon which conclusions and decisions are based (Burgoon and Saine 1978). Feelings, impressions, and emotions can spontaneously be altered according to the perceptions received from outside stimuli. For example, an individual feeling happy and content enters a facility for

elderly people where sanitation and building maintenance have been neglected. The person may become saddened. The reception and subsequent evaluation of artifactual characteristics have a direct influence on an individual's communicative development and behavior.

The use of clothing, jewelry, and cosmetics not only makes a statement about the individual who is wearing them, but also about the society in which they live. Harrison (1974) states that clothing emulates the "...personality, attitudes, and values of the wearer." Affluence, poverty, climate, available materials, and personal preferences are reflected by one's attire. Two additional key factors that an individual must consider in their selection of apparel are cultural norms and current style. Although individuals express their uniqueness through choice of clothing, jewelry, and cosmetics, societal standards are always present even when they are ignored by an individual. When a deviation from the norm occurs, judgments may be made that will nonverbally affect a communication event.

Environmental surroundings and objects contribute immensely to the comfort and disposition of an individual during the receptive and expressive interchange of communication. Burgoon and Saine (1978) enumerated levels of external conditions which impact the communication experience. They identified the following components (p. 107-111):

The first feature of significance is size and volume of an artifact.

A second feature is the arrangement of elements within an environment.

A third feature of the environment is the materials used--their shape and texture.

A fourth feature of importance is linear perspective.

A fifth consideration is lighting and shadowing.

Sixth in our list of factors is color.

A seventh element of environments and objects [is] ...temperature.

The eighth consideration that operates much like temperature is noise.

A final consideration is the total amount of sensory stimulation provided by an environment.

In any given setting, communication can be severely repressed, inhibited, or hindered due to the presence (singly or collectively) of these artifacts. Conversely, the interaction may be enhanced for the participants with increased freedom, security, and openness of expression.

Conclusion

In conclusion, human interaction is accompanied by nonverbal behaviors, initiated consciously or unconsciously, that facilitate the process of communication. The literature is replete with evidence to substantiate this theory. Nonverbal behaviors communicate more about people than merely their emotional states. Other important information regarding an individual's beliefs, values, and

perceptions may also be conveyed. Cultural background, educational preparation, and professional experience all contribute to the overall development of an individual, therefore, his/her use of nonverbal behaviors. Several modalities of nonverbal communication exist which influence how people exchange messages during mutual discourse. The areas of primary interest that have been investigated include kinesics (general body language/movement), eye movement (eye gaze, pupil size, and eye contact), facial expression (facial movement and emotional interpretation), proxemics (use and perception of space), chronemics (use and perception of time), haptics (touch), and artifacts (objects in the environment). Generally, a combination of these areas are involved when communicating a message. With increased awareness of these nonverbal aspects, individuals will have the necessary knowledge to communicate in a more effective manner.

Nonverbal and Nonmanual Behaviors Utilized by the Deaf Population

Research studies have identified cultural variations in nonverbal communication (Hall 1966). What may be appropriate nonverbal behavior within the confines of one society may not be acceptable within the boundaries of another. Effective communication between two members of the same group is plausible as both individuals comprehend the encoding/decoding rules of their language, nonverbal

activities, and culture. However, when two individuals of divergent cultures interact, and "when languages and codes are not fully shared, communication and social interpretation of it become disordered" (Stokoe and Battison 1981, p. 189). Conflicts may arise from confusion about the non-verbal meaning (emission or reception) of the message. Misinterpretations may plague the communication experience, leaving both participants feeling awkward and distressed.

Many of the cross-cultural problems attributed to translation errors of nonverbal activities frequently occur between hearing and the deaf communities. This may be attributed to the fundamental difference between the use of a spoken language by hearing individuals versus an independent language of signs employed by deaf people (Klima and Bellugi 1979). As a direct result of these separate modes of communication, contrasting nonverbal behaviors also exist. Stokoe and Battison (1981) assert that "hearing and deaf people differ in their communication on the linguistic level and on the nonverbal level, and that such code differences can result in misunderstandings, and in mutual judgments of 'madness (craziness) or badness.'"

Historical Perspective on Nonverbal and Nonmanual Communication

Unlike nonverbal behavior concomitant with spoken language and the hearing population, historical research on nonverbal communication in conjunction with sign language

and the deaf population is, in comparison, limited. Many authors have commented on the presence of facial expression and body movements in sign language or the deaf community; however, analysis of these behaviors did not transpire. One of the earliest endeavors was by Thomas Gallaudet who devised a way of representing the alphabet through facial expression (Frishberg 1975). The letter "a" was signified by the expression "awe"; the letter "b" by boldness; "c" by curiosity; "d" by despair; "e" by eagerness; "f" by fear; and etc. (Liddell 1980). Although this expressive alphabet was discarded, it acknowledged the utilization of facial expression, communication, and deafness. Only recently, within the past decade, have linguists and other specialists addressed the concept of nonverbal/nonmanual behavior and the deaf community.

The majority of literature regarding the deaf and their utilization of nonverbal cues focuses on body/head positions, eye movements, facial expression, and proxemics. These aspects of behavior have been investigated in terms of general use in the deaf community and as discrete linguistic components of American Sign Language (ASL). If movements of the eyes, face, head, or torso designate specific grammatical, syntactical, or lexical functions of ASL, they are termed "nonmanual components" (Baker 1978; Liddell 1980). Therefore, nonmanual components serve a linguistical purpose and other nonverbal behaviors are

derived from cultural norms. Both modalities are intricately woven into communication among the deaf population. Levine (1981) aptly explains the interrelatedness of nonverbal and nonmanual communication in the following quotation:

The language is, rather, a meshing of many kinds of body movements and positions into a flow of picto-kinesic expression. Depending on the situation as well as the expertise of the "speaker," the traditional sign language of the deaf is composed of varying quantities and qualities of natural gesture, conventional signs, fingerspelling, facial expression, body movements, postures and positions, and many other kinesic subtleties (p. 93).

Separating one concept from the other becomes a very complex task and exceeds the scope of this study; therefore, nonmanual components and nonverbal communication will be considered synonymous.

Kinesics. Researchers have discovered that in order to understand the communication and visual-gestural language of the deaf community, it was necessary to pay close attention to the eyes, face, head, and body (Baker 1980b; Baker-Shenk 1985). Important information can be transmitted without the use of conventional signs delivered on the hands. Friedman (1976) discusses body positioning in reference to role playing or establishing a means of representing other people not currently present. This is achieved by placing the absent individual to the right or left of the signer and turning the body to the opposite

side to relay a quotation. Baker-Shenk (1985) describes various body and facial activity which communicate special phrases; for example, "to like something" made by "raising the eyebrows, pursing the lips, and sucking in air" and "yeah I know that" made by "twitching one side of the nose." The phrase "not-yet" is produced by an exact sign with the appropriate corresponding facial movements (mouth open, protruding tongue, and head shake), or alternatively by omitting the sign and using only the facial expression (Liddell 1980).

Bellugi and Fischer (1972) and Baker (1976) have isolated characteristic nonmanual movements which accompany questions during communication. They reported that if the question requires only a yes or no answer, the signer raises their eyebrows while the orientation of the body and head are forward. If a wh-word question is implied, the head is tilted, the brow squinted, eyes narrowed, and the shoulders are generally raised. Rhetorical questions are again portrayed by a tilted head and by raised eyebrows. Negation of a statement entails the shaking of the head from side to side while the corners of the mouth are turned downward. Baker and Cokely (1980) present numerous photos illustrating questions and statements utilizing nonmanual movements.

Other nonmanual components accompany the topicalization of sentences, relative clauses, and conditional

statements. Fischer (1975) reported head tilts, eyebrow raises, and pauses ("intonation breaks") in association with the topic of a sentence. Liddell (1978; 1980) conducted extensive research into the area of relative clauses. He claims that nonmanual activity is essential to the understanding of relative clauses and this activity distinguishes relative clauses from other sentences in ASL. Three nonmanual factors marking relative clauses were determined. They include the tilting of the head backward and forward, the raising and lowering of the brows, and the tensing of the upper lip (Liddell 1980). Baker and Padden (1978) reviewed conditional sentences on videotape and observed a recurrence of head nodding, lowering of the brows, eye blinks, gaze shift, and a parting of the lips between the first and second clauses.

Liddell (1978; 1980) noted unique nonmanual expressions associated with adverbs such as "mm" (lips pursed and protruded) which represents "normal and proper" or "relaxed and enjoyment"; "cs" (head and cheek turned to raised shoulder) meaning "past-tense" or "recently"; and "th" (tongue protruding through slightly opened lips) representing "lack of control" or "inattention" (Liddell 1980). Adjectives can also be accompanied by nonmanual cues. Puffed cheeks signify thoughts of "large," "huge," or "to an unusually great degree"; conversely, pursed lips

mean "very small," "narrow," or "thin" (Baker and Cokely 1980).

Eye Movements. Eye contact between two deaf individuals engaged in conversation must be maintained to convey valuable nonverbal information (Padden and Markowicz 1976). Baker (1977) reported it is not unusual for deaf conversants to sustain eye contact for five seconds or more. This length of time is not, however, the general norm for hearing people. Therefore, hearing individuals may be viewed as "rude," "disinterested," or "trying to act hearing" when they avert their eyes during interaction or suddenly break eye contact (Padden 1980). Consequently, Baker (1977, p. 230) concludes that "one of the most basic problems confronted in deaf-hearing interaction concerns the different use of eye gaze between the two cultures." Stokoe and Battison (1981) support Baker's statement and expound upon it by adding the following:

In hearing people's conversations, eye contact, or lack of it, is used to express respect, attentiveness, boredom, preoccupation, and various other states and affects. Since signers are visually dependent, lack of eye contact is naturally interpreted as something stronger than inattentiveness. If the receiver breaks eye contact, communication is broken (p. 191).

One function of eye gaze behavior in ASL involves the regulation of turn-taking and interchange during discourse. Along with other nonmanual components, eye gaze is used to monitor, initiate, continue, shift, and terminate

the communication (Baker 1977). From data gathered of studies comprising deaf dyads, Baker (1977) deduced eye gaze was perceived to be "one of the most powerful regulators in Sign since it determines when an interactant can speak." Due to the necessity of the "addressee" to look at the "speaker" in a signed conversation, it becomes impossible to "speak" unless a visual encounter transpires. Baker designates two types of gaze: positive (eye contact) and negative (no contact). Negative gaze on behalf of the "speaker" controls interruptions or signals a possible interruption by the "addressee." Positive gaze on behalf of the "speaker" indicates turn yielding and allows the "speaker" to continue if initiated by the "addressee." To introduce signing, positive gaze is used by the "speaker" to gain the attention of the "addressee." If the "speaker" wishes to continue, the "speaker" looks away from the "addressee." If the "speaker" wants to relinquish the turn, he/she once again establishes eye contact with the "addressee." To terminate the conversation, mutual gaze is once again collectively initiated. Mathers (1987) examined the role of eye gaze, as an individual and a group process, within a deaf classroom. Her study demonstrates the importance of eye gaze by teachers in classroom discussions to maximize student response and participation.

Eye movements of blinking, closure, and gaze denote specific nonmanual information. Pronouns are determined by

a directional gaze, conditional statements and modifiers are indexed by retracting the eyelids, and constituent boundaries are marked by eye blinks (Baker and Padden 1978). For example, pronominal reference may be made in ASL discourse by the "speaker" simply gazing in the direction of a person or object. Conditional statements in ASL have two segments that are separated by a pause during manual presentation. The pause is accompanied by a widening of the "speaker's" eyes and simultaneously retracting the eyelid (Baker and Cokely 1980). Baker and Padden (1978) have observed periodic eye blinks by the "speaker" in ASL discourse at grammatical junctures or boundaries. Also, emphasis can be expressed by prolonged closure of the eyelid and by lengthening the time (duration) required to impart necessary information.

Facial Expression. The most thoroughly explored category of nonverbal communication has been facial expression. This area also has the greatest potential for code conflicts. Padden (1980) postulates that conflicts arise because "facial expression among hearing people is typically quite restrained when compared with deaf signers." Subjects assisting in a study related to conflicts between hearing and deaf cultures, labeled deaf facial expressions as "attention getting" and "exaggerated" (Padden and Markowicz 1976). Stokoe and Battison (1981) cite several informal experiments yielding totally opposite reactions by

hearing and deaf signers. The interpretation of facial expressions in these experiments elicited responses by hearing signers of an "emphatically negative" perception of the face while the response by deaf signers was one of an "emphatically positive" expression. This example accentuates the misunderstandings inherent in the analysis of facial expression between two dissimilar cultures. A breakdown in communication may result from these misunderstandings.

Kagan (1970) enlisted several deaf individuals to participate in an experiment designed to correlate emotional states with kinesic actions. Each adult was shown a series of videotapes and asked to abstract the concept of emotion from the context. The films were interpreted with extraordinary accuracy; participants correctly classified affective displays by body language cues. A frown on the face, duration and intensity of eye gaze, and eyes cast downward were judged as depicting a reflective state. Constant moving of the hands, playing with the ring finger, and restlessness were labeled as nervousness, embarrassment, and anxiety. Forcefulness was viewed as a quick movement of the head and body to a forward position. This study contributes to the theory that deaf individuals have an extreme sensitivity to body movement and cues. However, several studies using hearing-impaired adolescents have not produced the same results; i.e., hearing-impaired children

were unable to pair facial activity and emotional states as accurately as their hearing counterparts (Schiff 1973; Dowling and Furth 1973). Sanders (1985) suggests the inclusion of contextual factors, employed in the two previous studies, affects the ability of hearing-impaired children to successfully interpret the emotion assigned to the task.

Affect displays impart critical nonverbal information about the sender. Baker (1985) recorded emotional nonmanual behaviors associated with distress (brows drawn together as the inner segments of the brows are raised) and surprise (brows and eyelids raised and the jaw open). Liddell (1980) added the emotion of anger (a dropped jaw, bared teeth, frown, and tense lower eyelids). Affect displays are a powerful source of nonverbal communication. When an affect display is superimposed on a signed statement, the meaning of the statement may be altered. The emotional expression exhibited is disseminated across the complete sentence without interruption (Liddell 1980). Congruence between the emotion portrayed on the signer's face and the actual signed message is essential for effective communication.

Proxemics. Proxemic behavior in the deaf community has been minimally studied, although alluded to in numerous sources. Lyman and Scott (1967) proposed that there are significant differences between deaf and hearing

individuals regarding the concept of territory and space. "As an attempt to appear as normals, the deaf may overstep another's territorial space and thus call attention to the very stigma they wish to conceal." An opposing perspective was offered by Holton (1978) in her examination of overall proxemic behavior with deaf and hearing people. She submits that there are no significant differences between spatial and distancing behavior in application to these two groups.

A nonintimate distance throughout the process of discourse is considered appropriate by deaf standards (Friedman 1974). This distance is close enough to visually communicate and, yet, maintain "at least an arm's length" between the signers. Lighting and the ability to see the "speaker" are essential for the visually dependent (Stokoe and Battison 1981). Poor lighting or distractions within the surrounding environment can lead to misunderstandings of communication and eliminate the "addressee" from the conversation. "The logical position for the deaf person is not necessarily logical for the hearing person, nor are comfortable conversational distances necessarily the same" (Stokoe and Battison 1981, p. 191).

ASL is a spatial language, communicating the arrangement and relative distances of things (Lane 1985). The arrangement of nouns and pronouns in one's sign space permits the individual to consistently refer to the person

being discussed, by pointing, throughout the conversation. Modification of verbs is achieved by utilizing space and directionality of the sign. Spatial agreement of the noun and verb is essential for knowing who is doing what (Klima and Bellugi 1979).

The sign space is a zone vertically encompassing the distance from the top of the head to the waist, horizontally and laterally forming a "bubble" around the signer's upper torso (Wilbur 1987). Most signs are executed in this space (Bellugi and Fischer 1972; Frishberg 1975), allowing the interactants to maintain direct eye contact with one another. Physically, the sign space provides a comfortable area in which to reproduce signs, hand movements, and other nonverbal information.

Conclusion

Evidence of cultural differences affecting the encoding and decoding of nonverbal/nonmanual behaviors is well documented in the literature. An enormous difference is present in the categories of facial expression and eye movement. The mode of communication employed by deaf individuals accounts for many of the contrasting behaviors between the two dissimilar cultures. Chronemics, haptics, and artifacts have been virtually unexplored as nonverbal communication aspects of the deaf community. There is nothing in the literature on current behaviors, theories,

or expectations concerning cultural nonverbal communication norms of deaf people in the areas of chronemics, haptics, and artifacts.

Sign Language Interpreter Training Programs

Interpreter training programs provide formal course work in sign language, interpreting, and deaf culture within a postsecondary setting. Training is specifically designed to give the student an orientation to the field of deafness and skills to bridge communication between hearing and deaf individuals. Programs may vary according to content taught and the time frame in which students develop their skills. However, most institutions strive to provide a uniform approach to the training of interpreters.

Historical Perspective of Sign Language Interpreter Training Programs

The establishment of sign language interpreter training programs evolved from the need of hearing-impaired persons for quality interpreting services and from a concern for the limited quantity of interpreters available. The movement toward formal, educational preparation of interpreters began to gain strength in the 1950's and 1960's as an expanding population of hearing-impaired people expressed their desire for services (Dirst and Caccamise 1980). This increased demand resulted in a 1964 workshop, funded by the Rehabilitation Services Administration, held

at Ball State Teachers College in Muncie, Indiana. During this conference, the National Registry of Professional Interpreters and Translators for the deaf was organized. A primary goal of the newly formed association was "to promote recruiting and training of more interpreters..." (Dirst and Caccamise 1980, p. 6).

At a follow-up workshop held in Washington, D. C., seven months later (1965), a constitution for the organization was successfully composed. The name was subsequently modified and accepted as the Registry of Interpreters for the Deaf (RID). An additional workshop in 1965, held at the Governor Baxter State School for the Deaf in Maine, produced a publication entitled, Interpreting For Deaf People (Quigley and Youngs 1965), first on the topic of interpreter training. This resource manual provided a comprehensive model for the instruction of interpreters. A final workshop was held in San Francisco, California, during the summer of 1966. A joint agreement between RID and the National Association of the Deaf was adopted to support the accelerated growth in interpreter services.

Federal legislation enacted in the 1960's propelled the profession of interpreting forward and, indirectly, promoted the development of interpreter training programs. The 1965 Vocational Rehabilitation Act Amendments (PL 89-333) endorsed the employment of interpreters for Vocational Rehabilitation (VR) hearing-impaired clientele and provided

monetary compensation for those services through VR funds. Interpreters received an unprecedented upswing in demand with the passage of the 1973 Rehabilitation Act and the Education for All Handicapped Children Act of 1975. Requests for quality interpreters created by this additional legislation helped promote interpreting as a profession and highlighted the need for training interpreters.

Additional federal legislation in the 1970's led to the financial assistance given interpreter training projects such as the National Interpreter Training Consortium (NITC). Rehabilitation Services Administration (RSA) funded six institutions in the consortium: Gallaudet College, New York University, St. Paul Technical Vocational Institute, Delgado Community College, Seattle Central Community College, and California State University, Northridge. Since the mid-1970's, there has been a steady proliferation of interpreter training programs in the community college and university settings. Today, there are more than thirty postsecondary interpreter training programs throughout the United States (Frishberg 1986).

Programming

Many interpreter training programs accept students with very rudimentary or nonexistent levels of skill in sign language to interpreter proficiency within the constraints of a two or four-year academic framework.

Therefore, heavy emphasis is placed on the development of sign skills, cultural awareness and interpreter expertise (Dicker 1978). Cultural awareness is usually embedded in sign and interpreting classes because of the restrictive time parameters.

The interfacing of nonverbal/nonmanual training with the instruction of sign language is critical for interpreter competence (Nowell and Stuckless 1974; Baker and Cokely 1980; Frishberg 1986). Without the enhancement of a student's cultural sensitivity and ability to encode and decode appropriate nonverbal behaviors, the student is severely limited in his/her capacity to become a qualified interpreter. Misreading of nonverbal information can result in the misconstruing of a deaf person's message into spoken English. Likewise, the misunderstanding of nonverbal cues by a sign interpreter can radically affect the message sent to the deaf person. The acute awareness for cultural nonverbal communication training is not exclusive to sign language interpreter programs. Arjona (1978), in discussing training of spoken foreign language interpreters, recommends "...the presentation of cultural, nonverbal elements in the communication process include the repeated acting out of skits portraying given situations" (p. 39). Sensitivity to cultural diversity and the intricate array of nonverbal communication components is further noted by adding, "In this manner paralanguage, proxemics,

non-verbal cues and other subtle cultural elements of the communication act are studied, analyzed, and experienced" (Arjona 1978, p. 39). Poyatos (1975) concurs with this type of multidimensional approach to language instruction.

Individual courses on nonverbal communication are sometimes offered as a part of interpreter training programs. These may be elective classes in other programs of interest to the student (Eastman 1980). However, the majority of programs incorporate and interweave this type of specialized training into sign language and interpreting classes.

Due to the dearth of information on the philosophy and status of nonverbal communication training in interpreter programs, a survey (Appendix D) developed by the investigator was distributed to forty-eight educational institutions. The purpose of the survey was to collect data from interpreter training faculty on their perspectives regarding nonverbal communication in three major areas: a) the relationship of nonverbal communication and sign language; b) course structure for the inclusion of nonverbal communication in sign language classes and interpreter training; and c) what specific aspects of nonverbal communication should be included in course content. A twenty-one item Likert-type scale was utilized with a four-point response range indicating 1) strongly agree (SA), 2) agree (A), 3) disagree (D), and 4) strongly disagree (SD).

A summary of responses from thirty-two programs indicates that the relationship between nonverbal communication and sign language is viewed as extremely important. Results revealed that 84% of the respondents strongly agree and the remaining 16% agree that nonverbal communication is a critical component of sign language. The majority of respondents (88%) basically disagree that nonverbal communication includes only body language and facial expression, and 91% generally agree that it does express degree and depth of emotions in sign language. As an element of interpreter training programs, 66% strongly agree and 28% agree that nonverbal communication is essential. Ninety-one percent of the respondents generally agree that nonverbal communication is consistently used with sign language.

Inquiry into the area of course structure revealed that 47% believed nonverbal communication should be taught as a separate class in the interpreter training program, whereas 53% did not. This nearly equivalent split is very interesting because the information upon which the reply was based does not include empirical data. Another division in responses was evident in the area of instructional delivery of nonverbal information. A voice only method of teaching was not endorsed by the respondents; 85% generally disagree with this type of approach. Responses to a voice and sign method indicated a narrow approval of this

approach with 53% in agreement and 47% in disagreement. Yet, the method of using no voice only gestures and pantomime was proposed and received an equal number of responses: or, 50% for and 50% against this approach. The majority of responses (94%) indicated that the class could be taught by either a hearing or a deaf person.

Nonverbal communication curriculum content was the last segment of the survey. The questionnaire elicited responses on what aspects of nonverbal communication should be included in a course. Kinesics, proxemics, facial expression, haptics, chronemics, and artifacts were presented as pertinent topics. All respondents marked strongly agree or agree for the inclusion of proxemics and facial expression in a class. Ninety-four percent agreed that kinesics and chronemics should also be included. And 78% generally agreed that haptics and artifacts should be taught in the class. Another overwhelming response of agreement was indicated for the teaching of cultural differences (94%).

The survey results concur with previous research cited in the review of literature and support the findings of this study. Additionally, these results provide insight into the relationship of nonverbal communication and sign language as a component of interpreter training programs.

Relevance of Nonverbal Communication in Interpreter Training Programs

Second language learning is not a one-dimensional activity (Poyatos 1983), nor is the acquisition of a visual language. The study of sign language entails the learning of grammatical, lexical, and syntactical information (Klima and Bellugi 1979). Knowledge about unique nonverbal behaviors used in ASL and the deaf culture is also necessary for competency in sign language. If an interpreter cannot accurately analyze the subtle movements of the body and/or facial expressions exhibited by a deaf individual, communication ceases to occur. The ability to communicate with a deaf individual involves more than acquiring a sign vocabulary. The importance of nonverbal communication in ASL and the deaf community has been well documented in the literature (Padden and Markowicz 1976; Baker and Padden 1978; Baker 1980a; Baker and Cokely 1980; Stokoe and Battison 1981).

Nonverbal communication, however, is not restricted to just cues produced by various parts of the human body. It also includes the perception and use of abstract concepts such as space and time. In many instances, a combination of cues are used to transmit a message. For example, in the category of kinesics, emblems, illustrators, affect displays, regulators and adaptors are employed in ASL to demonstrate a grammatical pause, a change in the

topic, and a shift in meaning. These are conveyed through the use of body/face movement and three-dimensional space (Baker-Shenk 1985).

The eyes contribute valuable nonverbal information to an interpreting situation. Eye gaze, pupil size, and eye contact serve important functions in ASL (Baker and Padden 1978). The indexing of an individual in space can be accomplished through eye gaze. Conversational turn-taking is established by direct eye contact, and pupil size is an indicator of overall interest. Without knowledge of the rules governing eye movement, an interpreter can erect a barrier rather than a bridge to communication.

To select the correct English word when reverse interpreting, the student must be knowledgeable of the diverse meanings attributed to facial expressions in the context of the deaf community. Conversely, the interpreter must be trained to accurately reproduce these unique facial expressions when providing services for the deaf consumer. The misunderstanding of facial expression is one of the major problems encountered by interpreters in both the expressive and receptive modes of communication.

Distancing and spatial orientation is different for communication in a visual language as compared to an auditorily based language. Sign language discourse requires a closer proximity between the participants for the comprehension of sign and body movements. Stokoe and Battison

(1981) identify several cultural differences in the category of proxemics that exist between the hearing and the deaf populations. For example, seating arrangements may depend on appropriate lighting or the ability of the deaf person to see the "speaker." The need to have eye contact with another individual during conversation generally eliminates the range of distancing options described by Hall (1966) in his classification system for the hearing culture.

Empirical data has not proven that perceptions of time (chronemics) and touch (haptics) differ between hearing and deaf individuals. However, people in the field of deafness frequently comment that there is a difference. Deaf people often use touch to gain the attention of someone with whom they wish to communicate. Greetings are accompanied by an embrace, and hugs are freely given before departing. Observations indicate that physical contact is viewed as an avenue for self-expression.

Environmental factors such as noise, temperature, and lighting can all affect the ability of the interpreter to perform his/her duties. For example, dim lighting limits the deaf person's ability to clearly see and comprehend the interpreter's message. Cold temperatures can cause an interpreter's movements to be slow and sluggish. Interpreters should also be aware of the effect their clothing and jewelry can have on the interpreting situation. If an

interpreter is inappropriately dressed for an interpreting assignment, he/she will not appear professional or unobtrusive.

Conclusion

Research on cross-cultural communication indicates a need for interpreters to become competent in the target language and acquire knowledge about cultural idiosyncrasies and nonverbal behaviors. Effective cross-cultural communication between the hearing and the deaf is based on mutual understanding. The cross-cultural perspective of deaf people as a minority group with a hierarchical social structure, its own language (ASL), and unique culture is emerging (Markowicz and Woodward 1982). Without this visual "fifth parameter" of sign language, much of the degrees and shades of meaning would be lost in the communication process between hearing and deaf people. Mastering the realm of nonverbal communication is a goal that sign language interpreters must strive for to effectively facilitate communication.

Summary

The purpose of this chapter was to present a review of the literature relating to the categories of nonverbal communication, to the nonverbal and nonmanual behaviors associated with the deaf, and to sign language interpreter training programs. The historical background of nonverbal

communication and the seven nonverbal categories were presented in the first section. Section two described the historical background and research regarding the nonverbal and nonmanual behaviors utilized by the deaf. Section three presented the historical background and programming of nonverbal communication techniques in sign language interpreter training programs.

CHAPTER 3

METHODOLOGY

This chapter presents a discussion of the selection of subjects for the study and the methods, procedures, and instrumentation used in the evaluation of these subjects. A description of the research design and the statistical tests utilized in the analysis of the data are also presented.

Selection of Subjects

The target population consisted of participants in the six-week Beginning Interpreter Training Program (BITP) held at the University of Arizona, in Tucson. The twenty-eight registered participants were randomly assigned to two groups with fourteen subjects in each group. Group One was the treatment group. They received ten hours of nonverbal communication training in the categories of kinesics, eye movements, facial expressions, proxemics, chronemics, and artifacts, concurrently with their participation in the BITP. Each session was held semi-weekly for one hour over the duration of the program. Group Two was the control group which was not exposed to the treatment.

Biographical information on each participant was collected. Six males and twenty-two females attended the

program, including twenty-six individuals with normal hearing and two individuals with hearing impairments. Other demographic information revealed twenty in-state and eight out-of-state participants of which twenty-five were Anglo, two were Chicano, and one was of black heritage.

The University of Arizona policy on human subjects was completed and observed. Permission for participation in the research study was obtained from the subjects.

Methods and Procedures

The development of lesson plans (Appendix A) and activities (Appendix B) provided continuity within the ten training sessions in nonverbal communication. Lesson plan topics were sequentially organized, beginning with an orientation to nonverbal communication, followed by the seven primary categories, and ending with an integrated collection of nonverbal behaviors. Lesson one was an introduction to nonverbal communication terms and also definitions of the following: kinesics, eye movement, facial expression, proxemics, chronemics, haptics, and artifacts. Historical and current research trends within the seven categories for both hearing and deaf cultures were presented. Lesson two focused on kinesics and the classification of body movements in both hearing and deaf cultures. The purpose of this lesson was to emphasize the importance of overall nonverbal behaviors and how they blend together

to convey a nonverbal message. Lesson three involved the presentation of research concerning eye movement. Information on eye gaze, pupil size, and eye contact as related to hearing and deaf cultures was reviewed. Lessons four and five focused on the category of facial expression. Universal expressions were depicted and the physiology of facial movement was presented. Similarities and differences between hearing and deaf cultures was discussed. Lesson six highlighted current research in the category of proxemics. The use of distance, space, and territory was discussed in relation to hearing and deaf cultures. Lesson seven focused on the topic of chronemics. Time orientations and cultural differences were presented. Lesson eight highlighted research conducted in the area of haptics. Touch was analyzed in terms of deprivation, reception, and transmission. Lesson nine focused on the category of artifacts. The influence of environmental factors on an individual's performance was discussed. Lesson ten involved the integration of research previously presented in the other nine lessons. Emphasis was placed on cultural differences between hearing and deaf people.

Each session contained three separate but interrelated phases. The first phase of training incorporated a lecture format with a printed outline. The participants were required to passively absorb and ponder the information presented by the experimenter. Questions were

permitted but discussion was not encouraged at this time. Lecture topics included historical as well as current research interests, theories, and results. Due to the limited time frame, a comprehensive review of the respective topics was not attempted. However, major research studies and their implications were explored.

In the second phase, subjects participated in the assigned activity. The intention of each activity was to highlight the lesson's topic and to actually experience and practice the concepts previously addressed. The final phase focused on discussion of nonverbal behaviors exhibited by deaf individuals. The group shared their knowledge on these variations of conduct and possible reasons for the existing modifications. All ten sessions culminated with a question and answer period.

Instrumentation

The instrument used to evaluate the subjects was an interpreter rating scale which was employed by three independent raters. Similar instruments have been developed and implemented by the certification boards of the National Registry of Interpreters for the Deaf (RID), the Arizona State RID, and the Interpreter Quality Assurance System in the state of Arizona. Standard evaluation forms designed by these organizations were used as models to construct a rating scale specific to the purposes of this study. The

instrument (Appendix C) consisted of a five-point, eight-item rating scale for the evaluation of expressive sign language skills. The receptive component of the instrument was comprised of a five-point, five-item rating scale for the evaluation of receptive sign language skills. The competency levels on the rating scale continuum were designated by numbers ranging from one (poor) to five (excellent). Raters were requested to rank each subject according to the subject's sign language abilities in each of the corresponding categories.

Eight items, comprising the evaluation of expressive sign language skills, were summed to obtain a single overall score measuring expressive sign language skills, ranging from eight to forty points. Similarly, the five items comprising the evaluation of receptive language skills were summed to obtain a single overall score measuring receptive sign language skills, ranging from five to twenty-five points.

The three independent raters had the following qualifications: a) Comprehensive Skills Certificate (CSC) awarded by the National RID, or the Interpreter Quality Assurance System (IQAS) Level Five Certificate, obtained within the past five years; b) a minimum of two years experience as an instructor in an Interpreter Training Program; and c) previous service as an evaluator on a National or State Certification Board of Interpreters for the Deaf.

Research Design and Variables

The research design was a Pretest/Posttest, Control Group Design, which is commonly used in social and behavioral research (Selltiz et al 1976). This experimental design is strongly recommended and endorsed for educational research because it controls for internal validity of all main effects (Campbell and Stanley 1963). Reduction of interaction effects, which are factors of external validity, is also possible with random assignment of subjects into experimental and control groups. The independent variable in this experimental design was the specialized training in nonverbal communication. Interpreter skill ratings of each subject by the three independent raters constituted the dependent measures. Thus, the experiment consists of observations which vary on only one factor, treatment. The dependent variable was the degree to which a subject's competency in the expressive and receptive components of sign language changed after exposure to the experimental treatment.

Statistical analysis, thereafter, permitted the researcher to determine how much of the variance was due to the differences between the groups, raters, or interaction between the two groups. The analysis of covariance was applied to the data because it is considered the most appropriate statistical test of significance for the pretest/posttest control group design. This statistical test

allows for a "more precise" examination of differences between the pretest and posttest measurements (Campbell and Stanley 1963). Pretest scores from both the treatment and control groups were used as covariates.

Testing Procedures

Subjects in Group One and Group Two were both pre and posttested utilizing the rating instrument designed and adapted for the 1986 BITP. Two instructors from the summer program facilitated this procedure by videotaping the expressive portion and audiotaping the receptive portion of the evaluation process. Each participant first listened to a standardized story which they simultaneously interpreted/transliterated into manual communication and then watched (on videotape) a second story which they simultaneously voiced in English. The initial taping session (pretest) conducted the first week of the program provided baseline data. During the final week (sixth) of the program, subjects were again evaluated, for the posttest, by the same method.

Three independent raters evaluated, in random order, the pre and posttest audio and videotapes of each individual. Immediately prior to the formal evaluation, a period of training was administered to familiarize the raters with the instrument employed. the raters viewed and scored four separate trial segments, allowing practice time

with the expressive and receptive rating scales. Discussion followed these segments to verify content level and to validate the tabulations of scores. During the day-long evaluation process, fifteen-minute breaks were scheduled for every two hours to overcome mental and physical fatigue. This method of combining the evaluation system (e.g., video and audio taping vs. the live performance) eliminated possible extraneous variables associated with rater reliability over a six-week span.

Analysis of Data

The analysis of the experimental data utilizes statistical techniques including Cronbach's coefficient alpha (1951) for interrater reliability, Pearson correlation coefficients between scales to estimate convergent and discriminate validity of the ratings, Test-retest correlations to estimate stability of the ratings and instrument decay, and the analysis of covariance to test the research hypotheses. All statistics were computed with the statistical computer package, SPSS (Nie et al 1975).

It is assumed that the evaluations of the raters are valid (i.e., they correctly assess the competence of the subjects they rate) and reliable (i.e., repeated evaluations of the same subject would yield the same results on all trials). However, despite these assumptions, the probability that all three raters would reach identical

evaluations on subject i (for all subjects, $i = 1, \dots, n$) in the experiment is small, if not zero. Thus, a measure of interrater reliability was used to enable the researcher to determine if differences among the subjects are due to the effects of different raters, as well as exposure to the experimental treatments. Cronbach's coefficient alpha was the statistic used for this purpose.

The Pearson Correlation Coefficient was employed to test the relationship between the pre and posttest for each group and for the total sample. Interskill correlations were also compared by this method. Means and standard deviations of the performance on the expressive and receptive skills were calculated for both subject groups.

The analysis of covariance was administered to test the hypothesis that no significant differences exist between the skill level performance of subjects exposed to nonverbal communication training (group one) and those subjects who did not participate in the training (group two). A comparison of the posttest means on the rating scales cannot be completed until these means have been adjusted in terms of prior differences between the two groups (Campbell and Stanley 1963). To accomplish this task, the covariate or pretest means were utilized. The covariate was the pretest score, the dependent variable consisted of the posttest score, and the two-factor independent variable was group membership (i.e., experimental

vs. control). For all statistical tests, the level of statistical significance was $p < .05$.

Summary

The purpose of this chapter was to present methodological aspects of this study. Twenty-eight people were selected as subjects and randomly assigned to two groups, an experimental group and a control group. Both groups were pretested utilizing the interpreter rating scale specifically designed for this study. After the experimental group received ten hours of instruction on nonverbal communication research, both groups were again evaluated (post-tested) employing the same instrument and procedures. The data was then statistically analyzed utilizing the analysis of covariance.

CHAPTER 4

RESULTS

In the present study, thirteen hypotheses were tested using an analysis of covariance design. The first eight hypotheses relate to the acquisition of sign language abilities embodied in the expressive scale of interpreting. The final five hypotheses involve the receptive scale. Each hypothesis compares the performance of fourteen student interpreters who received nonverbal communication training and fourteen student interpreters who did not receive this specialized training. The following null hypotheses were:

1) There will be no significant difference in the skill of expressive clarity between interpreting students in the experimental and the control groups.

2) There will be no significant difference in the skill of expressive fluency between interpreting students in the experimental and the control groups.

3) There will be no significant difference in the skill of expressive facial expression between interpreting students in the experimental and the control groups.

4) There will be no significant difference in the skill of expressive utilization of space between

interpreting students in the experimental and the control groups.

5) There will be no significant difference in the skill of expressive fingerspelling between interpreting students in the experimental and the control groups.

6) There will be no significant difference in the skill of expressive mouth movements between interpreting students in the experimental and the control groups.

7) There will be no significant difference in the skill of expressive vocabulary between interpreting students in the experimental and the control groups.

8) There will be no significant difference in the skill of expressive overall between interpreting students in the experimental and the control groups.

9) There will be no significant difference in the skill of receptive clarity between interpreting students in the experimental and the control groups.

10) There will be no significant difference in the skill of receptive fluency between interpreting students in the experimental and the control groups.

11) There will be no significant difference in the skill of receptive fingerspelling between interpreting students in the experimental and the control groups.

12) There will be no significant difference in the skill of receptive vocabulary between interpreting students in the experimental and the control groups.

13) There will be no significant difference in the skill of receptive overall between interpreting students in the experimental and the control groups.

Analysis of Expressive
and Receptive Scales

Table 1 presents the pretest reliability and inter-scale correlations for the expressive and receptive scales associated with interpreter skills. As shown in Table 1, the diagonal elements are reliability estimates indicating internal consistency of the subscales. The reliability estimates for the expressive scale range from a low .82 coefficient on the utilization of space subscale to a high coefficient of .91 for both the clarity and fluency subscales. Inspection of the receptive scale shows the reliability estimates range from a low coefficient of .83 on the fingerspelling subscale to a high coefficient of .95 on the overall receptive subscale. The magnitude of the correlations obtained on both the receptive and expressive scales provide evidence that the scales are reliable and therefore constitute an appropriate measurement instrument for this study.

The offdiagonal (vertical) elements are correlation coefficients indicating the degree that each interpreter skill subscale covaries with the other twelve subscales. Within the expressive scale, the clarity subscale correlates highest with fluency and vocabulary at a .93, and the

Table 1. Multitrait-homomethod matrix depicting reliability and interscale correlations for expressive and receptive interpreter skills; Pretest

	EXPRESSIVE SUBSCALES								RECEPTIVE SUBSCALES				
	1	2	3	4	5	6	7	8	9	10	11	12	13
EXPRESSIVE SUBSCALES													
1- Clarity	.91												
2- Fluency	.93	.91											
3- Facial Expression	.76	.84	.87										
4- Utilization of Space	.85	.85	.77	.82									
5- Fingerspelling	.91	.91	.70	.83	.84								
6- Mouth Movements	.81	.84	.88	.77	.69	.87							
7- Vocabulary	.93	.94	.78	.91	.88	.84	.89						
8- Overall	.90	.95	.91	.90	.86	.91	.93	.90					
RECEPTIVE SUBSCALES													
9- Clarity	.45	.52	.59	.47	.41	.53	.60	.53	.91				
10- Fluency	.45	.55	.57	.54	.46	.53	.66	.56	.94	.94			
11- Fingerspelling	.52	.57	.57	.53	.54	.54	.64	.60	.87	.88	.83		
12- Vocabulary	.43	.50	.57	.46	.35	.53	.60	.52	.94	.93	.89	.92	
13- Overall	.51	.57	.58	.52	.47	.55	.67	.58	.97	.96	.91	.96	.95

lowest relationship is with facial expression at a .76. The highest correlation in the expressive scale is the fluency subscale with the overall expressive subscale (.95), indicating 90% of the variance is shared between these subscales. The lowest correlation, .69, is between the fingerspelling subscale and the mouth movement subscale, representing a 47% shared variance and a 53% unique variance. The only two relationships demonstrating a variance of uniqueness are the fingerspelling subscale with the mouth movement subscale and the fingerspelling subscale with the facial expressions subscale (49% shared and 51% unique). This suggests that the expressive subscales are essentially more similar than they are different.

The expressive subscales correlate to a much lesser degree with the receptive subscales. This contrast was expected and can be explained because the implied differences in the scales relate to the ability to transmit a signed message versus the ability to comprehend a signed message. Consequently, the expressive subscale of clarity has only a 20% shared variance with the receptive clarity subscale and a 80% unique variance. The expressive clarity subscale has a shared variance of 26% with the receptive overall scale, indicating 74% of the variance is unique to both subscales. The highest percentage of shared variance between the expressive and receptive scales was signified by the relationship of the expressive vocabulary subscale

and the receptive overall subscale (44%). The lowest shared variance was 12%, represented by a .35 correlation coefficient for the expressive fingerspelling subscale with the receptive vocabulary subscale. A unique variance of 88% is indicated between these scales.

All of the receptive subscales correlate to a high degree with each other. The highest correlation is between the subscales of clarity and overall and is shown by a .97 coefficient or 94% shared variance. Another very high correlation is between the subscales of vocabulary and overall with a .96 coefficient or shared variance of 92%. The lowest correlation within the receptive scale, a .87 coefficient, is between the subscales of clarity and fingerspelling, depicting a 75% shared variance.

In reviewing Table 1, it is observed that the subscales in the expressive scale correlate highly with one another, as do the subscales within the receptive scale. Each scale has strong internal consistency as indicated by the magnitude of the reliability coefficients. There was sufficient uniqueness within the scales to measure each scale separately. This uniqueness supports the viability of using independent scales to assess aspects of communication in this study.

Table 2 summarizes the posttest reliability and interscale correlations for the expressive and receptive scales associated with interpreter skills. The reliability

Table 2. Multitrait-homomethod matrix depicting reliability and interscale correlations for expressive and receptive interpreter skills; Posttest

	EXPRESSIVE SUBSCALES								RECEPTIVE SUBSCALES				
	1	2	3	4	5	6	7	8	9	10	11	12	13
EXPRESSIVE SUBSCALES													
1- Clarity	.90												
2- Fluency	.95	.88											
3- Facial Expression	.86	.79	.86										
4- Utilization of Space	.87	.85	.81	.88									
5- Fingerspelling	.87	.84	.75	.83	.84								
6- Mouth Movements	.80	.77	.86	.73	.81	.90							
7- Vocabulary	.92	.88	.85	.87	.88	.81	.84						
8- Overall	.96	.94	.90	.90	.90	.89	.95	.91					
RECEPTIVE SUBSCALES													
9- Clarity	.67	.60	.59	.64	.63	.61	.68	.69	.89				
10- Fluency	.63	.59	.57	.69	.68	.57	.69	.68	.92	.86			
11- Fingerspelling	.63	.53	.57	.64	.72	.53	.67	.63	.81	.84	.83		
12- Vocabulary	.63	.55	.57	.62	.70	.52	.67	.64	.90	.92	.91	.83	
13- Overall	.67	.62	.58	.71	.71	.60	.72	.70	.91	.96	.93	.95	.88

estimates in the expressive scale range from a high of .91 for the overall subscale to a low of .84 for the fingerspelling and vocabulary subscales. In the receptive scale, the reliability estimates range from a high of .89 on the clarity subscale to a low of .83 on the fingerspelling subscale.

The correlation coefficients for the expressive scale extends from a high .96 coefficient for the clarity with the overall subscale to a low .73 coefficient for the mouth movement with the utilization of space subscale. In the receptive scale, correlation coefficients reflect a high correlation of .96 for the combination of the overall and fluency subscales.

The posttest expressive and receptive scales also correlate to a lesser degree as was observed in the pretest data. The expressive subscale of fingerspelling with the receptive subscale of fingerspelling and the expressive subscale of vocabulary with the receptive subscale of overall have the highest correlations, signified by a .72 coefficient.

The posttest reliability outcomes were parallel to the pretest results. Stability of the instrument is therefore not shown to be affected by repeated assessment. The low coefficient correlation between the expressive and receptive scales and their respective subscales provide evidence of discriminate validity and allows for separate

analysis of the expressive and receptive skills. Although correlated, the expressive and receptive scales maintain sufficient uniqueness to justify an individual analysis of their subscales.

Estimates of reliability, as shown in Table 3, depict the relationship of the measures of expressive and receptive interpreter skills over time (test-retest). These coefficients provide an indication of which scales changed as a function of the treatment or intervention. The highest estimates of stability (.87) were recorded for the receptive subscales of fluency and overall, suggesting that 75% of the time the scores will be the same from the pretest to the posttest. The lowest correlation, .61, was for the expressive utilization of space subscale, indicating that 37% of the time the scores in this subscale will remain constant from pretest to posttest. All the coefficients were higher within the receptive scale and lower within the expressive scale.

Table 4 is a check for the effectiveness of the random assignment. All subjects were randomly assigned to either the control or the experimental group to eliminate any differences prior to nonverbal communication training. By comparing the means of the control and experimental groups, it is observed that the control group also has higher means throughout all subscales in both the expressive and receptive scales. Consequently, standard

Table 3. Pearson correlation coefficients depicting the relationship between measures of expressive and receptive interpreter skills over time

<u>EXPRESSIVE</u>	<u>r</u>
Clarity	.66
Fluency	.75
Facial Expression	.69
Utilization of Space	.61
Fingerspelling	.76
Mouth Movements	.65
Vocabulary	.71
Overall	.76
<u>RECEPTIVE</u>	<u>r</u>
Clarity	.77
Fluency	.87
Fingerspelling	.79
Vocabulary	.78
Overall	.87

Table 4. Pretest comparisons cross experimental and control groups: A randomization check

	Control		Experimental		F1	F2
	Mean	Standard Deviation	Mean	Standard Deviation		
Expressive						
Clarity	3.14	1.10	2.19	.87	.65	6.44*
Fluency	2.74	1.11	1.88	.94	.35	4.86*
Facial Expression	2.96	1.31	2.38	.84	2.42	1.90
Utilization of Space	2.64	1.14	1.79	.67	3.34	5.84*
Fingerspelling	2.62	.88	1.69	.82	.05	8.38*
Mouth Movements	2.79	1.19	2.31	.87	1.18	1.46
Vocabulary	2.67	1.15	1.86	.72	2.56	4.98
Overall	2.88	1.18	2.12	.83	1.50	3.89
Receptive						
Clarity	2.67	1.26	2.29	1.02	.77	.56
Fluency	2.40	1.37	1.93	1.08	.69	1.05
Fingerspelling	2.21	1.47	1.90	.78	4.72	.49
Vocabulary	2.57	1.42	2.48	1.11	.75	.04
Overall	2.40	1.39	2.0	1.11	.64	.57

deviations for the control group have a wider spread in all subscales (expressive and receptive).

Due to the mean differences found during the randomization check, the analysis of covariance was utilized to test the thirteen hypotheses. This procedure was employed to adjust the data for pretest mean differences. Table 5 summarizes the results of the analysis of covariance, comparing the experimental and control groups on measures of expressive and receptive interpreter skills after the experimental group received nonverbal communication training. The experimental group scored higher within the expressive scale on all eight subscales including clarity, fluency, facial expression, utilization of space, finger-spelling, mouth movements, vocabulary, and overall.

Analysis of Individual Hypotheses

The first hypothesis to be tested was that there would be no significant difference in the skill of expressive clarity between interpreting students in the experimental group (with nonverbal communication training) and the control group (without nonverbal communication training). The relationship between the experimental and control group pretest and posttest means for the subscale of expressive clarity is graphically shown in Figure 1. After nonverbal communication training, the posttest mean value of the experimental group was 3.82, and the posttest mean

Table 5. Analysis of covariance results controlling for pretest differences, comparing experimental and control groups on measures of expressive and receptive interpreter skills following training

	Control		Experimental		R ²	F
	Mean	Standard Deviation	Mean	Standard Deviation		
Expressive						
Clarity	3.32	1.12	3.82	.91	48.9	2.42
Fluency	2.81	1.18	3.33	.99	61.4	3.31
Facial Expression	3.25	1.27	3.51	.95	48.3	.66
Utilization of Space	2.81	1.16	3.15	1.11	38.7	.84
Fingerspelling	2.73	1.03	3.11	1.08	60.9	1.61
Mouth Movements	3.07	1.23	3.20	1.32	42.3	.09
Vocabulary	2.81	.98	3.19	.92	51.9	1.04
Overall	3.03	1.13	3.45	.98	62.2	2.54
Receptive						
Clarity	2.75	1.14	3.25	.69	66.6	5.24*
Fluency	2.06	1.12	2.46	.87	79.0	4.73*
Fingerspelling	2.08	1.29	1.80	.71	63.5	1.29
Vocabulary	2.52	1.22	2.56	.72	60.2	.02
Overall	2.23	1.14	2.41	.83	76.2	.86

Note: Tabular means have been adjusted for pretest difference.

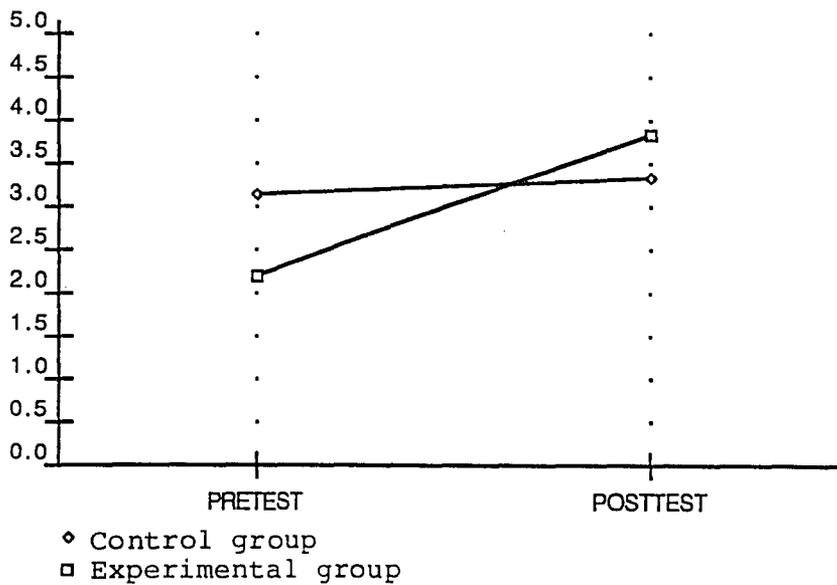


Figure 1. Pretest and Posttest Mean Values for the Subscale Expressive Clarity
 $p > .05$

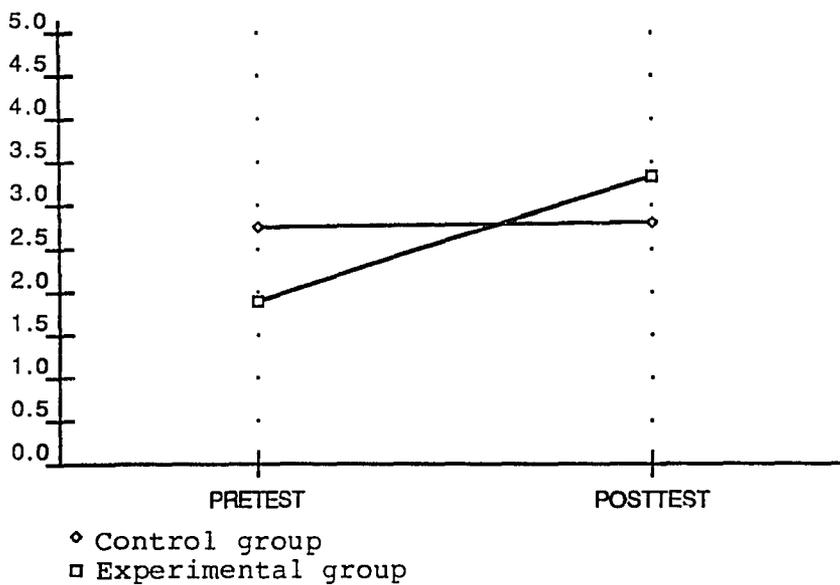


Figure 2. Pretest and Posttest Mean Values for the Subscale Expressive Fluency
 $p > .05$

value of the control group was 3.32. The difference between the mean scores of the two groups did not attain significance and the null hypothesis was not rejected.

The second hypothesis to be tested was that there would be no significant difference in the skill of expressive fluency between interpreting students in the experimental and the control groups. Figure 2 illustrates the pretest and posttest mean scores for the experimental and control groups on the expressive fluency subscale. The posttest mean score for the experimental group was 3.33, and a posttest mean score for the control group was 2.81. The difference between the mean scores of the two groups did not attain significance and the null hypothesis was not rejected.

The third hypothesis to be tested was that there would be no significant difference in the skill of expressive facial expression between interpreting students in the experimental and control groups. Figure 3 visually depicts the mean relationships on the pretest and posttest for the experimental and control groups. The posttest mean value of the experimental group was 3.51, and a mean value for the control group was 3.25. The difference between the mean scores of the two groups did not attain significance and the null hypothesis was not rejected.

The fourth hypothesis to be tested was that there would be no significant difference in the skill of

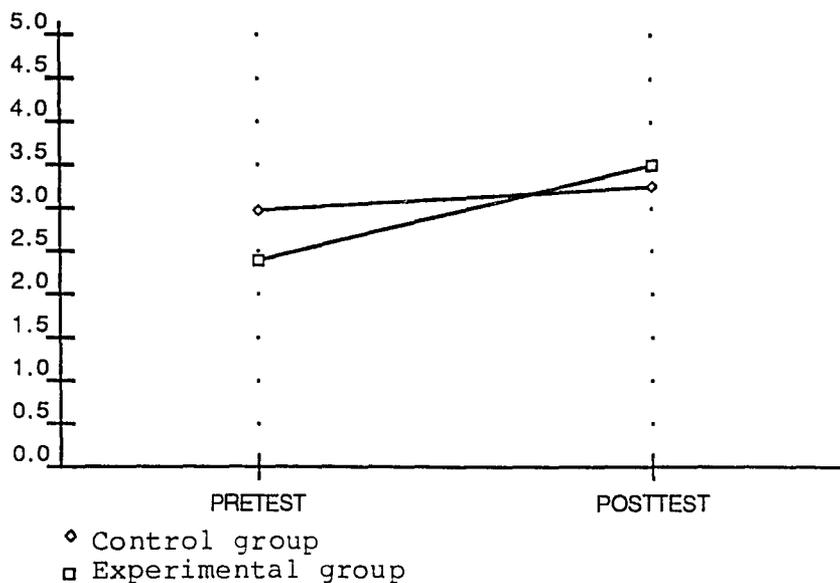


Figure 3. Pretest and Posttest Mean Values for the Subscale Expressive Facial Expression
p > .05

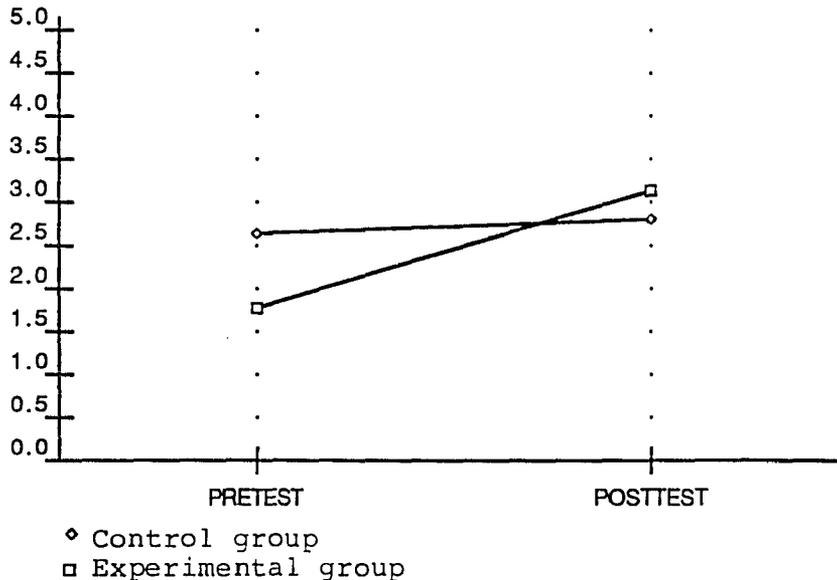


Figure 4. Pretest and Posttest Mean Values for the Subscale Expressive Utilization of Space
p > .05

expressive utilization of space between interpreting students in the experimental and control groups. Figure 4 diagrams the mean values of this subscale for the experimental and control groups. The posttest mean score for the experimental group was 3.15, and the mean score for the control was at 2.81. The difference between the mean scores of the two groups did not attain significance and the null hypothesis was not rejected.

The fifth hypothesis to be tested was that there would be no significant difference in the skill of expressive fingerspelling between interpreting students in the experimental and control groups. Figure 5 illustrates the pretest and posttest mean values for the experimental and control groups regarding expressive fingerspelling. The posttest mean score for the experimental group was 3.11, and a mean score for the control group was 2.73. The difference between the mean scores of the two groups did not attain significance and the null hypothesis was not rejected.

The sixth hypothesis to be tested was that there would be no significant difference in the skill of expressive mouth movement between interpreting students in the experimental and control groups. The relationship between the mean scores of the experimental and control groups on this subscale is graphically displayed in Figure 6. The experimental group posttest mean score was 3.20, and the

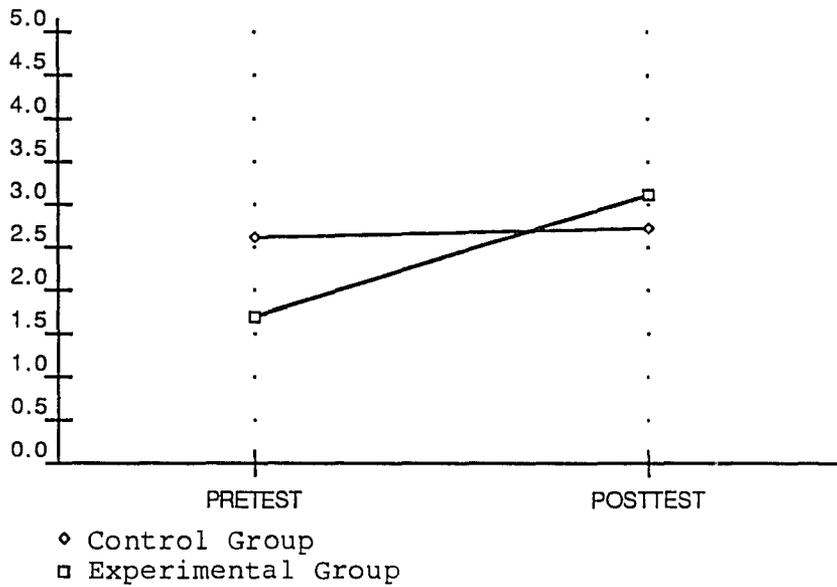


Figure 5. Pretest and Posttest Mean Values for the Subscale Expressive Fingerspelling
 $p > .05$

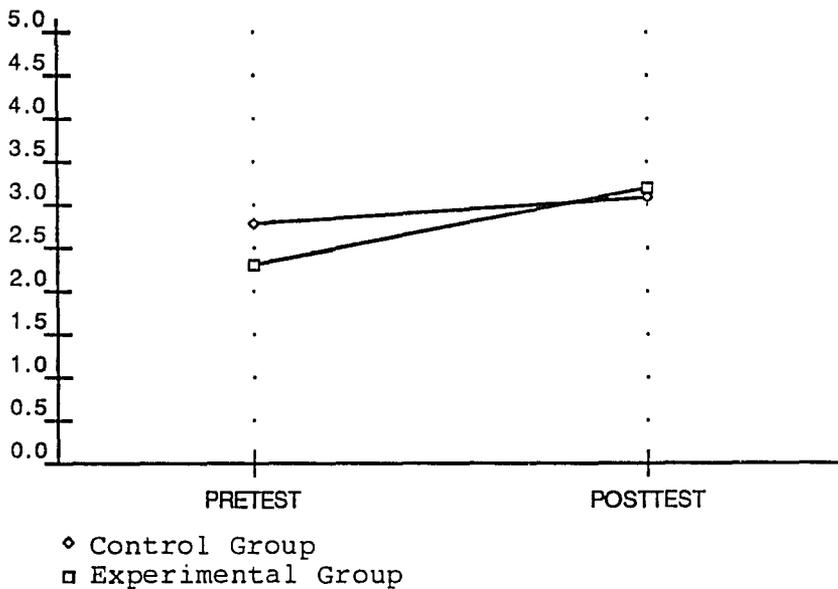


Figure 6. Pretest and Posttest Mean Values for the Subscale Expressive Mouth Movement
 $p > .05$

control group posttest mean score was 3.07. The difference between the mean scores of the two groups did not attain significance and the null hypothesis was not rejected.

The seventh hypothesis to be tested was that there would be no significant difference in the skill of expressive vocabulary between interpreting students in the experimental and control groups. Figure 7 illustrates pretest and posttest mean values with reference to the experimental and control groups. The experimental group obtained a posttest mean value of 3.19, and the control group obtained a 2.81 on the same test. The difference between the mean scores of the two groups did not attain significance and the null hypothesis was not rejected.

The eighth hypothesis to be tested was that there would be no significant difference in the skill of expressive overall between interpreting students in the experimental and control groups. As is shown in Figure 8, the mean score of the posttest for the experimental group was 3.45, and the mean score for the control group was 3.03. The difference between the mean scores of the two groups did not attain significance and the null hypothesis was not rejected.

Within the receptive scale, the experimental group had higher mean scores for all but one subscale, finger-spelling. The other subscales of clarity, fluency, vocabulary, and overall had comparatively advanced mean scores.

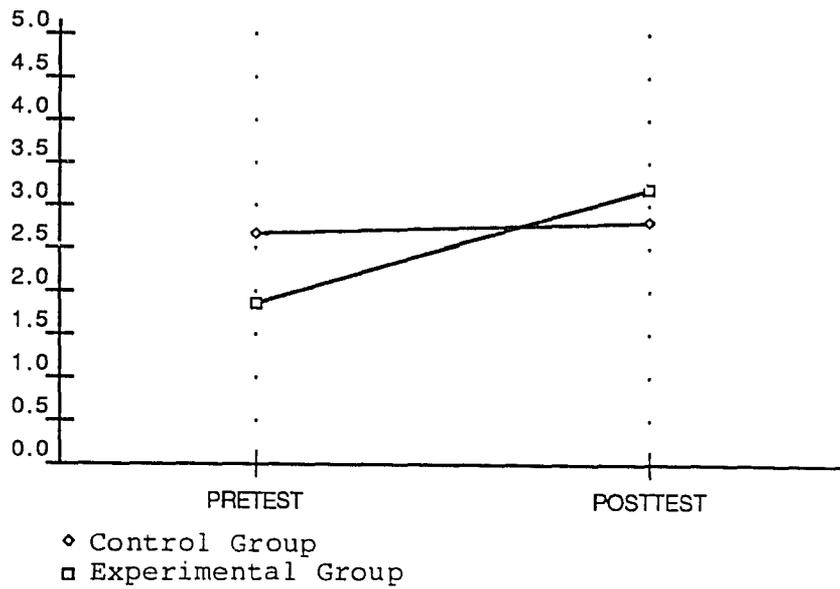


Figure 7. Pretest and Posttest Mean Values for the Subscale Expressive Vocabulary
 $p > .05$

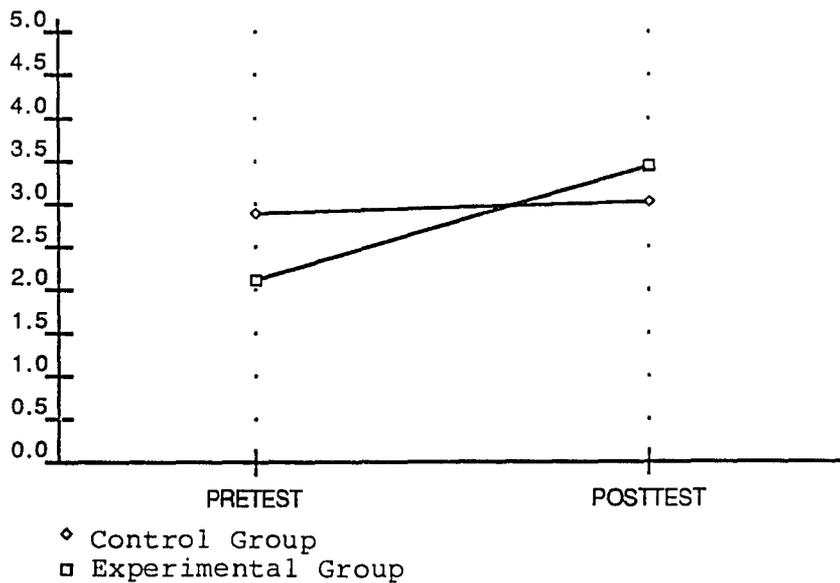


Figure 8. Pretest and Posttest Mean Values for the Subscale Expressive Overall
 $p > .05$

Statistically significant differences were evident on two of these subscales, receptive clarity and fluency, in favor of the experimental group. It should be noted that except for one subscale, fingerspelling, the experimental group means showed systematic gain over the control group means.

The ninth hypothesis to be tested was that there would be no significant difference in the skill of receptive clarity between interpreting students in the experimental and control groups. Figure 9 visually depicts the experimental and control group means values for the pretest and posttest. The mean scores on the posttest are 3.25 and 2.75, respectively. This indicates a greater degree of improvement on the subscale of receptive clarity skill for the experimental group. An F of 5.24 was computed and the analysis revealed a significant difference between the experimental and control groups. The difference between the mean scores of the two groups did attain significance and the null hypothesis was rejected.

The tenth hypothesis to be tested was that there would be no significant difference in the skill of receptive fluency between interpreting students in the experimental and control groups. The association between both groups' mean scores on the receptive fluency skill is presented in Figure 10. The experimental group posttest mean score (2.46) was significantly different from the control

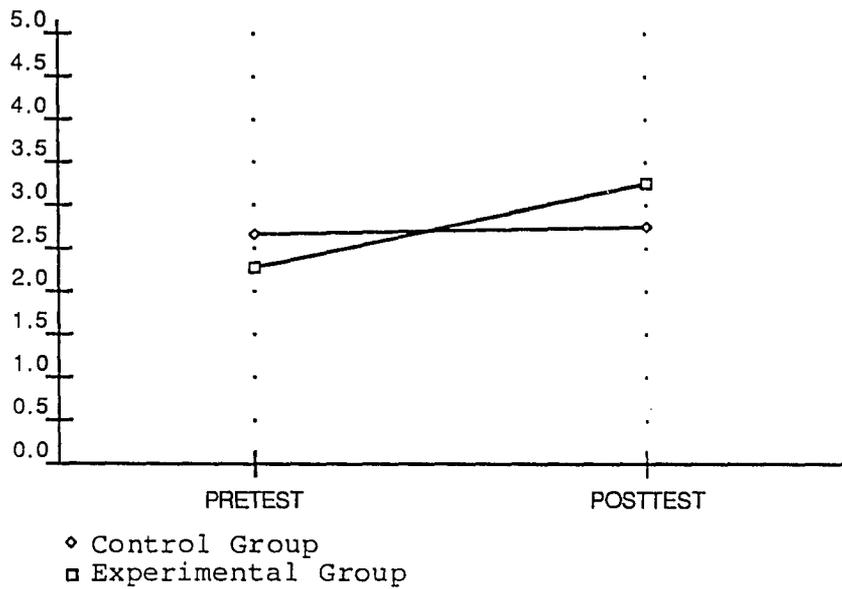


Figure 9. Pretest and Posttest Mean Values for the Subscale Receptive Clarity
 $p < .05$

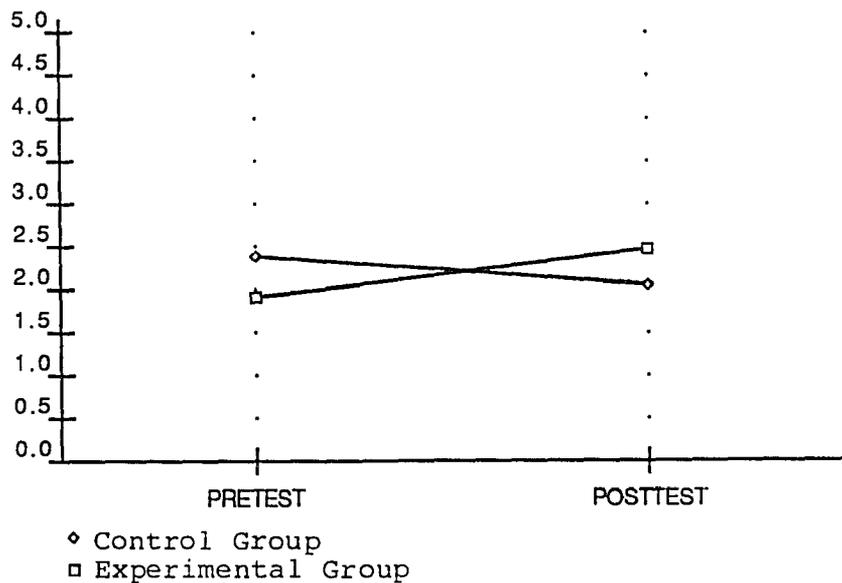


Figure 10. Pretest and Posttest Mean Values for the Subscale Receptive Fluency
 $p < .05$

group mean score (2.06). An F of 4.73 was obtained and the null hypothesis was rejected.

The eleventh hypothesis to be tested was that there would be no significant difference in the skill of receptive fingerspelling between interpreting students in the experimental and control groups. Figure 11 graphically reveals the experimental and control group pretest and posttest mean values on the subscale of receptive fingerspelling. For both groups the mean values decreased from the previous pretest scores, possibly due to the lack of emphasis placed on this component throughout the workshop. The posttest score for the experimental group was 1.80, and the control group score was 2.08. The difference between the mean scores of the two groups did not attain significance and the null hypothesis was not rejected.

The twelfth hypothesis to be tested was that there would be no significant difference in the skill of receptive vocabulary between interpreting students in the experimental and control groups. Figure 12 illustrates the mean values on the pretest and posttest for the experimental and control groups. The experimental group posttest score was 2.52, and the control group posttest score was 2.56. The difference between the mean scores of the two groups did not attain significance and the null hypothesis was not rejected.

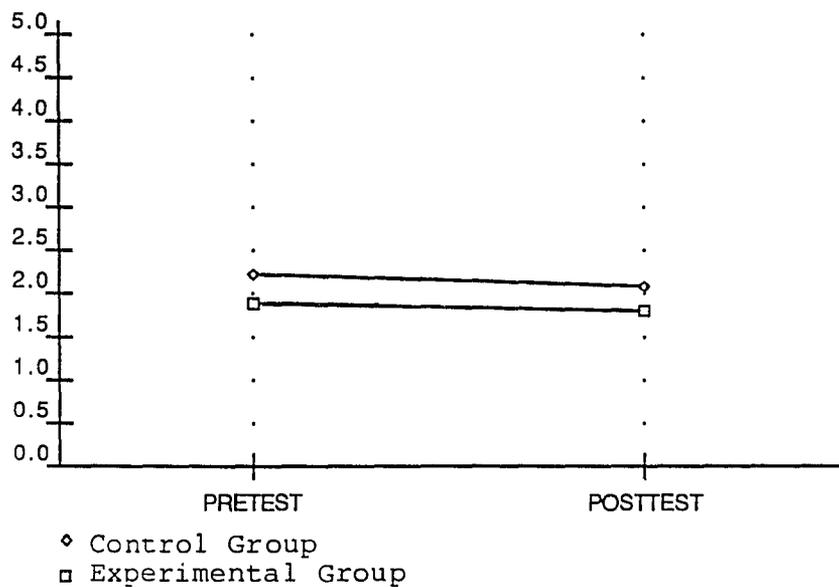


Figure 11. Pretest and Posttest Mean Values for the Subscale Receptive Fingerspelling
 $p > .05$

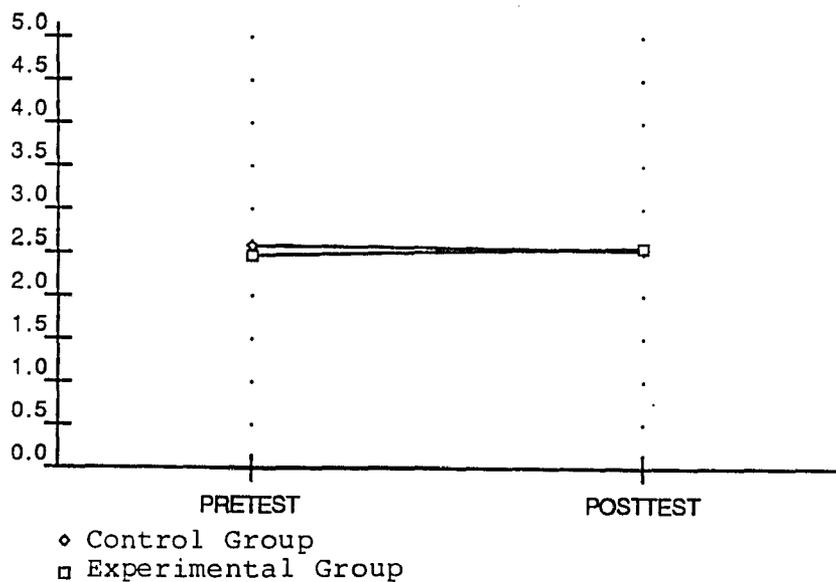


Figure 12. Pretest and Posttest Mean Values for the Subscale Receptive Vocabulary
 $p > .05$

The thirteenth hypothesis to be tested was that there would be no significant difference in the skill of receptive overall between interpreting students in the experimental and control groups. As can be seen in Figure 13, the mean posttest value for the experimental group was 2.41, and the posttest mean value for the control group on overall receptive skill was 2.23. The difference between the mean scores of the two groups did not attain significance and the null hypothesis was not rejected.

Discussion of Results

In reviewing the results, it is apparent that the experimental group repeatedly had greater mean score gains than the control group on all subscales except receptive fingerspelling. Figures 1-13 graphically depict this trend throughout the subscales. An explanation for the higher mean values in the experimental group is that the nonverbal communication training had a positive effect on the acquisition of sign language skills. Although no significant differences were obtained for eleven of the thirteen subscales, significance was obtained for the remaining two subscales, receptive clarity and receptive fluency. This indicates nonverbal communication training had a greater impact on the receptive scale.

Several factors may be responsible for higher receptive scale mean values. The first implies that the

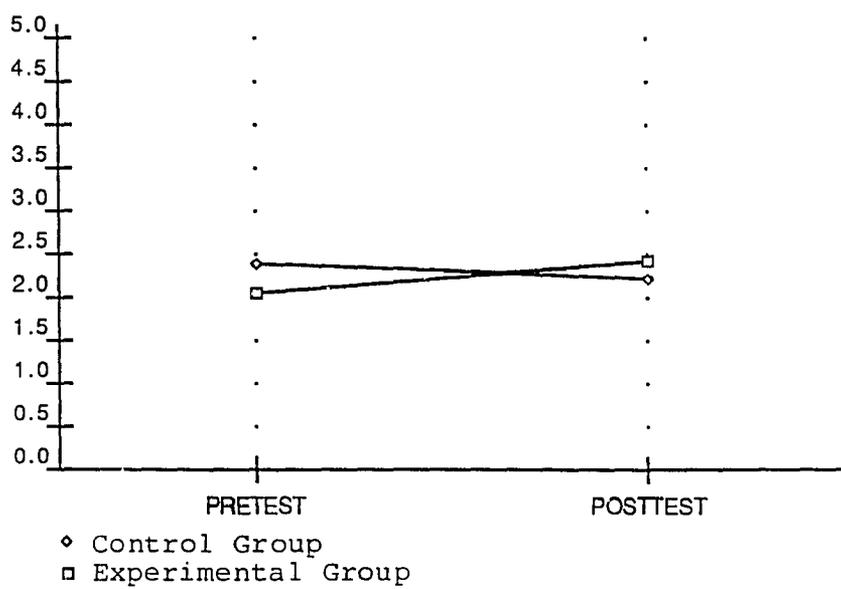


Figure 13. Pretest and Posttest Mean Values for the Subscale Receptive Overall
 $p > .05$

subjects, after training, became more cognizant of non-verbal behaviors in their own culture as well as in the culture of the deaf. Another factor is that lessons two (kinesics), three (eye movement), four and five (facial expression), and six (proxemics) dealt with the observation of nonverbal cues to a greater extent than participant portrayal of nonverbal behaviors, therefore providing more experience with the receptive aspect of nonverbal communication. Also, the process of implementing new concepts may be more difficult than merely observing differences.

Summary

In summary, only two subscales yielded significant differences, those of receptive clarity and receptive fluency. In these two subscales, the interpreters who received nonverbal communication training enhanced their sign language skills and performed better on the posttests than did the interpreters who did not receive the training. Comprehensively, the nonverbally trained interpreters surpassed their counterparts on all the expressive subscales and on all but one of the receptive subscales. While this can hardly be presented as a preponderance of evidence for nonverbal communication training of sign language interpreters, it is suggestive of an effectiveness which may be camouflaged by the small sample size.

CHAPTER 5

SUMMARY AND DISCUSSION

This chapter contains a summary of the study conducted and a discussion of the research conclusions. Additionally, instructional implications, recommendations for application of the results and suggestions for further research are presented.

Restatement of Problem and Procedures

This study has focused on the educational merit of training student interpreters in aspects of nonverbal communication. Twenty-eight student interpreters attending a six-week Beginning Interpreter Training Program (BITP), at the University of Arizona, participated in the testing of a nonverbal communication curriculum prepared by the investigator. The curriculum was designed to enhance an interpreter's awareness of nonverbal behaviors germane to hearing and deaf cultures. This was accomplished through instruction of current nonverbal communication theories and experiential activities, thus augmenting the interpreter's knowledge and increasing his/her ability to encode and decode nonverbal messages.

The subjects were divided into two groups, an experimental and a control group. Subjects were given a

pretest constructed to elicit signed or voiced responses and to assess expressive and receptive interpreting skills. During the course of the program, the experimental group received ten hours of nonverbal training while the control group attended regularly scheduled practice sessions. At the conclusion of the six-week session, a posttest identical to the pretest was administered. Pretests and posttests were evaluated by three independent raters utilizing an instrument developed by the investigator. The instrument measured each student's proficiency on eight expressive and five receptive subscales.

Findings and Conclusions

Thirteen hypotheses--corresponding to the following expressive and receptive subscales: clarity, fluency, facial expression, fingerspelling, mouth movements, utilization of space, vocabulary and overall (expressive and receptive)--were studied. It was hypothesized that the incorporation of nonverbal communication training into the BITP would not improve the expressive and receptive skills of subjects in the experimental group.

The analysis of covariance was the statistical technique used to test the thirteen hypotheses. A comparison of the pretest, after adjustment, and posttest mean scores revealed that the subjects who received nonverbal communication training were significantly superior in the

areas of receptive clarity and fluency to the subjects who did not receive training. Receptive skills are vitally important because it is at this point in discourse that the interpreter must accurately decode the intent of the message. Subjects in the experimental group also improved to a greater degree on the following subscales: expressive clarity, expressive fluency, expressive facial expression, expressive utilization of space, expressive mouth movements, expressive fingerspelling, expressive vocabulary, expressive overall, receptive vocabulary, and receptive overall. This suggests that the subjects with nonverbal communication training were better able to interpret a specific voiced message into a signed message and vice versa. Although the experimental subjects demonstrated improvement unsurpassed by the control group on all the above subscales, no statistically significant differences were found between the two groups. Receptive fingerspelling was the only subscale on which the control subjects maintained a higher performance level, again, not statistically significant. It is interesting to note, however, that both group posttest scores declined from pretest to posttest on this subscale. The analysis led to the conclusion that nonverbal communication training, in the form of lecture and activities, benefited these specific students preparing to become interpreters. The results of this study cannot be

generalized to all student interpreters and are limited to the subjects herein.

Instructional Implications

The results of this study have implications for the modification of interpreter training curricula. The format of the lessons presented in the study were organized to include lecture and activities. Lessons did not, however, involve direct teaching of sign language. Students commented positively on this method because they could first gain knowledge about the topic and then have the opportunity to practice the newly learned information. The format may be a factor in the substantial increase in receptive clarity and fluency skills by the experimental subjects. This suggests that the development of courses which present current nonverbal research relevant to hearing and deaf cultures are of paramount importance for the student in interpreter training. Paralleling these courses should be a role-playing component or practice time which addresses the similarities and differences in cultures and communication. In addition, sign language and interpreting courses could incorporate nonverbal/nonmanual communication research, thus allowing the student to study nonverbal communication materials in the context of language and interpreting.

Hearing individuals studying to become interpreters between the visual language of signs and the auditory language of English need to develop nonverbal communication skills in both cultures and languages. The curricula of interpreter training programs should be sensitive to this realm of human communication. By focusing instructional methodologies on these skills, students will effectively function as conduits between the two unique worlds.

Recommendations for Further Study

Several recommendations are made to expand upon the areas explored in this dissertation.

1. Replication of this study using a larger sample size could yield more statistically significant data.

2. A broader segment of subjects involved in interpreting from different geographical locations, different sign language programs, and in different phases of their interpreter training may produce more significant results.

3. If the existing rating instruments are used, the categories should be modified to represent only aspects of nonverbal/nonmanual communication. The subscales of expressive and receptive vocabulary and fingerspelling should be eliminated because they do not reflect nonverbal communication skills.

4. An extended period of time for nonverbal communication training may improve the performance of subjects and generate more significant results.

5. Nonverbal behavior training sessions should have longer activity periods to increase practice time for encoding and decoding messages.

6. Similar nonverbal communication training, with appropriate modifications, should be developed for interpreters in the area of deaf-blind.

Summary

In conclusion, the research conducted in this study concerning the effectiveness of nonverbal communication training on the acquisition of expressive and receptive sign language skills has demonstrated that this type of training facilitates receptive communication. Nonmanual and nonverbal behaviors are an integral part of ASL and the deaf community. To effectively interpret the visual language of the deaf, an interpreter needs to have an awareness and understand the similarities and differences of nonverbal communication in both cultures.

APPENDIX A

NONVERBAL COMMUNICATION
LESSON PLANS

Lesson One

Goal: To increase nonverbal communication awareness.

Objective: To provide an opportunity to become cognizant of the meaning and usage of nonverbal terms and research.

- I. Introduction to Nonverbal Communication
 - A. Historical Perspectives and Research
 1. Birdwhistell--Kinesics
 2. Argyle and Cook--Eye Movements
 3. Ekman and Darwin--Facial Expression
 4. Hall--Proxemics
 5. Bruneau--Chronemics
 6. Jourard--Haptics
 7. Burgoon and Saine--Artifacts
 - B. Overlap and Integration of Research and References
 - C. Activity
 1. Nonverbal Explanation of Nonverbal Communication Terms: Kinesics, Facial Expressions, Proxemics, Chronemics, Haptics, Artifacts, and Gestures
 2. Discussion
 3. Relevance to Interpreting

Lesson Two

Goal: To increase the student's ability to discriminate body movements.

Objective: To provide an opportunity for the student to become conscious of nonverbal communication behaviors, displays, and directions.

II. Kinesics (Body Movements)

A. Description of Kinesics (Birdwhistell 1970)

B. Classification of Body Movements (Ekman and Friesen 1969)

1. Emblems--directly communicate words or concepts

2. Illustrators--portray verbal message

3. Affect Displays--emotional meaning

4. Regulators--monitor and maintain speaking

5. Adaptors--satisfy needs in private

6. Examples

C. Importance of Integration of All Types of Nonverbal Cues

D. Activity

1. Group Directions to Members Through Nonverbal Communication Signals

2. Discussion

3. Relevance to Interpreting

Lesson Three

Goal: To increase awareness of visual nonverbal cues.

Objective: To provide experience with discrimination of eye movements.

III. Eye Movements (Argyle and Cook 1976; Knapp 1972)

A. Gaze

1. Attitude, Orientation, and Reaction
Toward Person
2. Speaker Versus Listener Gaze
3. Distance Influences on Gaze
4. Gender Influences
5. Gaze Aversion
6. Cultural Factors

B. Pupil Size

1. Research Conducted
2. Environmental Factors

C. Activity

1. Group Member Eye Contact Role Play
2. Discussion
3. Relevance to Interpreting

Lesson Four

Goal: To increase the awareness of nonverbal cues in facial expression.

Objective: To provide an opportunity to depict emotions through facial expressions.

IV. Facial Expression (Ekman and Friesen 1975)

A. Emotions Depicted (Universal)

1. Surprise
2. Fear
3. Disgust
4. Anger
5. Happiness
6. Sadness
7. Deceit

B. Cultural Rules

1. Management and Control
2. Social Context
3. Personality Aspects

C. Physiology of Emotions

1. Muscle Groups
2. Association of Emotions

D. Activity

1. Distinguish and Classify Facial Emotion
2. Discussion
3. Relevance to Interpreting

Lesson Five

Goal: To increase the awareness of nonverbal cues in specific facial features.

Objective: To provide an opportunity to reproduce emotions through facial expression.

V. Facial Expressions Continued

A. Features Addressed

1. Eyes, Lids, and Brows
2. Nose
3. Mouth, Cheeks and Chin
4. Ears
5. Others

B. Universal Judgment Research

1. Cultural Differences
2. Facial Affect Scoring Technique
(Ekman et al 1971)

C. Activity

1. Distinguish and Classify Facial Expressions by Emotions and Reproduce Expressions
2. Discussion
3. Relevance to Interpreting

Lesson Six

Goal: To increase the visual awareness and perception of distance.

Objective: To provide an opportunity to experience space; how it is maintained and measured in interpersonal relationships.

VI. Proxemics (Hall 1963, 1966)

A. Distance: Four Categories

1. Intimate--Loved Ones
2. Personal--Casual
3. Social--Gatherings
4. Public--Performances and Presentations

B. Current Research

1. Territory
2. Overcrowded Environments
3. Cultural Differences
4. Postures

C. Activity

1. Communication and Spacial Relationships
2. Discussion
3. Relevance to Interpreting

Lesson Seven

Goal: To increase awareness of the perception of time.

Objective: To provide an opportunity to distinguish between various time orientations.

VII. Chronemics (Hall 1959, 1966; Bruneau 1980)

A. Time Orientations

1. Psychological

a. Past

b. Timeline

c. Present

d. Future

2. Biological Time

a. Physical

b. Sensitivity

c. Intellectual

3. Cultural Time

a. Technical

b. Formal

c. Informal

B. Activity

1. Schedule of Appointments

2. Discussion

3. Relevance to Interpreting

Lesson Eight

Goal: To increase the awareness of nonverbal cues associated with touch.

Objective: To provide an opportunity to experience reactions to touch.

VIII. Haptics (Collier 1985; Jourard 1966)

A. Touching

1. Life Stages
 - a. Fetal
 - b. Adult
2. Communication Link
 - a. Basic Needs
 - b. Psychological Needs
3. Tactile Receptors
 - a. Sensitivity
 - b. Pressure, Temperature, and Texture
4. Deprivation Research
 - a. Brain, Nervous System Development
 - b. Surrogate Mother
5. Language Transmission
 - a. Deaf-Blindness
 - b. Cultural Research

B. Activity

1. Handshaking, Touching Situations
2. Discussion
3. Relevance to Interpreting

Lesson Nine

Goal: To increase awareness regarding environmental influences.

Objective: To provide the opportunity to become conscious of one's surroundings and how they influence mood and emotions.

IX. Artifacts (Burgoon and Saine 1978)

A. Environment

1. Geography
2. Structures
3. Surroundings
 - a. Lighting
 - b. Noise
 - c. Colors

B. Physical Appearance

1. Clothes
2. Accessories

C. Activity

1. Field Experience
2. Discussion
3. Relevance to Interpreting

Lesson Ten

Goal: To increase the integration of information presented throughout the program on nonverbal communication behaviors.

Objective: To provide an opportunity to depict and decipher characters from nonverbal cues.

X. Nonverbal Communication Wrap-up

A. Important Influential Factors

1. Use in Context
2. Cultural Differences
3. Observation of Cues

B. Activity

1. Imitation of Famous Couples (scripted and nonscripted)
2. Discussion

APPENDIX B

NONVERBAL COMMUNICATION
GROUP ACTIVITIES

Lesson One Activity: Nonverbal Communication Terms

Students received cards with the following nonverbal communication terms and definitions: 1) kinesics--the study of body movement; 2) chronemics--the study of structure, organization, and perception of time; 3) haptics--the study of touch; 4) proxemics--the structure, organization, and perception of space; 5) facial expression--portrayal of emotion(s) on an individual's face; 6) eye contact--the use and perception of eye gaze, pupil size, and eye movement; 7) artifacts--objects which constitute the environment. The students, in pairs, communicated through mime and gesture the term written on their card to the other members of the group.

Lesson Two Activity: Group Directions Through Kinesics

The group members chose one student to leave the room. A task for this student to perform upon re-entry was decided by the remaining group members (sit in a chair, erase the blackboard, jump up and down, move an object). A specific body part (eyes, mouth, leg, arm), selected by the instructor, provided the sole avenue through which group members could convey nonverbal directions to the student. Completion of the task represented an understanding of the nonverbal directions exhibited.

Lesson Three Activity: Eye Contact Role Plays

The following five role play situations were presented to the group: a medical appointment, a courtroom

appearance, teacher-student conference, a social gathering, a job interview. Group members separated into pairs and demonstrated/practiced eye contact behaviors associated with these settings and in accordance with previous lecture material.

Lesson Four Activity: Classification of Facial Expression

Group members received pictures of individuals exhibiting various facial expressions. Members separated into pairs and assigned each picture to one of six categories. These categories (happy, sad, anger, fear, surprise, and disgust) corresponded to the emotion conveyed by the individual's facial expression. Discussion of the rationale regarding distinguishing characteristics for appropriate placement in each category ensued.

Lesson Five Activity: Reproduction of Facial Expression

Students were given three cards which had one of the above six emotions printed on them. Each student reproduced, through facial expression, these emotions to the group. Emphasis was placed on those distinct areas of the face used to demonstrate the various emotions.

Lesson Six Activity: Spatial Relationships Situations

A table with six chairs (two on each side and one on each end) was arranged in the middle of the room. Two volunteers positioned themselves around the table in response to the following situations: a couple physically attracted to one another, a couple who previously had dated

and had a miserable time, one person representing a student and the other the teacher who gave him/her an "F" in a class last semester, same sex friends having lunch together, opposite sex friends having lunch together.

Lesson Seven Activity: Schedule of Appointments

On a small piece of paper, each member wrote a designated time for which they would personally appear for the following appointments: a medical appointment, IRS audit meeting, high school class reunion dinner, first date, and a rock concert. Each student read and commented on his/her responses.

Lesson Eight Activity: Handshake and Touch Experience

Members of the group were instructed to shake one another's hand. The members shared observations regarding the size, strength, limpness, skin tone, moisture, and temperature of the hands. Again, the members of the group mingled in the room, touching other individuals on the face, head, arms, shoulder, and back. Discussion revolved around the feelings, emotions, and reactions elicited by the touching experience.

Lesson Nine Activity: Field Experience

Students walked to various campus buildings to evaluate the differences in environment and atmosphere. Visitations included offices, restaurants, and the library. Size, lighting, color scheme, arrangement of decor, noise, and other artifacts were analyzed as to their impact on the

individual. Function and design influences provided additional topics of discussion.

Lesson Ten Activity: Imitation of Famous People

The students divided into pairs to mime famous couples. All forms of nonverbal communication were employed in this final session to facilitate identification of the characters. Personalities included: Fred and Ginger, Di and Charles, Adam and Eve, Frankie and Annette, Lone Ranger and Tonto, Laurel and Hardy, Farmer and Wife in the rain as depicted in the 7-Up commercial circa 1985.

APPENDIX C

EXPRESSIVE AND RECEPTIVE SIGN LANGUAGE
INTERPRETER RATING SCALES

Rater's Initials

Student's Number

Date

EXPRESSIVE SIGN LANGUAGE

INTERPRETER RATING SCALE

Pretest and Posttest

Please place an "X" under the rating you feel the interpreter should receive for her/his performance in each area. 1 indicates a poor performance and a 5 indicates an excellent performance.

1 2 3 4 5

Clarity _____

Fluency _____

Facial Ex/
Body Language _____

Utilization
of Space _____

Fingerspelling _____

Mouth
Movements _____

Vocabulary
Selection _____

Overall
Expressive _____

Rater's Initials

Student's Number

Date

RECEPTIVE SIGN LANGUAGE

INTERPRETER RATING SCALE

Pretest and Posttest

Please place an "X" under the rating you feel the interpreter should receive for her/his performance in each area. 1 indicates a poor performance and a 5 indicates an excellent performance.

1 2 3 4 5

Clarity

Fluency

Fingerspelling

Vocabulary
SelectionOverall
Receptive

APPENDIX D

NONVERBAL COMMUNICATION
SURVEY FORM

Directions: We would like your perspective regarding nonverbal communication and Sign Language curriculum within your Interpreter Training Program. Please indicate, by circling the appropriate letters, if you strongly agree (SA), agree (A), disagree (D), or strongly disagree (SD) with each statement.

1. Nonverbal communication is a critical component of Sign Language. SA A D SD
2. Nonverbal communication includes only aspects of body language and facial expression. SA A D SD
3. Nonverbal communication expresses degree and depth of emotions in Sign Language. SA A D SD
4. Nonverbal communication is an essential element in an Interpreter Training Program. SA A D SD
5. Nonverbal communication is consistently used with Sign Language. SA A D SD
6. Nonverbal communication should be taught as a separate content area (class) in the Interpreter Training Program. SA A D SD
7. Nonverbal communication and nonmanual components of Sign Language are different terms for the same information. SA A D SD
8. The instructor for a nonverbal communication class should use voice only for instruction. SA A D SD
9. The instructor for a nonverbal communication class should incorporate voice and sign into the instruction. SA A D SD
10. The instructor for a nonverbal communication class should use pantomime and gestures only for instruction (no voice). SA A D SD
11. A nonverbal communication class should be taught exclusively by deaf persons. SA A D SD
12. A nonverbal communication class should be taught exclusively by non-deaf persons. SA A D SD

13. A nonverbal communication class could be taught by either a hearing or a deaf person. SA A D SD
14. Nonverbal communication is only used in minimal language competency settings. SA A D SD
15. A nonverbal communication class should include instruction on kinesics (all forms of body movement excluding touch). SA A D SD
16. The study of proxemics (the structure, use, and perception of space) should be included in a nonverbal communication class. SA A D SD
17. Facial expression must be an integral part of a nonverbal communication class. SA A D SD
18. A nonverbal communication class should include the study of haptics (touch). SA A D SD
19. Chronemics (structure, perception and reaction to time) should be studied in a nonverbal communication class. SA A D SD
20. A nonverbal communication class should include instruction on the importance of physical features (hair, dress and accessories). SA A D SD
21. Cultural differences should be addressed in a nonverbal communication class. SA A D SD
22. What are your thoughts regarding the role and function of nonverbal communication in Sign Language and its applicability to an Interpreter Training Curriculum.

Use the back of this sheet if necessary. THANK YOU!

APPENDIX E

NONVERBAL COMMUNICATION
SURVEY COVER LETTER

APRIL 11, 1986

Dear Director/Coordinator,

As part of an ongoing research project in the area of interpreter training, we are eliciting information on curriculum and request your assistance. Our efforts are currently focusing on the inclusion of nonverbal communication into the interpreter training program.

We all face similar problems in developing comprehensive curriculum. Therefore, would you please respond to the following questionnaire and return it in the enclosed envelope. All responses will be kept confidential. Thank you for your support and cooperation.

Sincerely,

Annette M. Long
Coordinator

Karen L. Dilka
Doctoral Candidate

Your Name _____
 What is your official title _____
 Name of Program _____
 Is this a University _____ or Community College _____
 program? (check one)
 How many students are currently enrolled in this program?
 _____ students. (indicate number)
 In what year was this program established? 19____.
 How many years have you been with this program?
 _____ years.
 How many years have you been training interpreters in Sign
 Language? _____ years. (indicate number)
 Do you have any college, technical or professional degrees?
 Yes _____ No _____ If yes, what degree or degrees?

 Do you teach courses in the interpreter Training Program?
 Yes _____ No _____ If yes, what courses?

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