

A COMPARISON OF THE COMPREHENSION OF ENGLISH  
THROUGH AMERICAN SIGN LANGUAGE AND  
SEEING ESSENTIAL ENGLISH

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A THESIS

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BY

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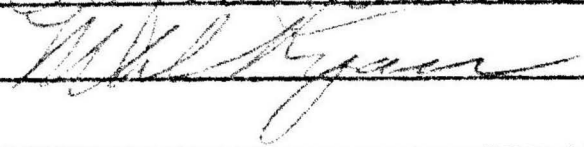
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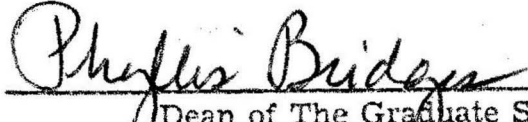
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## Chapter I

### Introduction

For more than 150 years teachers of the deaf in the United States have used various methods of communication in the classroom (Bender, 1970; Klopping, 1972; Morres, Weiss, & Goodwin, 1973). These methods have encompassed a wide range of philosophies from pure oralism to pure manualism. Today, manual communication methods using either fingerspelling or signs or a combination of the two, along with facial expressions and lip movements, are common. According to Tervoot and Verbeck (cited in Dalgeish, 1975), the pupil-teacher and pupil-pupil communication preference from greatest to least for children between the ages of seven and seventeen in two Dutch and two American schools for the deaf is: signs alone, signs and speaking, fingerspelling, fingerspelling and speech, and speech alone. Several more specific methods of manual communication in use are American Sign Language (ASL), Seeing Essential English (SEE), Signed English, Signing Exact English, and the Rochester method (Higgins, 1973).

The use of different manual communication methods in schools for the deaf is a controversial issue (Higgins, 1973; Klopping, 1972; Vernon, 1972). Klopping (1972) states that there is a need to determine which form of manual communication to be employed with young deaf children, several

expectations being improved academic achievement, speechreading skills, speech, and auditory skills through improved understanding of English in the classroom.

Two signing systems currently utilized with school-age deaf children are ASL and SEE. ASL, the traditional sign language of most deaf Americans (Bellugi & Klima, 1972; Moores, 1974; Schlesinger & Meadow, 1972), has been described as

. . . fingerspelling as well as signs or positions and movements of the hands indicating concepts and entire words or phrases. . . . This colloquial method does not follow normal English grammar or syntax, but rather it expresses its ideas by using the minimal amount of words necessary and omitting prepositions, articles, adverbial forms, and prefixes and suffixes. (Higgins, 1973, p. 46)

SEE, on the other hand, is a more recently developed system which "attempts to manually mirror English syntax, vocabulary, and morphology" (Newby, 1974). The essence of SEE is to visualize for the child the functional parts of English speech. Therefore, there are specific signs for plurals, present progressive, past tense, and past participle (Schlesinger & Meadow, 1972). The person using SEE is instructed to speak as he signs and to make a sign for each word he says (Anthony, 1972).

Some weaknesses of ASL have been acknowledged. ASL has its own process of word formation and its own methods of incorporating semantic variation into its basic units: signs

and sign phrases. It is an arbitrary system which has many differences from English, both at the levels of vocabulary and in the way sentences are formed (Bellugi & Klima, 1972). Schmitt (1966) says, "The language of signs . . . unfortunately bears little resemblance to verbal English" (p. 2). Moores (1974) states that the roots of ASL do not lie in the English language, but they can be traced back to the French sign language developed by de l'Epee to reflect French syntax. Anthony (1972, p. 19) gives examples of currently used signs which have French origins:

English word	French word	Hand shape used
good	bon	B
hundred	cent	C
thousand	mille	M
other	autre	A
seek/search	chercher	C

Bellugi and Klima (1972) also show evidence that ASL is not a parallel to or even a derivative of English. It is a "language in its own rights, with properties that are different from spoken languages in general and from English in particular" (p. 61). Kohl (1966) suggests that ASL is a concrete language. Since ASL is concrete, it is restrictive because so many signs are imitations of concrete situations; that is, it is difficult for the deaf to see beyond these imitative aspects of a sign.

Cicourel and Boese (1972) and Odom, Blanton, and Nunnally (1967) state that the student using ASL learns English as a second language. Further, these authors suggest that learning English skills begins at a later age for a deaf child because of his lack of early exposure to the English language. Learning language at a later age can cause serious problems if, as Brown (1970) states, it is necessary for the ability to create propositions which can be expressed in sentences to mature near the end of the sensory motor period, which is the developmental stage from birth to two years of age. Assuming that the deaf student using ASL does learn English as a second language, Lilly, Sherman, Compton, Fisher, and Carney (1968) state that there is a similarity between the way the deaf person learns the English language and the way a hearing high school student studies and learns a foreign language, i.e., vocabulary is learned before syntax, and grammatical rules are presented to be memorized. These authors suggest, therefore, that this type of language learning may result in the deaf child being as proficient in English as an average high school student is in French.

ASL, which has been used in America for many years, has its strengths. Anthony (1972) and Bellugi and Klima (1972) proclaim ASL to be a beautiful language. Stokoe (cited in Moores, 1974) has linguistically analyzed ASL and



demonstrated that it is a linguistic system with all of the important characteristics of a spoken language. According to Bellugi and Klima (1972), ASL has certain realms that are more highly differentiated than English. Bellugi and Klima also suggest that since a reliance on vision characterizes the world of the deaf, the vocabulary of ASL makes many more discriminations about ways of looking and seeing things than spoken English does. Sign language has the range and diversity to permit "humor and pun, song and poetry, whimsey and whispering. What it lacks in comparison with spoken English it amply compensates for in other ways" (Bellugi & Klima, 1972, p. 76). For example, there are many single signs which require several English words for translation. As a language designed for visual expression, ASL has benefited the deaf for years.

Although SEE is a relatively recent development, it is held in high esteem by many (Bornstein, 1973; Stokoe, 1974). One strength of SEE is that it makes available to deaf children a very important tool: English (Anthony, 1972). Bornstein (1973) and Bellugi and Klima (1972) agree that SEE is a very impressive parallel to written English. Yet SEE is not as great a departure from ASL as some might think; that is, in SEE, whenever possible, Anthony (1972) has utilized the ASL sign instead of developing a new sign. Bornstein

(1973) cites a case in which a member of his staff judged the origin of selected signs from Signing Exact English. He found that sixty-one per cent were traditional ASL signs. He then compared the selected Signing Exact English signs with their SEE equivalents. Eighty per cent of the traditional signs were found to be identical with the SEE equivalents. Most of the differences of the twenty per cent of the words remaining were slight and were attributed to the inclusion of an affix in SEE signs.

The fact that SEE parallels English is of great benefit since English language disability is the deaf child's greatest problem, and many of his other problems stem from this difficulty (Kohl, 1966; Schmitt, 1970). Anthony (1972) states that this difficulty continues because there is no printed representation of ASL, making it difficult to educate the deaf.

To remediate the above mentioned language disability, the deaf (in English speaking countries) must be taught English (Anthony, 1972). Stokoe (1975) states that "The simplest, most obvious way of representing one language by another is word-for-word" (p. 418). Stokoe (1974) also states that SEE is a methodical way of using clear manual symbols to represent English. It appears, therefore, that SEE might allow the deaf child to acquire English through



similar mental processes as hearing children. For example, language rules might be inferred by the child through his exposure to a manual form of English. Thus, perhaps there would be no need for classroom drill on specific language rules. Moreover, the child's vocabulary would not be limited to the mere 5200 words that have ASL signs (Steinberg cited in Bornstein, 1974).

The language needs of deaf children should not be met with any system which furthers English language difficulties. Quigley (1965) states that "a large percentage of deaf people do not have an understanding of common English idioms whether they be written, spoken, or given [interpreted] in perfect English order via fingerspelling and/or the language of signs" (p. 30). Stokoe (1975) states that this lack of understanding is a result of years of signing such things as: "Not much touch me" for "You mustn't touch me"; "Touch finish store you" for "Did you go to the store?"; "Letter body late" for "The mailman was late"; and "Late get present" for "I didn't get a present."

Stokoe (1970) also states that sign language sentences often show a departure from the patterns of standard English. For example, there is the simple English sentence: He saw me. A difficulty arises when the ASL sentence is used to translate the English sentence. The sign for "see"

is described as: The V hand is held up with the fingertips opposite the signer's eyes, back of hand outward. The hand is moved away from the face a short distance. However, the sentence, "He saw me," is signed in ASL with the V hand pointing obliquely out at about head level, looking at it, and with a flick of the wrist he bends the fingertips toward himself. The signer makes this motion to sign the sentence, "He saw me." To the person who understands sign language, this sign conveys just as much meaning as does the English sentence to one who understands English. Yet, it utilizes an entirely different set of grammatical rules.

Bornstein (1973) has identified another difference between English and ASL, i.e., they both have multiple meanings, but the meanings for any given pair of words do not always parallel each other. For example, in English, the word, train, can mean "to practice" or a "railroad train." In ASL there are two distinct signs for these different meanings. Bornstein suggests that this phenomenon has caused several people to feel that signs reflect meaning or concepts in a way that is different than that of spoken words. Also, Bornstein suggests that it is partially because of the inconsistency of signs for words with multiple meaning that teachers of the deaf teach ASL so badly. Additionally, Anthony (1972) believes that hearing people seldom learn to

sign ASL well, which makes it difficult for parents to learn to communicate with deaf children.

Currently, there is a need to investigate English receptive language levels associated with deaf children who utilize SEE and with deaf children who utilize other manual methods. The aim of this study, therefore, will be to determine the comprehension level of deaf children for English stories presented via SEE and ASL. Stated in the null, it is hypothesized that no difference will exist in the comprehension of English stories presented to school-age deaf children through these two methods of manual communication.

## Chapter II

### Related Research

A review of the literature revealed a paucity of research dealing with the ability of the deaf to comprehend the English language through various manual communication methods. Recently, however, it has been suggested that the closer the approximation to English, the better the comprehension by the deaf individual (Higgins, 1973; Hoemann, 1972b; Klopping, 1972).

In one attempt to evaluate the comprehension of English through a variety of manual communication methods, Higgins (1973) compared fifty-seven Gallaudet college students' comprehension of ASL, Signed English, which uses fingerspelling and signs to convey concepts and words, and the Rochester method, which according to Furfey (1974) uses speech with lip movements supplemented by fingerspelling. In this study, eighteen students were used for the Rochester group, nineteen students were used for the Signed English group, and twenty students were used for the ASL group. All of the students were presented with two videotaped test passages via the appropriate communication method. Each passage was adapted from Developing Reading Skills, Form C (Poquet & Foster, 1965) and ten printed questions for each

passage. Thus, each student was exposed to two passages and twenty test questions. As an index of the comprehension ability for each group, the mean number of correct responses was compiled. For each of the three groups the mean number of correct answers was as follows: Rochester group, 13.72; ASL group, 15.15; and Signed English group, 17.16. Also, the Mann-Whitney U Test analysis of the three methods indicated that the Signed English group was statistically superior to both the Rochester group and the ASL group. There was no significant difference between the Rochester method and ASL. The results indicated that these Gallaudet college students performed better on written tests of comprehension ability when a Signed English method of manual communication was utilized to present the test passages.

These results were compatible with those of Klopping's (1972) work in which he compared the ability of thirty deaf students, between the ages of thirteen and twenty, to understand language under three auditory-visual stimulus conditions: (a) speechreading with voice, (b) the Rochester method, and (c) total communication. The students were enrolled at the Arizona State School for the Deaf and the Blind. The students were randomly placed in six groups of five students each. They were then presented with four stories narrated by the investigator, who was skilled in all



three methods of communication. The stories were adapted from the Reading Laboratory IIa (Parker, 1958). Upon completion of each story, the students were given a three-part test, which was a paper and pencil test developed by the investigator. Part I, consisted of free response questions requiring the students to describe the content of the story. The story was then repeated and Parts II and III, consisting of multiple objective questions, were given by the investigator. There were twenty possible points on each test, ten points for Part I and ten points for Parts II and III. The comprehension data for these methods of communication was analyzed by a proportional, three way analysis of variance, which indicated significant differences between the student's ability to understand the three methods of communication. To determine which communication methods were significantly different, the Tukey HSD test was utilized. It was determined that the scores for the Rochester method and total communication were significantly higher than speechreading with voice. Also, total communication scores were significantly higher than the Rochester method. Further, the percentage of comprehension of the three methods of communication were analyzed. For the speechreading with voice group, the 35.15% comprehension was the lowest of all methods tested. For the Rochester method group, the

55.10% comprehension was an improvement. However, the scores indicated that total communication, with 76.35% comprehension, was most effective of the three methods tested.

Moore, Weiss, and Goodwin (1973), in another study, found total communication to be the most efficient means of comprehending information for young deaf children, when compared with the auditory method, the oral method, and the Rochester method. The auditory method is described as concentrating on listening skills, while the oral method allows the child to receive input through speechreading and amplification while expression is totally through speech. These investigators assessed seventy-four preschool children's receptive language. The children were tested with a receptive communication test devised by the investigators, which assessed five methods of communication: (a) sound alone, (b) sound plus speechreading, (c) sound plus speechreading plus fingerspelling, (d) sound plus speechreading plus signs, and (e) the printed word. The resulting scores of the receptive communication test improved from speech alone (34%) to the printed word (38%) to sound plus speechreading (56%) to sound plus speechreading plus fingerspelling (61%) to sound plus speechreading plus signs (72%). Moore, Weiss, and Goodwin (1973) suggested, therefore, that the



most efficient method for receptive communication was the simultaneous use of sound, speechreading, and sign.

Another investigation obtained different results. White and Stevenson (1975) compared the receptive language of forty-five residential school students between the ages of eleven years and eighteen years, seven months. The students were systematically scheduled for testing in one of six groups. The students were tested using four methods of communication: (a) oral communication, (b) total communication, (c) manual communication, and (d) reading. Two passages from Getting the Facts: Specific Skills Series, Book B (Boning, 1966), containing eight questions each, and two passages from Book D, containing ten questions each, were presented to each student by an interpreter able to present the material under all of the methods of communication being tested. Thus, the best possible score was thirty-six. The data were then analyzed to indicate the mean score of the correct responses. The mean score for each group was as follows: oral, 15.67; total communication, 23.73; manual, 25.51; and reading, 27.73. Thus, it was indicated that all groups had better comprehension through reading; all groups comprehended more information through total communication and manual communication than they did through oral communication; and there was no significant difference between the

mean comprehension scores obtained for manual communication and for total communication. However, White and Stevenson (1975) stated that during the last decade other research has indicated that educational achievement has been enhanced through the combined use of speech, fingerspelling, and signs, i.e., total communication. This claim has also been supported by Vernon and Koh (1971).

Johnson (1948) also investigated the ability of deaf students to understand language. Her subjects consisted of a combination of 253 manual and oral students whose ages were between eleven and twenty-four years and who were enrolled in the Illinois School for the Deaf. She tested the comprehension of the following methods of communication: (a) reading, (b) speech and hearing, (c) lip reading, (d) hearing plus lip reading, (e) fingerspelling, and (f) signs plus fingerspelling. To evaluate the ability of the students to understand language through various methods of communication used in schools for the deaf, Johnson developed five tests consisting of ten sentences each. She then evaluated the comprehension of the students using the six methods of communication under consideration. The students were instructed to reproduce in writing the exact sentences presented by Johnson. The data were analyzed to show the mean percentage of correct answers of the students

as a whole. Fingerspelling had a mean of 74%; followed by reading, 72%; signs and fingerspelling, 60%; hearing plus lip reading, 47%; lip reading, 29%; and speech and hearing, 23%. The results indicated that the students of the Illinois School for the Deaf understood fingerspelling better than the other methods of communication. Therefore, Johnson concluded that fingerspelling should be used in the classroom. Moreover, she concluded that a combination of fingerspelling and signs is an unsatisfactory method of communication to be utilized in classrooms for the deaf.

Another investigation was made by Schlesinger and Meadow (1972) who studied the language acquisition of several preschool deaf children. Each child was seen monthly in one to four hour sessions. These sessions were videotaped by the investigators and observed. They reported two cases in which one very young deaf child received SEE signs and another received ASL plus a mother's invention of movements which corresponded to English syntax and grammar. The samples of expressive language from the child exposed to SEE, between the ages of five years, three months and seven years, indicated that signs alone seemed to be her favored method of communication, but their frequency decreased substantially as she became older. In contrast, signs accompanied by

speech more than doubled in frequency with increasing age, and speech alone also increased as time passed. The period of study of the child who used the mother's invention of signs was much briefer, but certain trends appeared. Between the ages of three years, five months and four years, two months, speech increased almost entirely at the expense of signs. The results indicated that the milestones in language acquisition of deaf children generally parallels the milestones of spoken language acquisition. Also, though both children showed an early preference for signs, the signs which were approximates of English did not discourage speech.

While studies investigating the comprehension of various methods of communication have caused much debate over which communication method is the most effective for educating deaf children, the academic achievement of these children has fallen far behind that of their hearing peers (Babbidge, 1965; Boatner, cited in Klopping, 1972; Kohl, 1966). Boatner (cited in Klopping, 1972) conducted a survey of the educational achievement of ninety-three per cent of American deaf students sixteen years of age or older. The results indicated that only five per cent achieved tenth grade level or better; sixty per cent were at 5.3 grade level or below; and thirty per cent were functionally illiterate.

In another study, the Advisory Committee on the Education of the Deaf (Babbidge, 1965) accumulated data on

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In another study, the Advisory Committee on the Education of the Deaf (Babbidge, 1965) accumulated data on



the level of educational attainment of 365 deaf students, between the ages of fifteen and twenty-two, who graduated in 1964. Each student had been given the Stanford Achievement Test. The median achievement level of the graduates averaged eighth grade level.

Kohl (1966) cites that in 1961-1962 there were 501 deaf high school graduates in the United States. The grade level range of 3.1 to 12.8, for these graduates, in school achievement with a mean of 4.7 indicated that in general, the deaf population is between four and seven years retarded.

In another study, Goetzinger and Rousey (1959) surveyed 101 deaf students, between the ages of fourteen and twenty-one, who were in the advanced department of a state residential school for the deaf. The students were given tests to evaluate their grade level proficiency for paragraph meaning, vocabulary, arithmetic reasoning, and arithmetic computation. The results indicated that the educational achievement of the students was: paragraph meaning, 4.2; vocabulary, 4.3; arithmetic reasoning, 5.5; and arithmetic computation, 6.0.

Other studies have suggested that regarding English skills, the deaf student is linguistically far behind his hearing peers (Brannon, 1968; Cooper, 1967; Power & Quigley, 1973; Pressnell, 1973; Sarachan-Deily & Love, 1974). The

deaf student's (English) language is telegraphic, using less auxiliaries and other expanding words, and contains fewer words than normal (Brannon, 1968). The deaf have poor comprehension and production of the passive voice (Power & Quigley, 1973), and their rate of acquisition of syntax is far slower than that of hearing children (Pressnell, 1973).

Perhaps Sarachan-Deily and Love (1974) provide the reason for this deficiency in the English language. They state that ASL, used by many in schools for the deaf today, has its own linguistic structure. They agree with Hoemann (1972a) who has suggested that when children are exposed to ASL and English concurrently, they often acquire the greatest proficiency in ASL, to the detriment of English. Myklebust (1964) gives another reason for the language deficiencies of the deaf. He states that ASL is more pictorial and less symbolic than spoken English. ASL "lacks precision, subtlety, and flexibility" (p. 241).

A review of the literature reveals that a combined oral and manual method generally yields higher comprehension scores than the oral method alone, manual method alone, or fingerspelling alone. However, there is limited information regarding which manual method should be used in the total communication concept.

Although SEE is a method of manual communication currently employed in some schools for the deaf, and may



approximate the English language more closely than other signing systems in use with deaf children, there are apparently no reports of tests evaluating the receptive language of deaf children familiar with the SEE method of manual communication. It may be hypothesized that a manual method based on English morphology, syntax, and vocabulary might provide a means for more efficient comprehension of English than signing methods not employing the morphological and syntactical rules of English. This study was designed, therefore, to obtain data comparing English comprehension levels of children learning SEE and children learning another manual method, ASL. It was thought that this information might benefit the classroom teacher in presenting the English language to deaf children.

## Chapter III

### Research Design

Videotaped samples of three manually communicated paragraphs from the "Listening Comprehension" sub-test of the Durrell Analysis of Reading Difficulty (Durrell, 1955) were shown to two groups of matched deaf children. The paragraphs were signed to one group using ASL and were presented to the other matched group using SEE. Additionally, the standardized questions covering the paragraphs were videotaped and shown after each paragraph. As an index of the comprehension ability for each child, the number of correct responses was tabulated. Details of the methods and procedures utilized in this investigation are presented in this chapter.

### Research Questions

The research questions investigated in this study were:

1. What comprehension abilities can be demonstrated for deaf children receiving information through the SEE method of manual communication?
2. What comprehension abilities can be demonstrated for deaf children receiving information through the ASL method of manual communication?
3. What differences can be demonstrated in comprehension of information between deaf children instructed with SEE and deaf children instructed with ASL?

Subjects

The subjects consisted of twenty-two deaf children enrolled in two day schools for the deaf. The subjects were chosen on the basis of accessibility to the investigator. Eleven children were made available from the Tarrant County Day School for the Deaf; therefore, the investigator matched all of these ASL subjects with students drawn from the population of deaf students at the Callier Center for Communication Disorders. Thus, Group I consisted of eleven children (four boys, seven girls) instructed with SEE who attended the Callier Center for Communication Disorders school for the deaf. Group II consisted of eleven children (six boys, five girls) instructed with ASL who attended the Tarrant County Day School for the Deaf. The children in Group I ranged in age from five years, four months to seven years, ten months. The children in Group II ranged in age from five years, four months to eight years, ten months.

Group I and Group II were matched utilizing the following criteria: (a) age, (b) the magnitude of the child's hearing loss as being greater than seventy-five decibels in the better ear based on an average of the pure tone thresholds at frequencies of 500 Hz, 1,000 Hz, and 2,000 Hz (I.S.O., 1964), (c) intellectual ability estimated at average or above average by either a certified

psychologist's report or the report of a psychological associate, and (d) signing ability proficient enough to function in a classroom employing total communication, as judged by the child's teacher. Additionally, information was presented for each subject regarding the following parameters: (a) sex, (b) the length of time the child was in the manual communication program, (c) whether or not signs were used in the home, and (d) the socio-economic level of the parents as determined by The Minnesota Scale for Parental Occupations (Institute of Child Development).

#### Communication Sample

Each of the subjects was presented with the first three paragraphs and accompanying questions from the "Listening Comprehension" sub-test of the Durrell Analysis of Reading Difficulty (Durrell, 1955) via SEE or ASL. The paragraphs were selected because they were designed to evaluate the listening comprehension of first, second, and third grade normal children. Also, the questions were brief and simple. These "Listening Comprehension" paragraphs and questions are presented in Appendix A.

#### Instrumentation

Instrumentation used in videotape recording and playback procedures included a Sony camera (Model AVC 3200) and a Sony reel-to-reel recorder (Model AV 3600). Presentation of

both passages was accomplished by playing the videotape through a nineteen inch black and white Sony monitor.

### Procedures

The study consisted of (a) recording the communication sample in SEE and ASL, (b) presenting the videotapes to Group I and Group II, and (c) scoring and analyzing the data.

### Recording

The first three paragraphs from "Listening Comprehension" subtest of the Durrell Analysis of Reading Difficulty (Durrell, 1955), as well as the twenty-two questions covering the paragraphs, were recorded in SEE and ASL on videotape. Two individuals proficient in ASL or SEE were selected to present the test paragraphs and questions. Each of the individuals was videotaped from the waist up in a well lighted room with a blank background. Since SEE and ASL were utilized with spoken English in the classrooms of the subjects in each respective group, lip movements were used on the videotapes, but no sound was recorded. The presentations were made at a moderate speed adequate for relaying information.

### Presentation

To insure that the videotaped presentations were accurately signed and reflected the signing system actually



employed in the respective classrooms, two panels comprised of three judges each evaluated the videotapes. The panel that evaluated the SEE presentation consisted of the principal and two classroom teachers from the Callier Center for Communication Disorders. The panel that evaluated the ASL presentation consisted of the principal and two classroom teachers from the Tarrant County Day School for the Deaf. Each panel certified the respective presentation to be accurate and to reflect the signing system employed in the classroom.

The subjects from the Callier Center for Communication Disorders were tested separately from the subjects from the Tarrant County Day School for the Deaf. Each group was tested at 9:30 a.m. The subjects were tested individually in a room with no distractions. They were seated four to five feet from the monitor. They received the following signed instructions from the investigator: "The woman is going to read a story to you; then she will ask you questions about it. Be sure to watch carefully so that you can answer the questions. The first story is about 'The Cat and the Dog.' If you don't know the answer to a question, you may guess. I will give you a surprise if you pay attention." The appropriate videotape was then shown to each child individually. At the end of each paragraph, the child was

tested for comprehension by answering the videotaped questions in any way he chose. All answers were interpreted and recorded by the investigator, verbatim, and it was specified whether the answer was signed, spoken, or both. The qualifications of the investigator regarding manual communication proficiency are presented in Appendix B. After each question, the videotape was stopped while the child answered. When the questions for one paragraph were finished, the next paragraph was presented. Each child was rewarded with a small toy upon completion of his task. Each child received three paragraphs and answered twenty-two questions.

#### Scoring and Analysis

The children's answers to the questions were independently scored by a panel of two judges as correct or incorrect, based on the text and what was literally signed to the child. Where there was a difference in opinion, a third judge was utilized to resolve the difference. The data were then compiled to indicate number of answers correct for each child, number of answers correct for each group, and number of correct answers for each question. Means, medians, and standard deviations were then tabulated.



## Chapter IV

### Results and Discussion

#### Results

For this investigation, English comprehension scores obtained for deaf children utilizing SEE were compared to English comprehension scores obtained for deaf children utilizing ASL. As an index of English comprehension for each child, the number of correct responses to twenty-two questions over three stories from the Durrell Analysis of Reading Difficulty was tabulated. The correct responses for each group were then analyzed to determine differences in English comprehension related to the type of manual communication system utilized.

#### Subjects

Tables 1 and 2 present a summary of pertinent information concerning the subjects employing SEE and ASL respectively. Table 1 shows that the SEE subjects ranged in age from five years, four months to seven years, ten months, with a mean age of six years, eight months. The SEE subjects consisted of seven girls and four boys. There were six subjects whose parents used some SEE signs in the home and one subject, a child of deaf parents, whose parents used ASL and SEE in the home. The number of years that the subjects were exposed

Table 1

Age, Sex, Signing Environment, Signing Experience, Intelligence, and  
Socio-economic Status for Eleven Children Utilizing SEE

Subject	Age	Sex	SEE Signs Used in Home	Years of SEE Training	Intelligence Level	Socio- Economic Status
1	5/4	F	No	2.0	Bright-Superior	III
*2	7/5	M	Yes	2.0	Dull-Normal	VI
3	5/6	F	No	1.5	Average	I
4	5/5	F	No	1.5	Bright-Normal	III
5	6/5	M	Yes	1.5	Bright	II
6	6/8	M	No	2.0	Average	VI
7	7/0	F	Yes	2.0	Average	V
8	7/7	F	Yes	2.0	High-Average	II
9	7/6	F	Yes	1.5	Bright-Normal	V
10	7/5	F	No	2.0	Average	VI
11	<u>7/10</u>	M	Yes	<u>1.0</u>	Bright-Normal	<u>III</u>
MEAN	6/8			1.54		3.81

\*Denotes child of deaf parents who utilize ASL and SEE in the home.

to SEE ranged from one year to two years, with a mean of 1.54 years. The estimated intellectual levels of the SEE subjects ranged from dull-normal to bright-superior, while nine of the eleven were average, bright-average, or bright. Table 1 also shows that the socio-economic status of the SEE subjects' families ranged from I, which indicated professional occupations, to VI, which indicated slightly skilled trades and other occupations requiring little training or ability. There was a mean of 3.81 obtained for socio-economic status associated with the SEE subjects.

Table 2 shows that the ASL subjects ranged in age from five years, four months to eight years, ten months, with a mean age of six years, eleven months. The ASL subjects consisted of five girls and six boys. There were six subjects whose parents used some ASL signs in the home. Two of these subjects, children of deaf parents, received signs in the home from birth. The number of years that the subjects were exposed to ASL ranged from one year to five and one half years, with a mean of 2.86 years. The distribution of intellectual levels for the ASL subjects indicated four average estimates and seven bright-normal estimates. Table 2 also shows that the socio-economic status of the ASL subjects' families ranged from I to VII, which indicated a range from professional occupations to day laborers of all classes, with a mean socio-economic status of 4.18.

Table 2

Age, Sex, Signing Environment, Signing Experience, Intelligence, and  
Socio-economic Status for Eleven Children Utilizing ASL

Subject	Age	Sex	ASL Signs Used in Home	Years of ASL Training	Intelligence Level	Socio- Economic Status
*1	5/4	F	Yes	5.3	Bright-Normal	VII
*2	5/6	F	Yes	5.5	Bright-Normal	V
3	5/9	F	No	2.0	Normal	II
4	6/2	F	No	3.0	Average	III
5	6/6	M	No	1.5	Bright-Normal	V
6	6/7	M	No	3.0	Average	VI
7	6/8	F	Yes	1.0	Bright-Normal	V
8	7/8	M	Yes	3.0	Average-Bright	III
9	8/6	M	Yes	2.0	Bright-Normal	I
10	8/7	M	No	3.0	Average	III
11	<u>8/10</u>	M	Yes	<u>2.0</u>	Bright-Average	<u>VI</u>
MEAN	6/11			2.86		4.18

30

\*Denotes child of deaf parents who utilize ASL in the home.

A comparison of Tables 1 and 2 shows that the subjects in the SEE group were matched for age to the subjects in the ASL group with a maximum age difference of one year, eleven months. Additionally, there were four instances in which the subject pairs differed in age by more than one year. Moreover, in seven cases, the ASL subjects were older than their SEE counterparts. Regarding the mean age for each group, however, the children using ASL were three months older than the children using SEE. There was also a difference in the two groups concerning the sex of the subjects. The SEE group contained two more girls than the ASL group, and there were four instances in which ASL and SEE subject pairs differed with respect to sex. Further, nine out of eleven matches were possible based on whether or not signs were used in the home environment.

A comparison of Tables 1 and 2 also reveals that the mean length of signing experience associated with the ASL group was 1.38 years higher than the mean number of years of training associated with the SEE group. Each group included one student with one year of training, but the maximum length of training for each group varied. For example, the subjects with the most training in SEE had 3.5 years less experience than the subjects with the most training in ASL. For eight instances, however, subject pairs differed by a year or less



in signing experience. Concerning intellectual ability, it can be seen that ten of eleven subject pairs were reasonably well matched. Regarding the socio-economic status of the parents, the subjects were matched within one class value for six of the subject pairs. Additionally, there was a difference of .37 between the mean socio-economic status of each group.

Finally, Tables 1 and 2 reveal that ASL subject number one and pair number two were children of deaf parents. Subjects number two were paired because of this fact.

#### Comprehension Scores

Table 3 is a listing of the comprehension scores by subject. Table 3 reveals that the SEE group ranged from one to eleven correct answers while the ASL group ranged from zero to twelve correct answers. The ASL group contained both the lowest scores of zero and the highest score of twelve. With the exception of subject pairs two and eight, each SEE subject obtained a higher number of correct answers than the ASL counterpart. For example, 73% of the ASL subjects obtained scores of 2 or below compared with 18% of the SEE subjects. Table 3 also shows that the total number of correct scores for the SEE group was 63 while the total number of correct scores for the ASL group was 34.

Table 3

Comprehension Scores by Subject on Three Paragraphs  
and Twenty-two Questions for Deaf Children  
Utilizing ASL and SEE

Subjects	ASL Group Number Correct	SEE Group Number Correct
1	1	1
2	11	8
3	0	1
4	2	5
5	1	9
6	1	4
7	0	4
8	12	11
9	1	3
10	1	5
11	<u>4</u>	<u>11</u>
TOTAL	34	63

Table 4 is a listing of the number of correct responses on each test question. For each of the three paragraphs, there were five questions on which the SEE group scored more correct answers than the ASL group. Additionally, for each paragraph, there was one question on which the SEE and ASL groups had the same number of correct responses. For paragraph one, the ASL group scored more correct responses on question six, and for paragraph two, the ASL group scored more correct responses on question four. Also, the ASL group scored more correct responses on questions one and five associated with paragraph three.

Table 5 presents the means, medians, and standard deviations of the correct responses from the SEE and ASL groups. It can be seen that the mean and the median scores obtained for the SEE groups were higher than the mean and the median scores respectively for the ASL group. Additionally, the standard deviation of correct responses for the ASL group was higher than the standard deviation for the SEE group. It was also of interest to note the similarity between the mean and median associated with the SEE group. Regarding the ASL group, however, the median of 1.00 would indicate that one-half of those subjects produced either one or zero correct responses.

Table 4

Number of Correct Answers on Each Test  
Question for Each Paragraph

Paragraph I Test Questions								
	1	2	3	4	5	6	7	
SEE Group	4	3	0	2	2	0	1	
ASL Group	1	2	0	1	0	1	0	
Paragraph II Test Questions								
	1	2	3	4	5	6	7	
SEE Group	3	6	5	1	0	3	3	
ASL Group	1	1	3	2	0	1	0	
Paragraph III Test Questions								
	1	2	3	4	5	6	7	8
SEE Group	3	2	7	7	0	1	5	5
ASL Group	4	2	4	3	1	0	3	4

Table 5

Means, Medians, and Standard Deviations Derived from  
English Comprehension Scores Obtained for Deaf  
Children Utilizing SEE and ASL

	SEE Group	ASL Group
Mean	5.73	3.09
Median	5.00	1.00
Standard Deviation	3.49	4.30



To examine the statistical significance associated with the observed difference in mean correct responses obtained for the two groups of subjects, both paired and unpaired t-tests were employed. The confidence level was set at .05. Table 6 presents the t-scores obtained. It can be seen that there was a paired t-score of 4.74 which was significant at the .005 level of confidence. Thus, for the matched pairs of subjects, the mean score associated with the SEE group was significantly greater than that associated with the ASL group. Additionally, Table 6 reveals an unpaired t-score of 1.58 which failed to reach significance at the .05 level but which was significant at a level of confidence between .10 and .05. Thus, when the two groups of subjects were not considered to be matched pairs, no significant difference in mean number of correct responses could be reported.

### Discussion

The findings for the present investigation revealed a number of differences between the matched pairs of subjects. One obvious problem in matching occurred regarding subject pair number two (Tables 1 and 2). These subjects were matched because both were children of deaf parents. It was assumed that the type and quality of the home communication environment would have a definite effect on the communication

Table 6

The t-scores Obtained when Testing the Difference  
Between Mean Correct Responses of the  
ASL and SEE Groups

	Paired	Unpaired
t-score	4.73 <sup>a</sup>	1.58 <sup>b</sup>

<sup>a</sup>Significant at the .005 level of confidence.

<sup>b</sup>Significant at the .10 level of confidence.

proficiency of the child. It was further assumed that a child of deaf parents would be provided with manual communication from birth and that this would represent a significant advantage over a child of hearing parents not receiving an equivalent exposure to manual communication. Thus, although subject pair number two differed in age, sex, years of training in the manual communication method being tested, and intelligence, they were paired, nonetheless.

Additionally, other discrepancies in matching included differences in age, sex, years of training, and socio-economic status. Regarding years of training in the manual communication method being tested, it should be noted that the Callier Center for Communication Disorders had utilized SEE in the classroom for two years, while the Tarrant County Day School for the Deaf had been utilizing ASL longer than the ASL subjects had been in school. This made precise matching for time in program for the eleven subjects impossible. Thus, nine of the eleven ASL subjects had been exposed to ASL longer than their counterparts had been exposed to SEE. Also, it appears reasonable to assume that the teachers utilizing ASL may have had more experience in signing their particular manual communication method than the teachers utilizing SEE. That is, the Callier teachers had been exposed to SEE for two years.

Regarding differences in sex, age, and socio-economic status associated with the subject pairs, there were more girls in the SEE group than in the ASL group. Additionally, seven of the ASL subjects were older than their SEE counterparts. Also, for four of the subject pairs, the SEE subject was from a higher socio-economic status than the ASL subject, while for four of the subject pairs, the ASL subject was from a higher socio-economic status than the SEE subject. It is of interest that, in general, the ASL subjects were older and more experienced in the manual communication system being tested than their SEE counterparts.

It appears pertinent to a discussion of these findings to note that the Tarrant County Day School for the Deaf provided only eleven subjects meeting the criteria of age, hearing loss, intelligence, and ability to sign. Thus, from the student population of the Callier Center for Communication Disorders, which supplied the SEE subject group, eleven children were matched as closely as possible to the ASL subjects. This sampling procedure precluded a more desirable match between the two subject groups.

Although there were unavoidable discrepancies in matching, the findings revealed certain parameters within which the subjects were able to be well matched. For example, all eleven subjects presented hearing loss greater

than seventy-five decibels in the better ear. Additionally, there were nine subject pairs who were matched for whether signs were used in the home by the parents. Further, ten of the subject pairs were well matched according to intellectual level. Thus, individual pairs of subjects were well matched regarding hearing loss, signs used in the home, adequate classroom signing ability, and intelligence. Regarding the factors of age and socio-economic status, although it was impossible to make individual pairings as closely as the investigator would have liked, the mean age and socio-economic status associated with the two groups were similar.

Regarding English comprehension ability associated with particular manual communication methods, the findings from this investigation indicated that in general, the SEE subjects received higher scores than the ASL subjects on the twenty-two questions presented to them. The SEE subjects, as a group, obtained a total of 63 correct responses compared to 34 correct responses from the ASL group. Eighty-two per cent of the SEE subjects received higher total scores than their ASL counterparts on the comprehension questions. The two ASL subjects who obtained higher scores than their SEE counterparts were subjects two and eight. Subject pair two was the pair which was matched for the fact that both subjects had deaf parents who signed in the home. This ASL



subject gave eleven correct responses compared to the SEE subject who gave eight correct responses. Regarding subject pair number eight, the ASL subject had twelve correct responses compared to the SEE subject, who had eleven correct responses. These subjects were closely matched with the exceptions of sex and time in program. The ASL subject was male while the SEE subject was female, and the ASL subject had been exposed to ASL one more year than his counterpart had been exposed to SEE. An explanation as to why the two ASL subjects obtained more correct responses than their SEE counterparts is precluded by lack of close matching in subject pair number two and lack of a large difference in score regarding subject pair number eight. Of greater significance may be the facts that (a) for five of seven questions over paragraph one and two, and for five of eight questions over paragraph three, the SEE subjects obtained more correct responses than the ASL subjects, and (b) the total number of correct responses obtained from the SEE subjects was almost twice that obtained from the ASL subjects.

For the SEE and ASL subject groups respectively, this investigation presented means, medians, and standard deviations derived from the English comprehension scores obtained. A statistical comparison of the means obtained for each group revealed a t-score of 1.58 which failed to reach significance

at the .05 level of confidence. This finding would indicate no significant difference between the mean correct response obtained for the SEE group and the mean correct response obtained for the ASL group. Of considerable importance to an interpretation of that finding, however, is the fact that the obtained t-score of 1.58 was significant between the .10 and .05 levels. Reaching significance at the .10 level would indicate a ten per cent chance of error in deciding that the mean correct response associated with the SEE group was significantly larger than the mean correct response associated with the ASL group. It is also germane that the median correct response obtained for the SEE group (5.00) agreed closely with the mean (5.73), whereas the median obtained for the ASL group (1.00) would indicate a correct response of 1.00 or zero for half the ASL subjects. Additionally, 73% of the ASL subjects obtained 2 or less correct responses in comparison to 18% of the SEE subjects obtaining scores that low. Further, because the magnitude of the standard deviation affects the value of the t-score obtained, it is of interest that for both groups the standard deviation appeared to be high. Moreover, the standard deviation derived from the correct responses associated with the ASL group was greater than the mean.

When the SEE and ASL subjects were considered to be matched pairs and the mean difference in their scores was

considered, a t-score of 4.73 was obtained, which was highly significant. This finding would indicate that on the average, the correct responses obtained for the SEE subjects were significantly greater than the correct responses obtained for the corresponding ASL subjects. An interpretation of this finding may be somewhat equivocal, however, due to the manner in which the subjects were matched. Certainly, the subjects were well paired considering the parameters of hearing loss, intellectual ability, functional usage of signs in the classroom, and whether or not signs were used in the home. Additionally, the subjects were reasonably paired regarding age and sex, but less well matched regarding socio-economic status of the family.

In general, the findings from this investigation support an hypothesis that a manual communication method based on English morphology, syntax, and vocabulary might provide a means for more efficient comprehension of English than signing methods not employing the morphological and syntactical rules of English. Although the tested difference between the subject group means did not reach significance at the .05 level, significance was indicated at better than the .10 level. Additionally, the SEE subjects generally demonstrated a greater ability to comprehend English as presented in the three paragraphs, and they were able to answer

the twenty-two questions with more accuracy than the ASL group. Further, to the extent that the two groups of subjects would be considered as matched pairs, the comprehension score associated with the SEE group was significantly larger than that associated with the ASL group.

One implication of this study is that SEE, which appears to be a close approximation of English, could possibly enhance the ability of deaf students to comprehend English. As stated by Babbidge (1965), Boatner (cited in Klopping, 1972), and Kohl (1966), the academic achievement of deaf children has fallen far behind that of their hearing peers. If this is true, there may be a need for change in the educational procedures utilized in classrooms for the deaf. One of the primary aims in deaf education is to increase the ability of deaf students, through all language modalities, to both comprehend and express the English language. Since ASL, the traditional method of manual communication (Moores, 1974), does not represent an efficient facsimile of English (Bellugi & Klima, 1972; Higgins, 1973; Schmitt, 1968), it would appear relevant to investigate alternative manual systems which more accurately reflect English. The finding from the present study that deaf children trained in SEE were generally superior to deaf

children trained in ASL regarding comprehension of English stories, would suggest that SEE may be a potentially useful alternative to ASL.

Generalizations from the present data, however, are limited due to the small number of subjects employed and the fact that only one test of English comprehension was utilized. Thus, these findings strongly indicate a need for further research regarding the signing systems to be employed in improving the deaf child's comprehension and use of English.



## Chapter V

### Summary and Conclusions

This study was designed to investigate English receptive language levels associated with deaf children who utilize SEE and deaf children who utilize ASL. A comparison was made of the ability of deaf children to comprehend English stories presented via manual communication utilizing either SEE or ASL. SEE, a manual method which attempts to mirror English vocabulary, morphology, and syntax, was compared with ASL, a manual method which does not follow normal English vocabulary and syntax, to determine which method is more efficient in conveying this type of information to deaf children.

To provide data for this investigation, videotaped samples of three manually communicated paragraphs from the "Listening Comprehension" sub-test of the Durrell Analysis of Reading Difficulty and twenty-two standardized questions covering the paragraphs were shown to two groups of deaf children. The subjects consisted of eleven matched pairs of children between the ages of five years, four months and eight years, ten months. All subjects were trained in either ASL or SEE in day schools for the deaf. One group received the paragraphs via ASL, and the other group received the paragraphs via SEE. Additionally, as an index of the

comprehension ability for each child, the responses were interpreted by the investigator and scored by a panel of two judges. Where there was a difference of opinion in the correctness of a given response, a third judge was utilized to resolve the difference.

The findings revealed that although there were some discrepancies between the matched pairs of subjects, the two groups were reasonably well matched. Regarding the individual discrepancies in matched pairs, in general, the ASL subjects were older and more experienced in the manual communication method being tested than their SEE counterparts. However, the SEE group comprehended almost twice as much information as the ASL group. The SEE group obtained a total of 63 correct answers compared to 34 correct answers obtained from the ASL group. Eighty-two per cent of the SEE subjects received higher scores than their ASL counterparts. A statistical comparison of the means obtained for each group revealed a t-score of 1.58 which failed to reach significance at the .05 level of confidence. However, the t-score of 1.58 was significant at the .10 level, which indicated a ten per cent chance of error in assuming that the mean correct response associated with the SEE group was significantly larger than the mean correct response associated with the ASL group. When the SEE and ASL subjects were considered to

be matched pairs and the mean difference in their scores was considered, a t-score of 4.73 was obtained, which was highly significant.

The findings from this investigation generally support an hypothesis that a manual communication method based on English morphology syntax, and vocabulary might provide a means for more efficient comprehension of English than signing methods not employing the morphological and syntactical rules of English. Additionally, assuming that the academic achievement of deaf children has fallen far behind that of their hearing peers (Babbidge, 1965; Boatner, cited in Klopping, 1972; Kohl, 1966), there may be a need for change in the educational procedures utilized in classrooms for the deaf. Thus, if one of the primary aims in deaf education is to increase the ability of deaf students, through all language modalities, to both comprehend and express the English language, it would appear relevant to investigate alternate manual methods which more accurately reflect English. The findings from the present study, that deaf children trained in SEE were generally superior to deaf children trained in ASL regarding comprehension of English stories, would suggest that SEE may be a potentially useful alternative to ASL.

Finally, generalizations from the present study may be limited due to the small sample employed and the fact that

only one test of English comprehension was utilized. It also may be that uncontrolled variables such as (a) inherent differences in the student populations of the two schools, (b) qualitative differences in parental support regarding the two student groups, and (c) differences in student attention and retention, perhaps related to differences in class size of the two schools, could have influenced the present findings. The findings of this study, therefore, strongly indicate a need for further research regarding the manual communication methods to be employed in improving the deaf child's comprehension and use of the English language.

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APPENDIX A

"LISTENING COMPREHENSION" SUB-TEST

"LISTENING COMPREHENSION" SUB-TEST

The Cat and the Dog

A boy had a big gray cat. He was going to give her some milk. She did not come when he called. He saw her up a tree looking down at a big dog. The boy sent the dog away. Then the cat jumped down from the tree and came for her milk.

1. What did the boy have?
2. What was he going to give her?
3. What happened when he called to her?
4. Where was the cat?
5. What was she doing?
6. What did the boy do then?
7. What happened next?

Dick's Birthday Present

Dick jumped out of bed and ran downstairs. It was his birthday. He found a big basket on his chair at the table. Something was moving in the basket. Dick took off the cover. Out jumped a little brown dog. The dog started to bark and wag his tail. He was glad to get out.

1. What did Dick do when he woke up?
2. What day was it?
3. What did he find on his chair?
4. What did Dick hear?
5. What did Dick do then?
6. What was in the basket?
7. What did the dog do?

The Accident

A boy was hurt on our street yesterday. He had been playing ball and was riding his bicycle away from the ball field when a car came down the road. He did not see the car coming because he was looking back at the boys who were still playing ball. The car was going slowly. It hit the boy, but did not run over him. His arm was hurt and his bicycle was bent.

1. What was this story about?
2. What had the boy been doing?
3. What was he riding?
4. What came down the road?
5. Why didn't he see the car coming?
6. How fast was the car going?
7. What happened to the boy?
8. What happened to the bicycle?



## APPENDIX B

### THE QUALIFICATIONS OF THE INVESTIGATOR REGARDING MANUAL COMMUNICATION PROFICIENCY

THE QUALIFICATIONS OF THE INVESTIGATOR REGARDING  
MANUAL COMMUNICATION PROFICIENCY

The investigator is a hearing child of deaf parents who utilized ASL in the home. Therefore, the investigator was exposed to ASL from birth. Regarding interpretation of the SEE responses, the investigator attended two SEE workshops presented by David Anthony, the originator of SEE, in addition to attending SEE classes for one year.