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A PILOT DESCRIPTION OF INDIGENOUS SIGNS  
USED BY DEAF PERSONS IN JORDAN

By

Ziad Salah Kabatilo

A DISSERTATION

Submitted to  
Michigan State University  
in partial fulfillment of the requirements  
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## ABSTRACT

### A PILOT DESCRIPTION OF INDIGENOUS SIGNS USED BY DEAF PERSONS IN JORDAN

By

Ziad Salah Kabatilo

Use of Sign language, simultaneously with speech, has proved to enhance academic achievement and psychological development of hearing impaired students. However, Jordanian deaf children are taught orally and lack the opportunity of using standardized Sign language. At the time of this study, there had been no reference or known attempt to study Jordanian Sign Language (JSL). This pilot exploratory study appears to be the first attempt to record and describe indigenous JSL.

There were two main goals for the study: 1) an immediate one - to describe the language of Signs used by a small sample of the deaf population in Jordan, and 2) a longer range one - to begin the development of a Sign language handbook of instructions to train future Jordanian teachers of deaf learners in the use of "Total Communication". (Total Communication is the term used in the United

States to describe the simultaneous use of speech and Sign.)

Two educated deaf subjects were selected to demonstrate the signs for the 28 Arabic alphabet characters, and 100 concepts. The concepts were derived from a Jordanian study of the vocabulary of school age children, just before they started school (Oweidat, 1977). Each of the concepts was presented to the subjects on a stimulus card with a written word and/or picture. The subjects were filmed while signing each alphabet character and concept. Line drawings of the filmed signs were made, and compared and contrasted within and between subjects.

Signs, numbered 3-17 and 21-30, were used to examine intrasubject and intersubject reliability, respectively. It was found that subjects agreed on 18% of the alphabet characters, agreed with some variations on 14%, and disagreed on 68%. Subjects agreed on 26% of the signs for the 100 concepts, agreed with some variations on 22%, and disagreed on 52%. Intersubject reliability coefficient of the older with the younger subject was 80% while it was 90% for the younger with the older subject. Intrasubject reliability coefficient for the older subject was 73% while it was 80% for the younger subject.

The results suggest that the first (immediate) goal was achieved and that the second (longer-range) goal be postponed until after replication(s).

Recommendations from the study include: 1) replicating the study with a larger sample, 2) conducting similar

studies in other Arab countries, 3) selecting older deaf subjects, more experienced in Sign, and 4) using a video-tape system to standardize instructions to film responses, as well as to record sign patterns of subjects.

To

Everyone who Defends His Opinion  
and Allows Others to Do So

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## CHAPTER I

### THE PROBLEM

According to the International Center on Deafness  
(Gallaudet College, Washington, D.C., 1982),

"Deafness and loss of hearing among children has come to be one of the best understood conditions among those which cause childhood disability, yet, as one moves through the developing world, it is one of the conditions about which the least is being done . . . children with hearing impairments are confronted by many of the factors which compound the problems of disability generally throughout the developing world; . . . extensive illiteracy and little availability of basic services for health, education, and social welfare. Included in this number are millions of illiterate deaf adults. Of the relatively small percentage of deaf people who have learned to read and write, many are at risk of losing their skills as a result of inadequate communication with the rest of the world."

Deaf people are often illiterate in the language of their own culture, but they always develop their own sign language. The high positive correlation between illiteracy and the use of oral systems among deaf populations in the world leads to the belief that the use of sign language is a necessary factor in better educating deaf learners, thereby decreasing illiteracy among them (Meadow, 1966; Quigley

& Frisina, 1961; Stevenson, 1964; Stuckless & Birch, 1966; Vernon & Koh, 1970).

Currently, Sign Language as a way of communication is not used in the education of Jordanian deaf children, nor have Jordanian Signs been studied or recorded in the literature.

### Purpose of the Study

There are three major purposes for this study:

1. To investigate the Sign Language of deaf/hearing impaired citizens of Jordan - The results of this Survey will add information to any other efforts to study Arabic Sign language, and will foster the development of a systematic Arabic Sign language for both communication and educational purposes.

2. To contribute to the international literature about the language of signs - Many organizations and societies have conducted activities to promote better education and life style for the deaf community. The World Federation of the Deaf has compiled an International Dictionary of Signs (1975) to facilitate communication between the deaf people in the world. Studies are continuing on this important project, named Gestuno. This current survey of Jordanian signs contributes information about Arabic Sign language systems not yet described in any known literature.

3. To improve the educational opportunity of deaf/hearing impaired learners of Jordan - The Holy Land Institute for the Deaf estimates (1980) that there are about 3,000 deaf children between the ages of 0 and 15 years in the East Bank of Jordan. Concern for handicapped children generally, and deaf children particularly, has been growing rapidly in the last few years in Jordan. The Holy Land Institute for the Deaf estimates that there were about 400 deaf learners being served in five institutes in the East Bank of Jordan in 1980. Although the Oral System is being used in these institutes for instructional purposes, the students are permitted to sign between themselves outside the classroom. There is no systematic sign system being used in the educational programs of any of these schools.

The use of signs in the educational program for the deaf in the U.S.A. was found to improve the psychological, social, and linguistic status of deaf children (Meadow, 1966; Quigley & Frisina, 1961; Stevenson, 1964; Stuckless & Birch, 1966; Vernon & Koh, 1970). Since the use of Sign Language has proven to benefit the deaf learner in the U.S.A., it may also be useful in Jordan. Hence, a systematic language of signs for instruction needs to be developed, in order to provide deaf learners in Jordan an opportunity for improved literacy.

This study takes a first step toward investigating Sign Language in Jordan and it is anticipated that these

findings can form the basis for an Arabic Sign language manual. This could become a necessary part of a teacher's preparation program in Jordan for the use of "total communication" (the simultaneous use of speech and sign) with the hearing impaired and communicatively handicapped.

### Definition of Terms

#### Deaf

The Conference of Executives of American Schools for the Deaf (1974) adopted the following definition: A deaf person is one whose hearing is disabled to an extent [usually 70 dB ISO (International Standards Organization) or greater] that precludes the understanding of speech through the ear alone, with or without the use of a hearing aid (Moores, 1978).

#### Decibel (dB)

This is a unit of relative loudness of sound. Zero decibel (0 dB) designates the point at which people with normal hearing can detect the faintest sound. Each succeeding number of decibels indicates a certain degree of hearing loss (Hallahan & Kauffman, 1978).

#### Hard of Hearing

The Conference of Executives of American Schools for

the Deaf (1974) adopted the following definition: A hard-of-hearing person is one whose hearing is disabled to an extent (usually 35 to 69 dB ISO) that makes difficult, but does not preclude, the understanding of speech through the ear alone, with or without a hearing aid (Moore, 1978).

### Hearing Impaired

The term is used particularly in the field of special education. It denotes any learner, deaf or hard-of-hearing, who is in need of special services because of hearing loss. These services may range from preferential seating and speech therapy in a regular classroom to a special program designed exclusively for deaf children (Katz, Mathis, and Merrill, 1978).

### Deafness

The Conference of Executives of American Schools for the Deaf (1974) adopted the following definition: Deafness refers to the condition of individuals whose hearing is disabled to an extent that precludes the understanding of speech or other sounds calibrated for frequency and intensity (Moore, 1978).

### Prelingual Deafness

This term describes the condition of persons whose



deafness was present at birth or occurred at an age prior to the development of speech and language (Moore, 1978).

### Postlingual Deafness

This term describes the condition of persons whose deafness occurred at an age following the spontaneous acquisition of speech and language (Moore, 1978).

### Language

Language is any system of words or symbols, and the rules for putting them together, to form a method of communication among a group of individuals (Kelly & Vergason, 1978).

### Speech

Speech is the behavior of forming and sequencing the sounds of oral language (Hallahan & Kauffman, 1978).

### Sign Language

Sign language is any form of communication by the use of gestures (Kelly & Vergason, 1978).

### American Sign Language

American Sign Language is a complete and separate

(gestural) language system used in the United States and Canada which does not ordinarily follow English Syntax (Katz, Mathis & Merrill, 1978) and is considered the third most used language in the United States (Wilbur, 1979).

### Signed English

Signed English is the use of signs and fingerspelling to represent the exact word order of English grammar (Katz, Mathis & Merrill, 1978).

### Oralism (Oral System)

Oralism is a method of instruction for the deaf in which the chief means of communication is lipreading and talking (Travis, 1971).

### Speech Reading

For the last decade, the term speech reading has replaced the term lipreading, because one does not just read the lips, but reads eyes, facial expressions, gestures, and postures as well. It is a skill taught as a supplement to amplification, or in the case of an individual who is not a good candidate for a hearing aid (Filter, 1977).

### Cued Speech

A method of communication in which four positions of the hand (side of the face, the throat, the chin and a corner of the mouth) are used to indicate vowel sounds (Cornett, 1971).

### Manual Alphabet

It is a spelling-out of the alphabet by various finger positions on one hand (Hallahan & Kauffman, 1978) and is also called "fingerspelling".

### Rochester Method

The Rochester Method is a communication system developed and used in instruction at the Rochester School for the Deaf in Rochester, New York. Developed in the nineteenth century by the school's first superintendent, the method combines an emphasis on fingerspelling with a strong supporting program in speech and lipreading. The method emphasizes the learning and use of English, either spoken, spelled on the fingers, or written. The language of signs is not used (Katz, Mathis & Merrill, 1978).

### Total Communication

Total Communication is a system of expressive and receptive language in which manual signs and fingerspelling

are combined with speech, speech reading, and listening, in the way deemed most beneficial to communication for each hearing impaired individual (Kelly & Vergason, 1978). The term has been used more often since 1960, replacing the previous terms "Combined System" and "Simultaneous Method" (Pahz, 1978).

### French Sign Language

This is the first systematic sign language, established by Abbé de l'Eppé in 1776 in France. Later it had great influence on American Sign Language and other sign systems in different countries (Wilbur, 1979).

### Organizations Related to the Study

#### World Federation of the Deaf

WFD is an international organization maintaining official relations with UNESCO and other international agencies. It was constituted in 1951 in Rome. Its basic aim is to promote the social growth and rehabilitation of the deaf population and prevent the spreading of diseases causing deafness (World Federation of the Deaf, 1975).

#### Educational Facilities for the Deaf/Hearing Impaired in Jordan

Work for the deaf/hearing impaired in Jordan has shown

steady growth in the last few years. Several schools and institutes have been established to educate deaf children of Jordan. Most of these schools and institutes have been established by the private sector; some are administered by the government or by both. The Oral System is being used in these schools for instructional purposes. These schools and institutes which are located in the East Bank of Jordan are:

The Holy Land Institute for the Deaf

The Institute was established in the town of Salt in 1964. The program is a coeducational one with a capacity for 75 students. Most of them are boarders. There are two years of preschool (Nursery and Kindergarten) and six years of elementary and one year of preparatory school. The prevocational and professional vocational program consists of two years of training.

El Amal Institute for the Deaf

This Institute was established in El-Qeismeh/Amman in 1969. The approximate number of students is 128, of which 34 are boarders. The Institute has 12 coeducational classes covering first to 5th primary. There are 12 teachers, a director and domestic staff, totalling 23. A new program of pre-vocational training has been implemented recently.

### The Vocational Training Centre

The Centre was established in the town of Ruseifeh in 1973. It provides vocational training in the fields of carpentry, metalwork, tailoring and cane and bamboo work. The trainees are between 16 and 45 years of age with different handicapping conditions, including visually impaired, mentally retarded, physically disabled and hearing impaired.

### Al-Raja Kindergarten School for the Deaf

This school was established in Amman in 1973. It is a coeducational day school with 46 students in five classes; the program serves kindergarten and primary level pupils. Five teachers, one director, one social worker and domestic staff are employed.

### El Amal Institute for the Deaf

The Institute, established in 1977 in the city of Irbid, serves a total capacity of 40 students. A small boarding section has been established. There are five classes serving kindergarten and first and second primary levels. The staff consists of five teachers, a director, and domestic staff.

### The Queen Alia School for the Deaf

This school was established in 1979 in the town of Ruseifah. Its total capacity is 80 students with boarding facilities for 30 students. Both day and boarding facilities are coeducational. The school has five kindergarten classes. There are five teachers, a director and domestic staff. A team of three Italian experts recently started an in-service teacher training program there.

### Goals of the Study

The long-term goals of this study are:

1. To describe the language of signs used by the deaf population in Jordan;
2. To develop a sign language handbook of instructions to train Jordanian teachers of deaf learners in the use of Total Communication; and
3. To provide Jordanian deaf children the opportunity for education through the use of a systematic sign language.

### Objectives of the Study

The study is designed to accomplish the following objectives:

1. To survey and record on 8 mm film the signs for the Arabic alphabet as given by the same subjects;
2. To survey and record on 8 mm film the signs for selected concepts, as given by two Jordanian deaf subjects;
3. describe the apparent cultural or common sense origin of each sign;
4. To obtain a simple example of the sign usage in a phrase or sentence indicating the most accurate meaning of each of the 100 selected concepts; and
5. To develop a diagram and word description of each sign.

### Assumptions

It is assumed that:

1. The signs used by the deaf population in Jordan, as in any society, is the natural communicative language for them.
2. Such signs are affected, to a great extent, by the cultural elements of that society.



## CHAPTER II

### REVIEW OF LITERATURE

Any review of literature pertaining to the education of deaf children will focus primarily on the acquisition of language and speech. Selected studies of the effect of deafness on language and speech acquisition are reviewed for purposes related to this pilot description.

Since the Sign languages used by deaf persons have been accepted as one of the languages of the culture where they exist, selected studies on signs as they relate to language and culture are also reviewed.

The use of Sign language, as a part of the Total Communication (T.C.) philosophy in the educational systems of the United States, has spread widely and proven to benefit deaf learners. Some history of the development of T.C. is reviewed.

Sign systems as currently used in the United States and the status of Sign language in the Arab World is described.

#### Language and Speech

Language consists of a set of symbols used systematically by a group of people for purposes of communication

between them. Speech is the process of articulating words and sentences. Through oral language the normal hearing person communicates with others and acquires knowledge and education.

Bloom and Lahey (1978) discuss the following definition of language:

"A language is a code whereby ideas about the world are represented through a conventional system of arbitrary signals for communication."

As Bloom and Lahey explain, the first element of the definition of a language and/or code, could be a picture, a map, a graph, a word, a sentence, or other such device. The second element of language represents ideas about the world. This means that knowing just the sounds in any word is literally meaningless unless one also knows the concept which the word represents. The third element of the definition of language is a system. This refers to the regular and usual ways in which sounds combine to form words and words combine to form sentences to describe concepts. The fourth element of a language is a convention, which means that people speaking a language agree among themselves that certain forms correspond with certain content and can be used in specific ways. The last element of the definition of language is its use for communication. People need to use language in order to maintain contact with others, gain information, give information,

and accomplish goals.

The difference between normal hearing children and deaf children is that normal hearing children acquire their language gradually by building linkages between the phonemes (sounds) that they are hearing and certain concepts. The strings of these phonemes that they are building in time will constitute their normal acquisition of language. This normal process does not occur for prelingually deaf children, because their hearing is blocked.

Speech is the process of articulating words and sentences. Cornett and Heneger (1971) explain that:

"Speech is 'talking', but when we use the term speech production, we are referring to the actual formation of the speech sounds and their patterns . . . the way sounds are put together (rhythm, syllabication, emphasis, intonation). Every word is composed of a sound or a combination of sounds. These are not clearly indicated by the way we spell words; for instance, there are twenty-two ways to spell the sound of the word "I". Discovering the individual sounds that one is producing is a fascinating new experience for many parents of hearing-impaired children. (Who would think that in the word "of" we do not ordinarily form the sounds usually associated with "o" and "f", but something logically written "uv"?)

According to Cornett and Heneger (1971), Alexander Graham Bell wrote in a letter on November 8, 1885, the basic problem in developing good speech in the deaf is not so much that of teaching them to make the speech sounds, but that

". . . the necessary preliminary to good speech is that the pupil should have a definite conception of how we pronounce our words . . . that he should have in his mind a definite model which he attempts to copy."

Hearing children acquire normal speech production through their hearing in a long term process of "trial and error" of their speech production. Deaf children do not have normal hearing. They do not get feedback enough to go through a fruitful process of "trial and error" and, thus, do not acquire normal speech production. Cornett and Heneger (1971) state:

"Speech does not come easily to a deaf child. After much work and unusual concentration as a young child, he may be continually frustrated by the attempts of hearing persons to understand him. They will ask him to repeat, repeat, and then finally give up and ask him to point, write, or draw a picture."

Consequently, deaf children will demonstrate varied degrees of delayed vocabulary, depending on the amount of hearing loss and other variables. The findings of Lewis and Wilcox (1978) showed that hard-of-hearing subjects employed a primitive sentence dictionary while normal hearing subjects used a more sophisticated word dictionary. Ishisawa and his colleagues in Japan (1979) examined the vocabularies of 2-6 year-old deaf children by 100 picture cards. One of their conclusions was that the slighter the hearing loss, the higher was the percentage

of correct naming.

The investigator contacted Gallaudet College in Washington, D.C., educators from the University of Jordan, and some teachers and principals of Jordanian deaf schools. All indicated that there are no studies of Sign language or acquisition of language in deaf children in Jordan.

Several studies in the United States have shown that deaf children who have been taught to sign at an early age have demonstrated greater language and vocabulary development. Quigley and Frisina (1961) showed that deaf children communicating manually with their deaf parents were superior in fingerspelling and vocabulary. Also, Vernon and Koh (1970) indicated that similar children showed an average of 1.44 years superior on academic achievement and superior in reading, vocabulary, and written language.

### Language and Signs

For most deaf persons, especially the prelingually deaf, the process of acquiring language through speech is very difficult since the primary means, hearing, is blocked. Thus, unless deaf children are provided with an appropriate set of symbols (sign language), the process of acquiring language is very difficult for them to master. Recently, the trend toward considering the signs of deaf

people as language has been growing strongly. The works of Stokoe (1965, 1978, 1980) and Bellugi (1972, 1978) have brought attention to such a trend. Signs are as sounds and can be used for the purpose of communication, but instead of being based on signals produced by the voice and perceived by the ear, they are based on signals produced by the hands and perceived by the eye. Bellugi and Klima (1979) state:

"When regarded as a global whole, a sign may display some iconic aspects, revealing its origins in mimicking or depicting some action, shape, or movement of what it originally represented. But however iconic a sign may be, at another level it is a form within a constrained body of forms (the signs of ASL) that can be decomposed into a small set of distinguishing elements. The formational components of signs represent specific spatial dimensions; configurations of the hands; locations; movement shapes, directions, and qualities; spatial relations and interactions between the hands. A simultaneous combination of a limited set of values from each dimension which can combine only in certain restricted ways creates a multitude of possible sign forms.

Signs exhibit an overall multidimensional organization, not as successive contrastively distinct events through time, but in terms of spatial parameters that coexist within a unit of time. Sign language makes use of the dimensions of the spatial mode, which spoken languages lack, in creating visible shapes moving in space which reveal their mimetic origins yet are systematically and formationally constrained."

Levine (1960) explained the difficulty that deaf children encounter when faced with the spoken language:

"Meaning comes with language, above all with verbal language, and verbal language for the deaf comes through special education. But to learn language the way a child born deaf must learn it is as taxing an achievement as known to man . . . the mistaken conclusion is that deafness is a speech problem, and this is followed by the even more mistaken assumption that a hearing aid and speech lessons will soon put everything right . . . Not until he is offered highly specialized instructions does the child born deaf learn that there are such things as words . . . Learning language naturally is not a matter of reasoning, logic, or instinct. It is a matter of hearing . . . it is not a matter of accumulating vocabulary, oral expression, manual expression, grammatical principles, spelling, or even facts. It is a matter of learning how to use all of these to become one of the company of mankind."

The idea of using visual motor signs as a way of communicating was described in the classic literature. In her comprehensive review of the classical world literature on deafness, Bender (1981) states:

"One of these frequently referred to by later authors was a treatise called (of the Art of Signs), by Giovanni Bonifacio, in 1616. The writer was not interested particularly in the deaf but remarked, at one point, on the extent to which they developed visible language by making signs with their hands."

Seigel (1969) wrote:

"As early as 1662, Dr. Wallis, the Oxford mathematician and one of the first successful teachers of the deaf, set forth his methods for educating the deaf . . . Wallis was one of the first educators of the deaf who proposed that ideas might be transmitted by signs as well as by sounds."

### Culture and Signs

Different sign language systems have been studied throughout the world. Vasishta, Woodward and DeSantis (1978) found that Indian sign language has not been used in the education of deaf students in India. Vasishta, Woodward and Wilson (1978) also demonstrated the following findings about Indian Sign language:

"1) Varieties of Indian signing are not directly related to European sign language, 2) varieties of Indian signing constitute one language, 3) there is systematic variation in and between regions in India, and 4) the amount of differences in signing would allow communication among cities without any major problems in language standardization and planning that are faced by the oral language communities (in India)."

Stokoe (1965) performed preliminary structural analysis of American Sign Language phonology. He states:

"Language sounds, phones, are rigorously classified into phonemes . . . The nature of sign language is not very different from that of spoken language structure, once account is taken of the vocal-visual difference. Sign language uses, not sounds, but visible distinct elemental units . . . Analogous with the phonemes is the sign language chereme (CARE-eem, the first syllable from a Homeric Greek word meaning "handy")."

There have been few studies on the phonology of the sign system. Stokoe showed that sign phonemes could be classified into three major groups: Tab (tabula), place on



the body where signs are made; dez (designator), handshape used in making signs; and sig (signation), the movement used in making signs. His efforts resulted in a dictionary of American Sign Language based on tab, dez, and sig symbols representing the sign and referred to as "cheremes".

Although the individual handshapes of Indian Sign Language are unique, its phonology is highly systematic, since it follows the universal system of handshapes (Vasishta, Woodward, and DeSantis, 1978).

According to Wilbur (1979) American Sign Language (ASL) was not invented or started in France, but developed naturally over time. ASL absorbed French signs when they were introduced in 1817, much the way English absorbed many French words after the Norman Conquest in 1066. Wilbur states:

"As a natural language, ASL has considerable variation, it is affected by factors such as geography, age and education of the signer, and formality of the situation in which the conversation is taking place. Interaction between deaf and hearing people is greatly affected by the hearing person's general unfamiliarity with ASL and the degree of familiarity with English possessed by the deaf person."

Sign language can be either context-dependent or context-independent. Context-dependent language is interpretable only with hints from the physical and social context of the environment. Context-independent language has its own systematic arbitrary and internally defined

units. Washabaugh (1980) studied the sign language of the deaf population on Providence Island, Colombia, South America. He found that factors like the social and geographical isolation of the island and the very small size of the island population and of the deaf community contributed to the finding that Providence Island Sign Language (PSL) utterances tend to be context-dependent.

Klima and Bellugi (1979) compared American sign language with Chinese sign language, and found that signs indeed exhibit formational constraints specific to the language. They stated that:

"Sign languages are constrained not merely by motor limitations on handshapes, locations and movements, nor by general visual limitations, but also in ways that are far less predictable. Certain handshapes, locations, and movements occur in one sign language and not another. Two divergent sign languages may use the same parameter values (like a pinching handshape) and yet have different restrictions on how these values can combine in the signs of the two languages. Some parametric values (like the closed fist) are common to the two languages and yet show detailed but consistent differences from one language to the other . . . degree of closure, for instance."

This statement supports the fact that sign language systems in different countries can be similar in some aspects and different in others. The organization of each system is not related to the speech mode comparison; therefore, speech mode comparison techniques cannot be applied efficiently to the analysis of sign languages. Sign

language is produced by the hand and perceived by the eye.

Because of its early development, French sign language has been studied and described in the literature more frequently than the sign language of other cultures. French Sign Language has shown systematic regional, social, and historical variations. Signers from Toulouse use fewer two-handed facial signs than signers from Paris. Males use newer hand forms than females (Lane, Grosjean, 1980).

The issue of cross-cultural communication between signers of different countries has been mixed with facts and myths. Battison and Jordan (1980) examined that issue through personal interviews, direct observations, examination of language dictionaries, and personal reports of travelers and immigrants. They concluded that:

"Sign languages are not understood by signers who are not familiar with them . . . Certainly not as easily understood as some stories would have us believe . . . deaf signers can and do communicate despite not sharing the same sign language."

The previous review of selected studies indicate that sign languages differ within the cultures, ages, and regions within the same culture. Such differences highlight the need for the improvement of a Sign System to enhance more opportunities for Jordanian deaf children. Such a study is important, since no other culture's signs can be imposed on the Jordanian culture. However, concept signs

from other cultures can be studied, modified, then adapted for Jordanian use when needed.

Oweidat (1977) conducted a study to ascertain the vocabulary list of normal hearing school age children just before they enter first year of elementary education in the rural areas of Jordan. The study resulted in a list of 4,746 different words from a sample of 242 children. First-born children averaged higher than the rest of the children, with a mean of 895 words; the mean vocabulary of children other than first-born was 685 words. Children from the upper class recorded more words than those from lower classes. Those of Arab origin used more words than those of non-Arab origin in this sample. According to Oweidat:

"The result of data analysis indicated that it is possible to obtain a total of 177,896 current words with a mean of 735 words per child. This total number of current words consisted of 4746 different words, out of which were 3850 nouns constituting 81.1% of all the words, 839 verbs constituting 17.6%, and 57 articles constituting 1.3%. It was also possible to make a count of the number of colloquial and standard Arabic words. The number of standard Arabic words was 4166, out of which 3338 were nouns, 798 were verbs, and 30 were articles, the percentage of standard Arabic words was 87.8% and that of the colloquial 12.2%. The results showed that 81.5% of the words used by children referred to concrete objects, while 14.5% of the words could be classified as abstract. Among the concrete words there were 3272 nouns (85%) and 988 verbs (93.3% of all verbs). The results of analysis showed that the children who attended kindergarten used more words than those who did not attend kindergarten. The average

number of words recorded for kindergarten children was 1144, that for non-kindergarten children was 706, with a difference of 436."

Though the frequency count was not a variable of interest in Oweidat's study, this was an obtainable by-product and was used as the source for the 100 basic concepts used in this study.

The use of signs has spread internationally in an attempt to increase its use and to enhance the situation of the deaf human being. Organizations such as the World Federation for the Deaf (WFD) sponsor many activities to promote such goals. WFD has compiled an International Dictionary of signs (1975). This dictionary (Gestuno) is intended to facilitate communication between deaf people in the world. Studies are continuing to enhance and enlarge this important project.

#### History of Total Communication

Before the 1960s there were two main methods of educating deaf children - Oralism and Combined System. Oralism aims to develop oral speech, written language and mental abilities, by using techniques of speech training, speech reading (lipreading), auditory training, reading, and writing. The Alexander Graham Bell (AGB) Association for the Deaf is the strongest supporter and advocate for Oralism. A position paper of the American Organization

for the Education of Hearing Impaired (one of AGB Sections) submitted on May 1, 1975, concludes that:

" . . . all hearing impaired children should have the opportunity to learn to speak and understand spoken language . . . that spoken expressive language and academic achievement relative to normal children are the criteria by which the hearing impaired child is to be judged in society."

The fact of the matter is that the deaf child (especially the prelingually deaf) never learns to speak well enough to be easily understood by the average hearing person. Wright states (1969):

" . . . while so much time has been spent teaching them (more or less vainly) to articulate that they may have less command of language, and be less well educated generally, than if they had been taught by the silent or combined methods."

The fear is that those orally educated deaf might finish their education without real attachment to any societal group. They feel as outsiders in both the deaf and hearing communities.

The Combined System is a method of instruction that includes every procedure which can be of service to any subclass of the deaf. This notion has been described in the early literature when the American Annals of the Deaf (Janaury, 1914), noted:

"Speech and speech-reading are regarded as very important, but mental development and

the acquisition of language are regarded as still more important. It is believed that in some cases mental development and acquisition of language can be best promoted by Manual or Manual Alphabet methods."

Educators' recognition of the importance of Total Communication in the education of deaf children has been spread widely. Suppes indicates (1974):

"Until recently, the oral position was probably the dominant one, but in the last few years there has been an increasing interest in and respect for what has been achieved by manual methods beginning with the very young child."

Filter states (1977):

"It seems reasonable that if the child cannot learn verbal language, he should be taught to communicate either through the total or manual method."

Furth explains (1973):

"In short time the young deaf child acquires this method (total communication) of communicating by spontaneous imitation. During the conversation periods the child focuses primarily on what interests him. The school atmosphere is not centered on language but on the child's communicative interests; language per se is considered too narrow an educational goal."

In Jordan, most of the school time is consumed in teaching the deaf children how to speak the language with little result in terms of developing satisfactory communication with the hearing world. At some point in the middle

school the Jordanian educational program for deaf learners is geared toward vocational training. At that time, speech training and academic subjects are not useful any more, as the demands of vocational training require a real comprehension and understanding of speech and conventional language. Furth (1973) notes:

" . . . by the time of the middle division the nonselective schools could no longer continue for all pupils the pure oral education that had been maintained for the preceding five to seven years."

The term Total Communication emerged in the U.S. in the 1960s. Mindel states (1974):

"Total communication is defined here as the use of all available educative techniques for enhancing the exchange and acquisition of linguistic information. Included chiefly, are manual communication (sign language), finger-spelling, speech training and lipreading."

Total Communication differs from the Combined System in that the Combined System has been implemented historically when the deaf student fails in an oral program, while Total Communication starts at the beginning of the deaf child's life.

A paper prepared by Santa Ana Unified School District and given at the Convention of American Instructors of the Deaf at Little Rock, Arkansas, June 30, 1971 (Santa Ana Unified School District, 1971), concluded:



"There are 10 teachers on the staff in the program for the Hearing Impaired at the James Madison School. All of the teachers were trained to teach via the oral method. Most of the teachers have taught in oral programs around the country. Several of the teachers had strong speech backgrounds from various universities. The teachers made the statements below about the Total Approach (total communication) as compared to the oral method alone:

1. It is more effective for teaching the abstract.
2. It is more effective for teaching vocabulary and language.
3. It promotes more communication between adults and children in greater depth.
4. It is more effective for teaching new concepts.
5. It cuts down on repetition.
6. It produces more positive attitude from the parents. It gives them something tangible to work with where they can see good results immediately.
7. The Total Approach is also more effective for holding the attention and interest of the children.
8. It appears to be more effective in establishing teacher-pupil rapport and developing a cohesive class.
9. It allows for a broader and more detailed curriculum development.
10. It is more effective for encouraging feedback and participation from the children.
11. It is more effective for encouraging interaction and communication among the children.
12. It permits the deaf child to follow more closely the academic curriculum of his hearing peers.
13. It gives more support to the current theory of progressive inclusion by affording some opportunity for integration of the deaf child with the hearing world.
14. It helps children follow events surrounding them with understanding.

15. It decreases a completely "teacher oriented" atmosphere and lets the children "lead" each other."

### American Sign Language (ASL) and Other Sign Systems in the USA

The term "systems" is used here to designate those manual methods that have been developed for educational purposes but are not currently used as the mother tongue by large groups of deaf people (Wilbur, 1979).

The first systematic set of signs for deaf persons was established by Abbé de l'Eppé in France in 1776. Bender (1981) states:

"As his work progressed, the Abbé became convinced that the signs the deaf made with their hands in trying to communicate with each other were the basis of a mother tongue for them, in much the same way that one's native language is for a hearing person."

American Sign Language was derived from the French Sign Language when Thomas Gallaudet and Laurent Clerc brought the latter to the United States in 1817. French Sign Language has also influenced other sign systems in the world. Stokoe (1972) states:

"French Sign Language has influenced sign language systems in other countries as well, namely: Latvian, Irish, Spanish, Dutch, Italian, Swiss, Austrian, Russian, and eventually Australian."

Later on, American Sign Language had an influential role in other sign systems. Wilbur (1979) states:

"American Sign Language has been carried to Africa and India in recent years, where it will probably interact with the native sign language."

Sign Language is now viewed by the supporters of Total Communication as a legitimate language and a system of communication which revolves around the child and best fits his/her learning potential.

The other Sign Systems in the USA are:

#### Paget-Gorman Systematic Sign (PGSS)

The first English-based system developed by Sir Richard Paget in 1951 in England with the intention that the system be discarded by the child when he no longer needed it for communication. The system is based on pantomimic signs which include 21 standard hand positions and 39 basic signs used in different combinations (Paget, 1971).

#### Seeing Essential English (SEE I)

The first system in the United States was developed by David Anthony, who was interested in producing a simplified system to use with deaf children. The system has much in common with ASL and uses some fingerspelling (Anthony, 1966).

### Signing Exact English (SEE II)

This English-based system was developed by Gustason, Pfetzing and Zawolkow in 1972. The system is a variation of the Seeing Essential English (SEE I) system. Its manual includes 2100 words and 70 affixes with 7 contractions (Gustason, Pfetzing, and Zawolkow, 1972).

### Manual English

The system was developed by the Total Communication Program at the Washington State School for the Deaf in order to provide a system that would parallel English sufficiently well that it could be used in conjunction with normal speech (Wilbur, 1979).

### Signed English

The system was developed at Gallaudet College by Bornstein and his colleagues in 1973. It consists of a 2500-word vocabulary; 1700 are from ASL and those remaining are either invented or borrowed from other systems (Bornstein, 1973).

### Perkins Sign Language Dictionary

The Dictionary is based on 11 sources compiled by the Department for Deaf-Blind Children of the Perkins School for the Blind in Massachusetts. It includes signs

from several systems such as SEE I, SEE II, Signed English, ASL, etc. The main goals of the Dictionary are teaching expressiveness, language for learning and thinking, and communication skills for better relationships with others (Robbins et al., 1975).

### Fingerspelling

Fingerspelling (dactylology) consists primarily of 26 distinct handshapes which correspond directly to the 26 letters of the alphabet. Fingerspelling has no separate syntax, morphology, phonology, or semantics, but instead is entirely dependent on the linguistic structure of the language it is representing (Wilbur, 1979).

### Rochester Method

The Rochester Method is a form of the Combined System in which simultaneous speech and fingerspelling are used, but without the use of Sign Language (Scouten, 1967).

### Cued Speech

Cued Speech is a method of communication for use with and by the aurally-handicapped, in which eight configurations and four positions of one (either) hand are used to supplement the visible manifestations of natural speech. The four positions of the hand (side of the face, the throat,

the chin and a corner of the mouth) are used to group the vowel sounds (Cornett, 1971).

### Status of Sign Language in the Arab World

Sign language systems still appear to be in their infancy in some of the Arab world countries and, even, unbroached in most of these countries. However, the geographical area known as the Middle East has been recognized as the location of the earliest civilizations. Deafness, too, has been known as a human condition from earliest times. One can conclude that the use of Sign among deaf members of Arabic cultures has also existed for centuries, though it has not been studied and described in the literature.

Toubbeh, Soliman and Yates (1976) state:

"The degree of commitment to oralism is exemplified by the fact that there is not a uniform system of manual communication in the Arab world, although a limited system of indigenous signs has developed among the deaf in certain groups."

Some results regarding the manual alphabet and manual signs in some of the Arab world countries were mentioned in the final report of the Arab Federation for the Organs of the Deaf (A.F.O.D.) Conference held in 1980 (AFOD-Final Report of Conference, 1980). The report concludes that there are manual alphabet systems in the Arab countries,

but most of the institutions and schools of the deaf in these countries do not use them in their educational programs. Another conclusion is that manual signs and gestures are used socially/informally in all the institutions of the deaf. These signs are many and are affected by the local milieu. Finally, deaf institutions in the Arab countries are very dependent on lipreading. In nearly half of these institutions, signs are used as an auxiliary means to the main purpose, lipreading, but there is no intent to teach these signs. The remaining institutions do not encourage using signs, and even prohibit the use of signing. One may assume that this is true, mainly because of a lack of knowledge and information about sign language systems on the part of professional educators.

The two main related suggestions of A.F.O.D. Conference held in 1980 were: 1) studying and researching the existing Arabic manual alphabet systems to make them consistent with the Arabic spoken language, and 2) studying and researching the language of signs and the existing Arabic signs to standardize one Arabic sign language system to be used in the Arab world countries.

In Tunisia the oral system is used as an approach to teaching deaf children. Toubbeh, Soliman and Yates state that:

"The oral-aural approach is used while children are in school, except during play when auditory aids are removed.

There is no manual communication system available at this time, and adoption of such means is not contemplated because of a strong commitment to oralism."

Egypt probably has taken the first step among the Arab world countries toward studying and establishing a sign system to be used in the schools of Egyptian deaf children. The Arab Federation for the Organs of the Deaf has published a final report of an earlier Arab Conference of the Organ in 1974 (AFOD, Final Report of Conference, 1974). In that report, Mahrous states that:

"Studying the signs that are used in Egypt has shown that there are some similarities to some extent between these signs and other signs used in the Western world like Britain, of course there are differences due to the culture and milieu differences."

There were no formal studies of the sign language system in Egypt until 1976. Tobbeh, Soliman and Yates state:

"Agreements have been reached between the Rehabilitation Services Administration, Office of Human Development, Department of Health, Education and Welfare of the United States and the Department of Social Rehabilitation of Egypt to initiate three major, long-term research projects. The most significant one is an investigation of the relative merits and effectiveness of aural versus manual communication systems. The objectives of this research project will include (1) identification, through survey, of sign vocabulary used by the deaf in Egypt; (2) construction of a standard sign vocabulary based upon the results of the survey; (3) comparison of the effectiveness of aural-oral home training and sign manual training in development of language; and



(4) identification of an optimal approach at language training procedures for education of the deaf in Egypt."

Hopefully, this study may stimulate a similar project for Jordan, with at least these same four objectives.

All the previous studies conclude that the current thinking in the field of deaf education supports the use of Total Communication in the education of deaf children. Jordanian deaf children should be provided with this opportunity by introducing Jordanian Sign Language to the educational system, as a part of a Total Communication philosophy. To do so, studies should explore as much as possible about the manual signs used now by Jordanian deaf persons. This study takes the first step toward that goal. Jordanian programs for deaf children should be impacted; the first step might logically begin with the preparation of teachers of the deaf. A manual of Jordanian signs for basic concepts appears to be a necessary first step toward that end.

## CHAPTER III

### METHODOLOGY AND PROCEDURES

Developing a sign system for the education of Jordanian deaf students must begin with an investigation of the existing signs used by deaf persons in Jordan.

#### Identification of Sample

A sample of two educated deaf Jordanian persons who meet Special Education requirements and are certified as educationally and medically deaf was selected for this study.

The first subject is a 14-year-old male student at the upper elementary level in the Holy Land Institute for the Deaf in Salt, Jordan. The Institute was chosen for its reputation as one of the well-established institutions for teaching Jordanian deaf children. The emphasis in the educational program is on speech development, speech correction, and speech reading. However, the Institute believes that the signs which are being used informally between the deaf students prove to be a great reinforcer of communication, and function together with speech and

speech reading. The subject was chosen because, according to the school principal and staff, he was the student considered to be experienced with signing.

The second subject is a 22-year-old male who graduated from a vocational school for the deaf in Kuwait. He works as a typesetter, and lives with his mother and four sisters who communicate with him through sign. This subject was chosen because he was known to the investigator as an educated and active deaf person with good signing experience.

Each subject signed two forms, a consent form in which the subject verified his understanding of the nature of the study, and an agreement form in which the subject agreed to participate in the study (See Appendices A and B, respectively).

These older and otherwise unimpaired subjects were selected because they demonstrated the ability to read the written word, know commonly used Jordanian signs, and have more extensive experience with sign usage.

### Description of Procedures

In order to carry out the procedures, the following equipment was used:

- An 8 mm movie camera for filming the subjects while they were signing each concept (word).

- One hundred 8½" x 11" stimulus cards. Each of these cards contained a written word and/or a picture representing the target concept. The cards were used to elicit the sign for the specific concept from the subject. The pictures served as supplementary visual aids to the written words to give the subject more direct and clear understanding of the concept he was asked to sign.
- Twenty-eight 8½" x 11" stimulus cards, each of which displayed a different letter of the Arabic alphabet. These cards were used to elicit the signs of the Arabic alphabet.

The following procedures were implemented to collect the data. Application was made to the University Committee on Research Involving Human Subjects (UCRIHS) for approval of the study procedures (see Appendix C). The UCRIHS requirements were met by:

- A letter of intent explaining the nature of the study, and assuring that the obtained information will remain confidential, was sent to the Subjects (see Appendix D).
- Two forms were signed by the subjects, a consent form in which the subjects verify their understanding of the nature of the study, and an agreement form in which the subjects agreed to

participate in the study (see Appendices A and B, respectively).

The stimulus cards were prepared in the Royal Scientific Society in Amman, Jordan, with the help of its calligrapher who is involved in preparing Jordanian primary grade reading texts. The type of calligraphy used for writing the cards was the same as that used in Jordanian primary reading texts.

Some stimulus cards for abstract concepts had written words without pictures: "God", "thing", "yes", "with", "good morning", "for", "all", "or", "hey", "and", "when", "noon", "the", and "no".

Real materials were attached to the cards for the concepts: "tea", "iron", "piaster", and "rice". It was realistic to demonstrate real materials for such concepts, since it was easy to obtain them.

Number concepts were represented on the cards by the written word and the number symbol. These numbers were "one" through "ten".

Plural concepts consisted of two or more pictures of the same objects. The subjects were instructed by the interpreter to include such indication in their signing.

A three minute 8 mm film of some American signs (signed by two Special Education students) was made at Michigan State University. The film served as a rehearsal and experimental step to accustom the investigator to the

filming process. However, the film was also shown to the Jordanian subjects to instruct them in what they were expected to do.

In Jordan, an appointment was set up with each subject and his interpreter. The interpreter for the older subject was one of his sisters, has a B.A. degree, works as a teacher, and was the most communicative family member with the subject. The interpreter for the younger subject was one of his teachers, who was recommended by the school principal. The brief 8 mm film of American signs was demonstrated; the procedures were discussed with both subjects and the interpreters, to make sure that they were fully aware of their part during the filming. All of their questions were answered at that time. To obtain the best filming environment, some conditions were listed and given to the principal of the school of the younger subject and to the sister (interpreter) of the older subject (see Appendix E). Appointments were made for filming the signs on another occasion.

On the filming date, each subject was told again that he would see 100 flash cards, each of which showed a written word and a picture, and that these would be presented one at a time. Each time he saw a card he should make the appropriate sign that represented that written word/picture. He was also asked to give (through the

interpreter) a simple sentence\* or example for each sign. This was done to verify the subjects' understanding of the concepts they were signing and to improve sign validity. On several occasions where confusion occurred, the interpreter helped in clarification. Each sign, including using it in a phrase or sentence, took approximately two minutes. After signing 10 signs (approximately 20 minutes) a ten minute break was taken. Sessions were conducted for about 2½ hours every day for a total of two days for each subject, totalling five hours.

To obtain intrasubject reliability, each subject was asked to sign again the concepts numbered (3-17), ten days later. These signs were also filmed.

Intersubject reliability was obtained two days after the original filming by having the subjects sign to each other the concepts numbered 21-30. While one of the subjects turned his face to the wall, the other was asked to sign each of these concepts, one at a time; just before he signed it, the first subject (receiver) was asked to look at him (sender) and identify the concept by indicating the matching card from the total of 30 cards. Each subject served as sender and receiver. These signs were not filmed, but observational notes were taken.

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\* The translation of these sentences into English was agreed upon by the investigator and two Arab students working with the University Center for International Rehabilitation at Michigan State University. Agreement was reached by discussing the most appropriate translation for each sentence.

Line drawings of each filmed sign for the alphabet and 100 concepts were made by the art teacher at Michigan School for the Deaf, Flint, Michigan, USA. An American Sign Language interpreter was asked to give her opinion and suggestions of these line drawings. An artist, a graduate of Michigan State University in graphic design, was also asked to give an opinion concerning the accuracy of representation between the line drawings and the filmed signs. Both consultants (interpreter and artist) agreed that the final graphic representations were of high quality, and consistent with the filmed representation.

### Selection of Concepts

To select the 100 words (concepts) that were used to elicit their matching signs from the subjects, a Jordanian study to ascertain the language of school age children before the first year of elementary education was used. The study indicated that a list of 4,746 different words were obtained from a sample of 242 children (Oweidat, 1977). The 100 most frequently used words from this list were selected for presentation to the two deaf subjects.

The translation of these 100 words into English and the retranslation to Arabic were agreed upon by the investigator, the director of the Jordanian study (Oweidat),



and a group of four Arab graduate students.\* Two of the graduate students were asked to translate the list to English, and the other two to reword the list to Arabic. This procedure resulted in 90% agreement; slightly different translations for 10% of the words did not significantly change the meaning of those concepts.

The 100 Jordanian words were cross-referenced with both the Semantic Frequency List of the Thorndike Teacher's Word Book of 20,000 Words\*\* (Eaton, 1940), and The Spontaneous Speaking Vocabulary of Children in Primary Grades (Murphy, 1957). While this cross-reference is not a variable of interest in this study, it is a matter of cultural interest and may have significance for future comparative studies. Though the last two studies are relatively old, it was interesting to notice the high frequency of the most 100 used concepts in a relatively old Western world study and more recent study in a rural area of the Middle East.

In selecting the 100 most frequently used Jordanian words some minor modifications were made:

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\* Students who work in the University Center for International Rehabilitation (UCIR) at Michigan State University.

\*\* The 20,000 words had been taken from a count of 9,565,000 in 279 sources.

1. The word "morning" was omitted as a single concept because the phrase "Good Morning" was already included in the 100 words.

2. Both formal and informal references to the same concept were assimilated into one formal word since the intention of this study is to concentrate on the concept rather than the specific utterances of the concept (English example: father/daddy/dad/pappa are assimilated into father).

3. Different words that were found to express the same concept were assimilated into one word (English example: doctor/physician; house/home).

4. Concepts that appeared in both singular and plural forms were recorded as just singular or plural according to which occurred most frequently in the Jordanian study (English example: chair/chairs).

5. Concepts that might appear in both masculine and feminine form in the Arabic language were assimilated into either masculine or feminine according to which occurred most frequently in the Jordanian list (English example: the word "meat" in Arabic can be expressed in both genders).

6. The concepts "once" and "one" were assimilated into "one".

7. The word "eye" was omitted because the Arabic translation indicates more than one concept for such a word, i.e., it could be "eye" or "fountain". It was not

clear which concept was intended in the Jordanian study.

8. The word "watch" was omitted because the Arabic translation of the word has multiple meanings.

9. The frequencies of the different grammatical forms of the same concepts were assimilated to the simplest form, since the intention of this study is focused on the concept rather than the grammatical differences between forms that express the same concept, i.e., "sitting" and "sit" have been recorded as "sit".

10. The letter "L" in the Arabic language has a grammatical indication as a prefix. Despite the fact that this prefix has high frequency in the Jordanian study, it was omitted since this study does not explore the grammatical dimension of the Jordanian signs.

The final list is shown in Appendix F. It consists of four columns; the first one includes the words 1-100, the other three columns consist of the frequency of each word according to the Jordanian study, Thorndike's and Murphy's, respectively. The "1" after a word in Thorndike's column, indicates that it occurs among the first thousand words in the source list; "2" among the second thousand, etc. The letters "a" and "b" after the figures indicate, respectively, the first and the second five hundred of that thousand. The following three words are examples from that list:

<u>The Word</u>	<u>The Frequency in The Jordanian Study in Descending Order</u>	<u>Thorndike's Frequency</u>	<u>Murphy's Frequency</u>
7. The	10,789	1a	6,451
9. Men	1,537	1a	477
100. Shirt	239	2b	126

The word "The" was the first word in the list order, repeated 10,789 times in the Jordanian study, occurred within the first five hundred of the first one thousand words of Thorndike's list, and repeated 6,451 times in Murphy's list. "Men" was the ninth word in the list order, repeated 1,537 times in the Jordanian study, occurred within the first five hundred of the first thousand words of Thorndike's list, and repeated 477 times in Murphy's list. Finally, "shirt" was the 100th word in the list order, repeated 239 times in the Jordanian study, occurred within the second five hundred of the second thousand words of Thorndike's list, and repeated 126 times in Murphy's list.

## CHAPTER IV

### FINDINGS OF THE STUDY

This chapter is divided into three parts - the subjects' signs of the Arabic alphabet and their descriptions, the subjects' signs of the 100 target concepts, and a discussion of the inter- and intrasubject reliability of the signs.

Six 8 mm movie films were used. The first recorded some American sign language to be shown to the subjects, as described in Chapter III. The second and third films were used to record the signs of the older subject, the fourth and fifth films were used to record the signs of the younger subject. Ten days later, the last film was used to record the signs of the alphabet and the signs 3-17 from each subject to obtain the intrasubject reliability.

Tracing paper (8½" x 10½") was used to line draw each sign from the film. Each sign was drawn in a 5½" x 5½" square. These squares were reduced to the size shown in Appendices G and H.

### The Arabic Manual Alphabet in Jordan

The Arabic alphabet consists of 28 letters. These letters and their English pronunciation are demonstrated in the chart on Page 53 (Figure 1). The Merriam-Webster pronunciation Symbols of Webster's Seventh New Collegiate Dictionary were used when they were needed for the closest English pronunciation of vowels. A dot below the letter (as in ha) indicates it is aspirated. The Arabic alphabet is read from right to left.

It was observed that the signs for the Arabic alphabet characters were accompanied by voice. The deaf subjects appeared to be trying to use spoken language to say the alphabet. Since some alphabet signs were found to be similar to each other, the simultaneous voicing, if intelligible, becomes an important factor in distinguishing between these alphabet characters.

Unlike the Arabic alphabet signs in Jordan, the American set of manual Signs for the English alphabet characters tend to shape graphic representations. These representations might appear in one-half shapes (as the American manual alphabet) or in two-hand shapes as the British manual alphabet.

In this small sample (N=2), both subjects' signs for each alphabet character were compared. The three aspects of Sign language cheremes, tab (place of sign), dez (hand shape), and sig (motion of sign) were employed to establish

Figure 1. The Arabic Alphabet

ha. ح	jeem ج	thah ث	teh ت	beh ب	ay ا
noon ن	khā خ	ra ر	thal ذ	dal د	kha ك
kāā ع	shāh ظ	tāh ط	dād ض	add ز	aboon ظ
noon م	ham ل	kaf ك	ghāf ق	feh ف	ghān غ
		yeh ي	waw و	heh ه	boon ن

three degrees of similarity. When both subjects' signs for any given character were found to be the same in all three aspects, the signs were considered to be in complete agreement. If paired signs were found to have two aspects in common (same tab and sig or dez and tab or sig and dez) . . . , they were considered to be in agreement with some variation. The rest of the pairs of signs that were found to have less than two aspects in common, were considered to be in complete disagreement. Judgment regarding degree of similarity was rendered by two hearing adult raters familiar with the study of Sign.

The alphabet signs of both subjects were recorded as they appear in Appendix G. As demonstrated in Table I, the subjects agreed on 18% of the signs, agreed with some variations on 14% and disagreed on 68%.

Three examples (on page 56) demonstrate the complete agreement, agreement with variation, and disagreement, respectively (Figure 2). The letter on the top left side of the drawing indicates the initial of the subject's first name, the word on the bottom left side of the drawing is the English pronunciation of the alphabet character. As indicated in Table II, each of three groups of letters of the alphabet was found to have the same sign.

It was also found that each subject gave the same sign for various letters of the alphabet. As demonstrated in Table III, six pairs of letters (12 of 28) were expressed



Table I. Agreement on the Alphabet Signs Between the Two Subjects.

Degree of Agreement	Percentage of Agreement	Content of Agreement/Disagreement
Complete Agreement	18% (5 of 28 letters)	"alif", "teh", "theh", "gäf" and "noon"
Agreement with some variation	14% (4 of 28 letters)	"beh", "jeem", "sheen", and "heh"
Complete Disagreement	68% (19 of 28 letters)	"ḥa", "kha", "dal", "thal", "ra", "zān", "seen", "sōd", "dōd", "tōh", "thōh", "āān", "ghān", "feh", "kaf", "lam", "meem", "wow", and "yeh"

Table II. Three Groups of Alphabet Characters (7 of 28 Letters), Each Expressed by the Same Sign.

"ḥa" of the younger subject. "heh" of the older subject.
"kha" of the younger subject. "ghān" of the younger subject. "jeem" of the older subject.
"gäf" of the younger subject. "kaf" of the older subject.

Figure 2. Three Examples Demonstrating the Agreement, Agreement with Variation, and Disagreement Between the Two Subjects on the Signs for Selected Alphabet Characters.

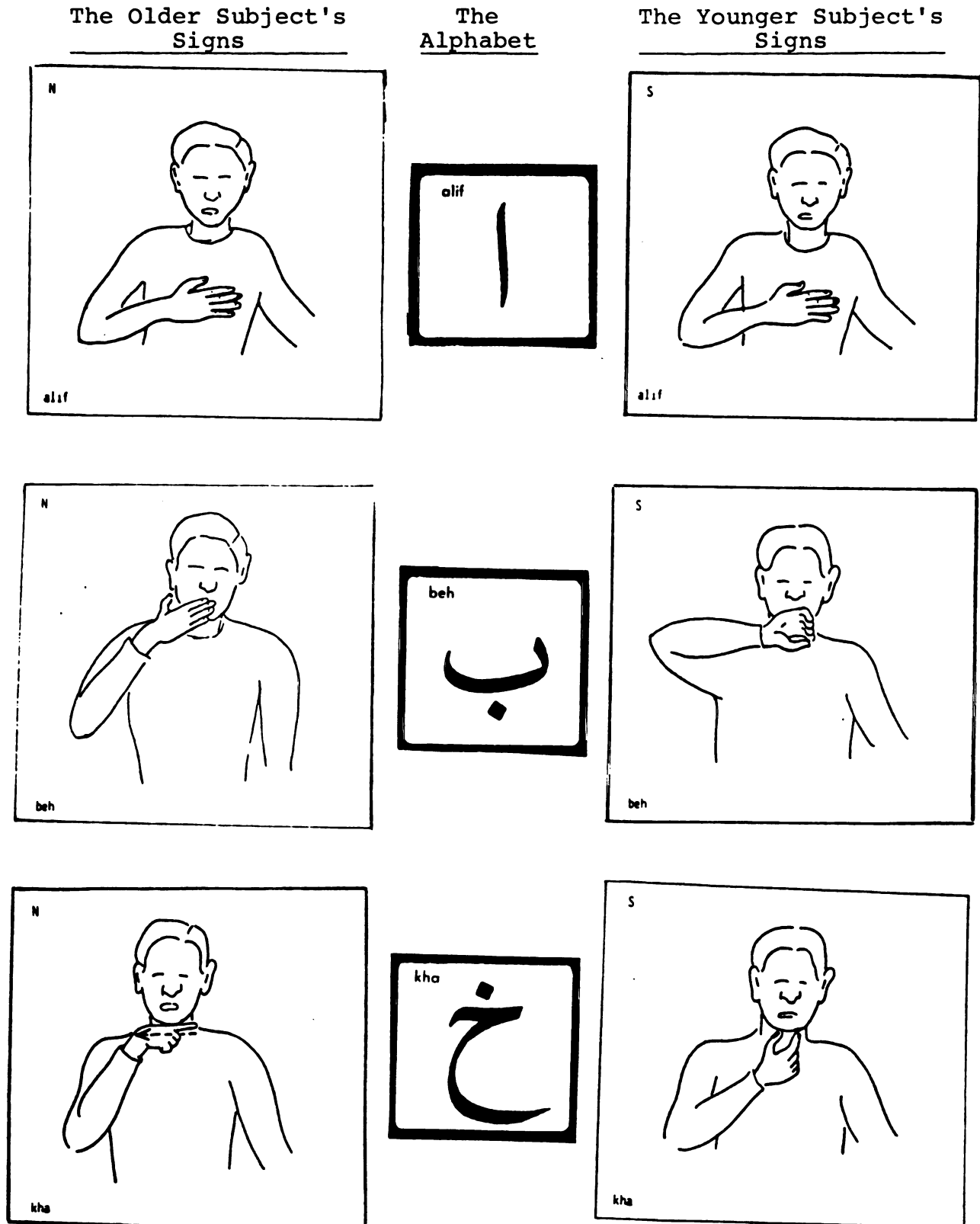


Table III. Eleven Pairs of Alphabet Characters (22 of 28 Letters), Each Pair Expressed by the Same Sign.

The Subject	Pairs of Letters
The Older Subject	"teh"-"theh", "dal"-" <u>thal</u> ", "sòd"-"dòd", "tòh"-" <u>thoh</u> ", "ään"-"ghān", "gäf"-"kaf".
The Younger Subject	"alif"-"ään", "teh"-"theh", "kha"-"ghān", " <u>thal</u> "-"feh", "tòh"-" <u>thoh</u> ".

by only six signs by the older subject, and five pairs (10 of 28 letters) of letters were expressed by only five signs by the younger subject.

No standardized forms of signs emerge in this sample. The description of signs, used by each subject, of the Arabic alphabet characters appears to indicate a possible effect of the Oral System in teaching Jordanian deaf children. The discrepancy between the subjects' Signs might reflect the different teachers' procedures used to teach speech to Jordanian deaf children. It seems that each teacher creates his own method of teaching by hand movements to represent the movements of articulators. Evidently, in Jordan, it is the only available way to teach

the name of the alphabet characters. At least, this appears to be the case in this limited sample. One might conclude that the Arabic manual alphabet in Jordan is a slow and unpractical process for forming words or phrases.

### The Signs of the 100 Concepts

This study differs from those of advanced Sign languages in that it offers the first systematic description of the actual signs that are used in Jordan.

Each subject was asked to sign 100 concepts and to use the given sign in a phrase or sentence, one at a time. These phrases and sentences assured that the subjects understood what they were signing. In a few cases, interpreters helped to clarify any confusion.

The following brief description will be helpful in understanding and interpreting the line drawings of the signs for the 100 selected basic concepts.

Each drawn sign has a number and a letter. The number on the top left side matches the number of the word from the vocabulary list; the letter relates to the first initial of the name of each subject. This process facilitated ordering and studying the signs throughout the research. As an example, 1S means the first sign of Sahel (the younger subject's name), 2S means his second sign, etc. 8N means the eighth sign of Nabil (the older subject's

name), 10N means his tenth sign, etc. The bottom left side of the square contains the English word for the concept.

After the line drawing was completed, a reducing process was used to obtain a suitable size for printing purposes.

Whenever there is more than one sig (motion), dez (hand-shape), or tab (place of sign) for the sign, arrows are used for better understanding. The numbers (if used) around the sign indicate the order of the movements. As an example, 1 means the first movement; 2 the second movement, etc. Some signs consist of dotted (broken) lines and solid lines; the solid lines of the drawing indicate the last movement of the sign.

In order that the reader better understand the sign drawing, the following procedure is suggested: first examine the picture; then read the complete entry (word description, the origin of the sign, and the usage example given by the subject); and finally note that the front view presents a mirror image. Whenever a plural concept was presented, both subjects added the "many" sign. As an example, both subjects signed "children" by signing "child" then "many"; and "cars", by signing "car" then "many". Even though the tab for the "many" sign sometimes differed in the various plural concepts, the dez and sig of the sign remained the same.

The line drawings of the signs for the 100 concepts, as elicited from both subjects are recorded in Appendix H.

The three aspects of Sign language cheremes (sig, tab, and dez) used to determine the degree of similarity between the two subjects' signs for the alphabet characters, are used in Appendix H in the same manner for each subject's signs for the 100 concepts.

It was found that both subjects agreed completely upon 26% of the signs, showed some degree of similarity in 22% of the signs, and disagreed upon the remaining 52% of the signs.

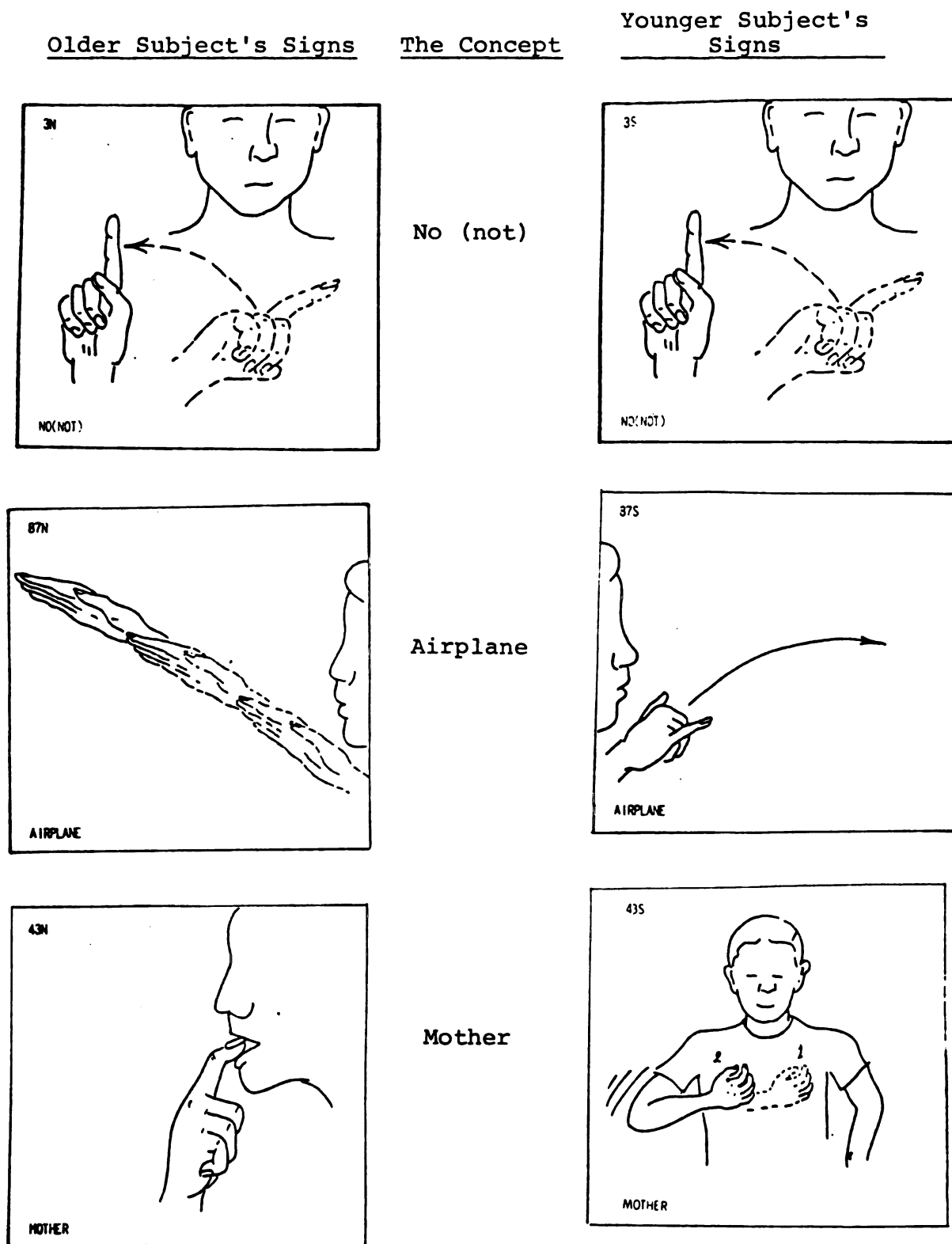
Table IV demonstrates the degree of subjects' agreements on the signs of the alphabet and the concepts.

Table IV. Agreement on Signs of the Alphabet and of Concepts Between the Two Subjects.

Degree of Agreement	Percentage of Agreement	
	Alphabet	Concepts
Agreement	18% (5 of 28 letters)	26% (26 of 100 concepts)
Agreement with some variation	14% (4 of 28 letters)	22% (22 of 100 concepts)
Disagreement	68% (19 of 28 letters)	52% (52 of 100 concepts)

The following three examples in Figure 3 illustrate the agreement, agreement with variation, and disagreement.

Figure 3. Three Examples Illustrating Agreement, Agreement with Variation, and Disagreement Between the Two Subjects on Signs for Selected Concepts.



The agreement on signs for concepts is higher than the agreement on signs for alphabet characters. This discrepancy probably occurs because there is no systematic sign system taught to deaf children in Jordan. They develop their own signs for purposes of communication. Obviously, concept signs are more necessary and functional for basic communication than the signs for alphabet characters.

#### The Reliability of the 100 Signs

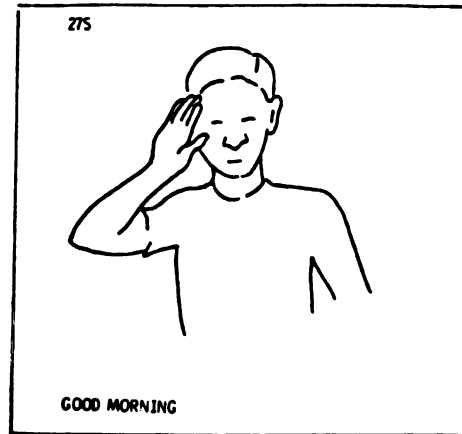
Both intersubject and intrasubject reliability were measured. Intersubject reliability was measured two days after the original filming by asking the subjects to sign to each other 10 concepts (numbers 21-30). While one of the subjects (receiver) was asked to turn his face to the wall, the other subject (sender) was asked to give the sign for each of these ten concepts one at a time; just before signing, the first subject (receiver) was asked to look at the other subject (sender) and determine the concept of the sign by selecting a matching flash card from a total of 30 flash cards. Intrasubject reliability was obtained ten days after the original filming by asking each subject to give again the sign for the 15 concepts (numbers 3-17).

When the intersubject reliability was examined, it was found that the older subject understood 80% (8 of 10) of the younger subject's concept signs. The two signs not understood are indicated in Figure 4.

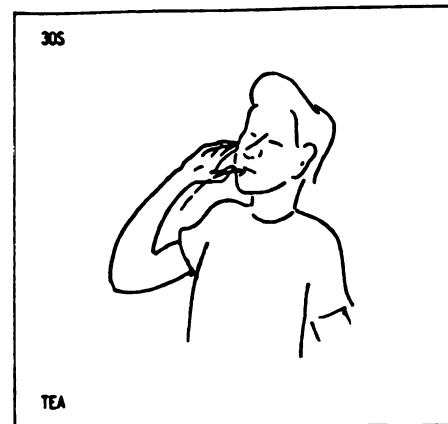


Figure 4. Two Signs Illustrating the Disagreement of the Older Subject with the Younger Subject (Inter-subject Reliability = 80%).

The older subject did not recognize the related flash card and thought that the sign meant just "hello".



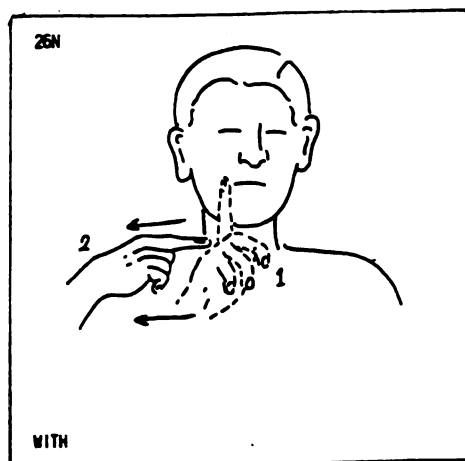
The older subject pointed to the "water" flash card.



The younger subject understood 90% (9 of 10) signs given by the older subject. The one sign not understood is shown in Figure 5.

Figure 5. One Sign Illustrating the Disagreement of the Younger Subject with the Older Subject (Inter-subject Reliability = 90%).

The younger subject did not recognize this sign.



When intrasubject reliability was examined, it was found that the older subject gave the same signs for 73% of the concepts (11 of 15 signs). It can be noticed from examining the remaining four signs in Figure 6 that the variations and changes occurring after ten days were not markedly different from the initial signs.

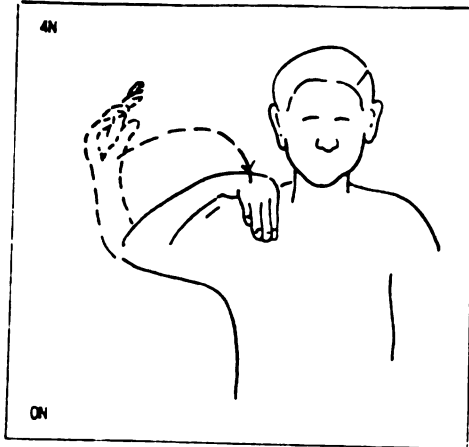
It was found that the younger subject gave the same signs for 80% of the concepts (12 of 15 signs). The variations within the remaining 3 signs were found to be minor, as shown in Figure 7.

Figure 6. Four Signs Illustrating Intrasubject Reliability of the Older Subject's Signs.

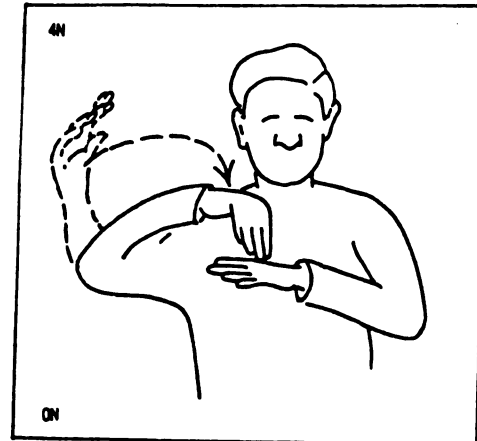
The Original Filming

The Concept

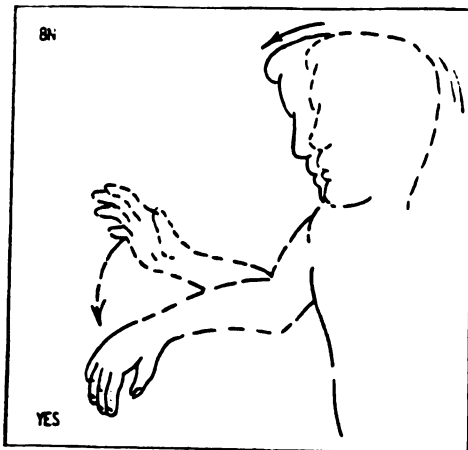
Ten Days Later



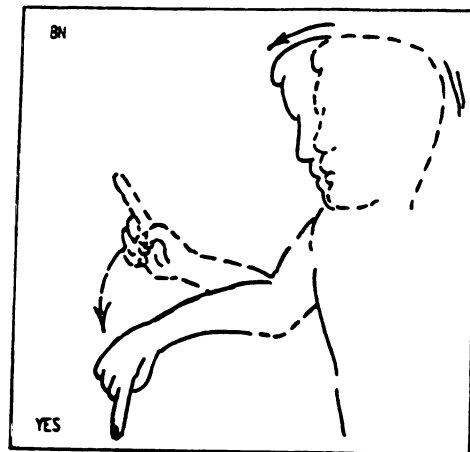
ON



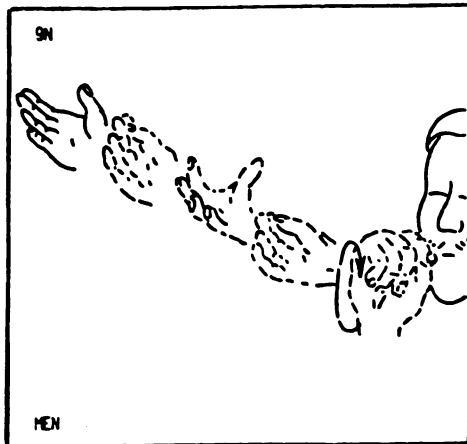
Adding the left hand.



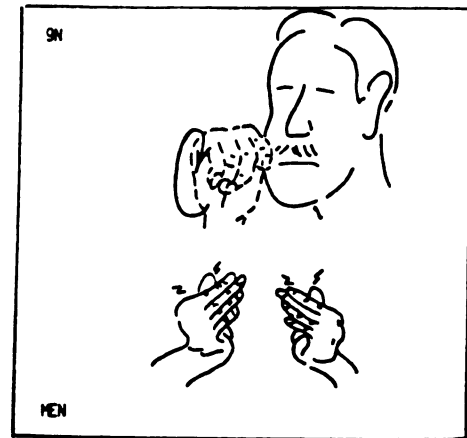
YES



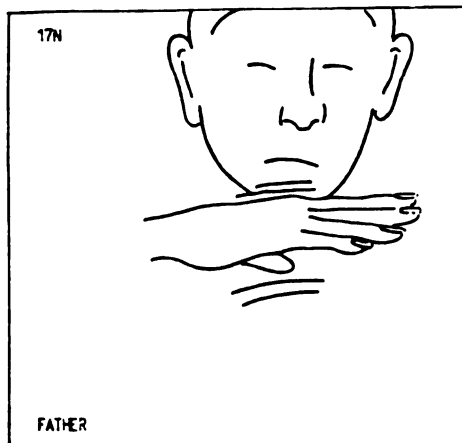
Using the index finger.



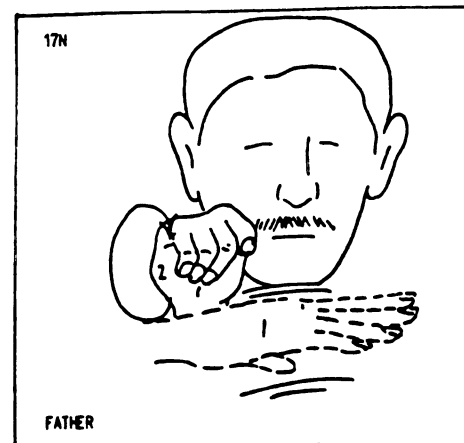
MEN



Eliminating the extended hand and adding the "many" sign.



FATHER



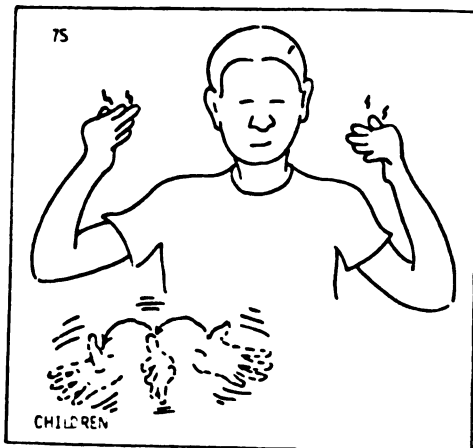
Adding the first motion of 9N "MEN" sign by twisting the right side of the mustache.

Figure 7. Three Signs Illustrating Intrasubject Reliability of the Younger Subject's Signs.

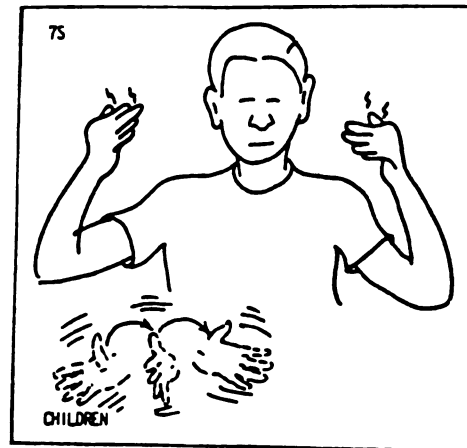
The Original Filming

The Concept

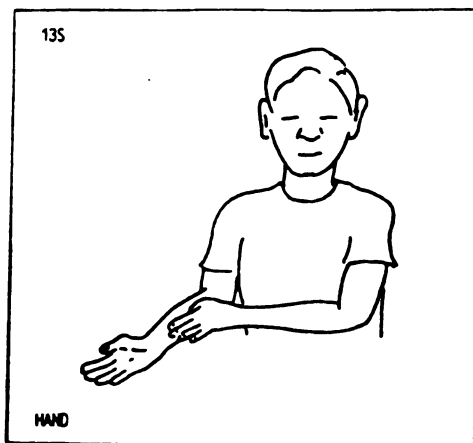
Ten Days Later



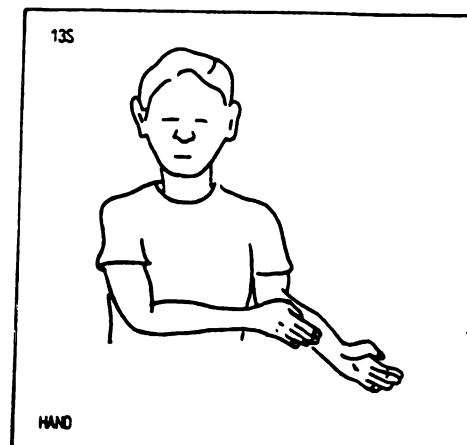
CHILDREN



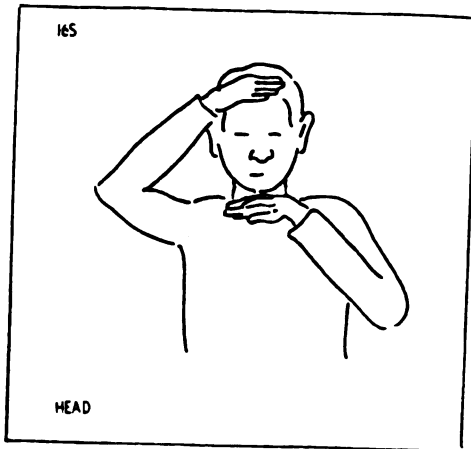
The hand is moved  
from right to left.



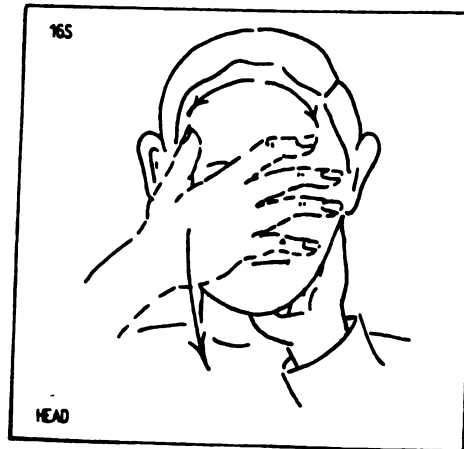
HAND



Touching the left  
forearm with the  
right hand.



HEAD



Moving the right  
palm down on the  
face.

Even though there is little agreement on the tab, dez and sig of the signs in Figures 4, 5, 6, 7, illustrating inter- and intrasubject reliability, one can observe that there is agreement on the general function of these signs, and they appear to be relatively stable.

## CHAPTER V

### SUMMARY, DISCUSSION, AND RECOMMENDATIONS FOR FUTURE RESEARCH

#### Summary

##### Objectives of the Study

The study was designed to accomplish the following objectives:

1. To survey and record on 8 mm films the signs for 100 commonly used concepts (words) from a sample of two Jordanian deaf subjects,
2. To survey and record on 8 mm films the signs for the 28 Arabic alphabet characters from the same subjects in the same manner as mentioned above,
3. To offer explanations for the cultural or common sense origin or basis of the sign for each concept,
4. To obtain a usage sample for each concept sign to indicate usual meaning in a phrase or sentence,
5. To develop a diagram and word description of each sign,
6. To measure similarities and differences between subjects' signs for each alphabet character and for

each concept, and

7. To measure the reliability of sign language as used by two Jordanian deaf subjects.

### Review of Literature

Six main dimensions of sign language use were examined through a literature review. The first concerns the definitions of "Language" and "Speech" and the impact of hearing disability on the language and speech of the hearing impaired child. The second examines the relationship between "Language" and "Signs" as a legitimate language for deaf persons.

Thirdly, the relationship between "Culture" and "Signs" indicates that Sign Language differs from culture to culture and takes its own developmental course in each culture. Fourthly, the status of Sign Language in the Arab World countries was examined. Even though there is some awareness of the usefulness of studying and implementing the system of Signs to teach deaf children, there is still no implemented or standardized Sign Language system in the Arab World countries. However, the Arab Federation for the Organs of the Deaf (A.F.O.D.) is nurturing and fostering efforts to study and develop an Arab Sign Language system.

The fifth issue deals with the history and development of American Sign Language (ASL) and other Sign systems



that are being used in the United States. Finally, the controversial issue of teaching deaf children by oralism versus Total Communication was discussed. Recent thinking by researchers and educators points out that the use of the Total Communication approach proves to benefit the deaf child more than using just the Oral approach.

### Research Design and Methodology

The following steps were followed in order to accomplish the objectives of the study:

1. One hundred most commonly used concepts (words) were chosen from a Jordanian study of the vocabulary of the beginning elementary school age children.
2. Each of these concepts were presented on a flash card by a written word and a picture. Also, 28 flash cards of the Arabic alphabet were prepared. The flash cards were used to elicit the signs of the alphabet and concepts from two deaf Jordanian subjects.
3. The subjects were filmed while they were signing for each concept and each Arabic letter of the alphabet.
4. Line drawings of the filmed signs for each subject were constructed and comparisons were made

of the drawing between the two subjects to determine the degree of similarity.

5. Signs 3-17 and 21-30 were used to examine the intrasubject and intersubject reliabilities, respectively.

### Findings/Results

Line drawings of the filmed signs formed the main body of data for the findings. Examining these line drawings led to the following findings:

1. Of the 28 Arabic alphabet characters, both subjects agreed upon 18% of the signs; 14% of the alphabet signs were found to have some degree of similarity; 68% of the alphabet characters were different.
2. The signing of the Arabic alphabet by these subjects was accompanied by voice. This finding appears to reflect the oral background of teaching Jordanian deaf children.
3. Of the 100 concepts, both subjects agreed upon 26% of the signs; 22% of the 100 concepts' signs were found to have some degree of similarity; 52% of the 100 concepts were different.
4. Intersubject reliability on the 100 concepts was found to be 80% when the older subject responded

to signs of the younger subject; 90% when the younger subject responded to signs of the older subject.

5. Intrasubject reliability was found to be 73% with the older subject and 80% with the younger subject.

### Limitations of the Study

The high percentage of variation between the signs for the alphabet characters and concepts by the two subjects decreases the certainty level of the most widely acceptable sign for any given concept. Hence, before attempting to develop a standardized sign manual for educational use, a replication of the study will be necessary. Such replication should consider the following:

- A larger sample (approximately N=15) to increase reliability for any given sign should be attempted.
- Focus on adult deaf subjects (between 20-30 years of age) who have had longer experience with sign usage and more contact with the deaf population.
- Conduct similar studies in other Arab countries. Since hearing people in the Arab countries communicate in one spoken language, Arabic, it would be helpful to establish one standardized Arabic Sign System (ASS) for the use of all Arab deaf learners.

- Signs should be collected on videotape. It is more practical and more efficient to use the videotape camera, allowing the researcher to examine the recorded signs immediately at any point, or replay the tape easily.

### Discussion of Results

The findings of the study showed that: signs as a way of communication are used informally among Jordanian deaf population; Jordanian signs can be studied, characterized, and improved to be used in the Jordanian educational system for teaching deaf children; and finally, these signs are affected by the cultural elements of the Jordanian society.

Three elements of invalidity were noticed in the signs of the 28 Arabic alphabet characters given by the two subjects. These elements are: the high level of disagreement, the overlap of the subjects' signs for several alphabet characters and lack of validity in the signs of the same subject.

First, the subjects agreed on only 18% (5 of 28) of the signs. The agreement included the signs of the letters "alif", "teh", "theh", "gäf", and "noon"; both subjects agreed with some variations upon 14% (4 of 28) of the signs, these signs included the letters "beh", "jeem", "sheen",

and "heh". They disagreed upon the remaining 68% (19 of 28) of the signs.

Second, both subjects gave the same sign for different letters (7 of 28). For example, "ḥa" of the younger subject and "heh" of the older subject were found to have the same sign.

Third, each individual subject gave the same sign for different letters. The older subject gave six signs for six pairs of letters, and the younger subject gave five signs for five pairs of letters. For example, the older subject gave the same sign for the letters "teh" and "theh" and gave another sign for both letters "dal" and "thal".

The overlap of Jordanian manual alphabet along with the fact that the subjects were trying to vocalize each letter they were signing, make such vocalizing (if intelligible) a necessary factor to distinguish between the signs. Such a finding suggests that the educational programs of Jordanian deaf students may be affected by: The Oral approach, lack of a standardized manual alphabet, and/or arbitrary teacher methods of teaching the sounds of the alphabet characters. At the present time, one might conclude that the Arabic manual alphabet in Jordan is a slow and impractical process for forming words or phrases.

Differences and similarities were also noticed in both subjects' signs for the 100 concepts. They agreed upon 26% of the signs, showed some degree of similarity for

22% of the signs, and disagreed upon 52% of the signs. For example, while both subjects agreed completely upon sign 84 "plates", they gave slightly different signs for concept 87 "airplane", and gave completely different signs for concept 90 "door".

The variation observed in this study in JSL lexicon for concepts may be influenced by four factors: The small sample of the study (N=2), the difference in chronological age of the subjects, the difference in geographic region and culture (unlike the younger subject, the older subject was brought up in an urban area), and the difference in the educational level of the subjects.

Similar variations have been noticed in advanced sign systems like ASL. In America, Southerners tend to use older forms more often than Northerners (Woodward, Erting & Oliver, 1976); more highly educated signers tend to use more borrowing from English in their ASL (Lane & Grosjean, 1980); in the South, Blacks tend to use older forms more often than whites of the same age (Woodward & Erting, 1975).

The cultural influence in JSL was noticed through many of the subjects' signs (3N, 9N, 17N, 23N, 27N, 29N, 42N, 43N). Examining the origins of these signs supports the assumption that JSL, as other Sign languages, is a context-dependent language in which there is great evidence of Arabic cultural influence.

The reliability of the selected concept signs indicates that there is sufficiently high consistency to standardize a Jordanian sign language. Intrasubject and intersubject differences between the signs were not found to be major ones, in that they were related to the same general function despite the disagreement on the sign specificity. Intersubject reliability measure indicated that the older subject understood 8 of 10 of the younger subject's signs and that the younger subject understood 9 of 10 of the older subject's signs. On the other hand, intrasubject reliability measure indicated that the older subject was consistent in 11 of 15 signs and that the younger subject was consistent in 12 of 15 signs. These inconsistent signs did not have enough variation to be considered as completely different from each other.

The collected signs were determined to be colloquial in that many of them are common mimes and gestures that are used in everyday life by almost everyone in Jordan. (Signs like 3N, 3S, 4N, 4S, 5N, 5S, 7N, 7S, 9N, 9S, . . . are good examples of such signs.)

It was also found that naivete (simple as possible) is a common characteristic of many of the collected signs. This evidence of naivete was suggested in the very short sign, as 27S, or very long as 27N and 49N. It was also evidenced in the expression of different concepts with just one sign (like 9S, 17S and 59S, or 28N and 31N).

Further studies on JSL in Jordan are needed before any efforts to modify and refine the language for use in schools for the deaf or the communicatively handicapped. Later on, different features of JSL phonology can be examined; handshape complexity and structure, place on the body where signs are made, and motions of the signs can be studied. Careful observation of conversations between Jordanian deaf persons can also reveal the structure of JSL syntax.

One can conclude that signs as a way of communication among the deaf population do exist in Jordan, have their own structure, and can be explored, studied, fostered and developed.

### Recommendations

Sign language, like spoken language, is a growing, living language. This study of some Jordanian signs is a preliminary survey and, hopefully, a stimulus for further studies and research.

Based on this survey, the following recommendations are offered for future research:

Recommendation 1. Sign language can become an important part of the educational system of deaf children in Jordan; Jordanian deaf children should not be deprived of the opportunity to learn through signing as well as through oral skills.



Recommendation 2. More surveys and studies on larger samples of deaf persons throughout the Arab world should be conducted to standardize the Jordanian sign language.

Recommendation 3. Standardization of Jordanian sign language must proceed only after surveys are made of Jordanian deaf subgroups from different regions, so as to generalize the findings.

Recommendation 4. The future studies should consider the sign systems that exist in other Arab countries since all the Arab world countries have many common cultural characteristics, including one spoken language.

Recommendation 5. Educated adult deaf persons should be strongly considered as the subjects for future studies.

Recommendation 6. A manual Arabic alphabet needs to be developed in more practical ways for functional use.

Recommendation 7. The use of the videotape system would be more efficient in filming the signs to be studied.

Recommendation 8. A film or videotape should be prepared to assure standardization of survey techniques and instructions to subjects.

## APPENDICES

## APPENDIX A

### EXAMPLE OF CONSENT FORM IN ENGLISH

## APPENDIX A

### Example of Consent Form in English

"The purpose, objectives and methods of this study have been explained to me. My questions have been fully and satisfactorily answered. I freely consent to participate with the freedom to discontinue at any time without recrimination.

All results and materials will be treated with confidence. My name and references to other persons and places will remain anonymous. Materials generated from the filming by the investigator about myself will be made available to me upon request. The results of the study will also be made available to me.

I understand that the nature of the filming is to obtain information on Jordanian signs."

Date

Signature



## APPENDIX B

### EXAMPLE OF AGREEMENT FORM IN ENGLISH

## APPENDIX B

### Example of Agreement Form in English

I agree to participate in this study based on the conditions set forth in the enclosed letter.

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Witness: \_\_\_\_\_

Date: \_\_\_\_\_

## APPENDIX C

### UCRIHS APPROVAL



APPENDIX C  
UCRIHS Approval

**MICHIGAN STATE UNIVERSITY**

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UNIVERSITY COMMITTEE ON RESEARCH INVOLVING  
HUMAN SUBJECTS (UCRIHS)  
238 ADMINISTRATION BUILDING  
(517) 355-2186

EAST LANSING • MICHIGAN • 48824

January 6, 1981

Mr. Ziad Kabatilo  
University Centers for International Rehabilitation  
D-201 West Fee Hall

Dear Mr. Kabatilo:

Subject: Proposal Entitled "A Survey of Selected Sign Language  
Symbols Used By Deaf Persons in Jordan"

The above referenced project was recently submitted for review to the UCRIHS.

We are pleased to advise that the rights and welfare of the human subjects appear to be adequately protected and the Committee, therefore, approved this project at its meeting on January 5, 1981.

Projects involving the use of human subjects must be reviewed at least annually. If you plan to continue this project beyond one year, please make provisions for obtaining appropriate UCRIHS approval prior to the anniversary date noted above.

Thank you for bringing this project to our attention. If we can be of any future help, please do not hesitate to let us know.

Sincerely,



Henry E. Bredeck  
Chairman, UCRIHS

HEB/jms

cc: Dr. Gaston E. Blom

## APPENDIX D

### EXAMPLE OF LETTER OF INTENT IN ENGLISH



## APPENDIX D

### Example of Letter of Intent in English

As a part of my Ph.D. program requirements in Special Education/Hearing Impaired at Michigan State University, I am interested in surveying the signs used between the Jordanian deaf as a communication system. I hope that this survey will be the first step in establishing Jordanian sign language to be used as an instructional media in the schools of the deaf in Jordan.

If you would be willing to be filmed by me, will you kindly sign the enclosed form and return it to me. Someone will contact you to arrange a meeting at a time and place of your choice and convenience. The contents of this film would remain confidential, and only be used for teaching and research purposes without personal identification and disclosures. Should you wish a report of my findings, it will be sent to you on your request.

If you have any questions, please feel free to contact me at 24470 Amman, Jordan or 517-355-1824, U.S.A.

Sincerely,

Ziad Kabatilo, Doctoral Candidate  
Department of Elementary and  
Special Education  
Michigan State University

## APPENDIX E

### EXAMPLE OF INSTRUCTIONS FOR FILMING SESSIONS IN ENGLISH

## APPENDIX E

### Example of Instructions for Filming Sessions in English

Will you kindly provide the following conditions so as to obtain the best results.

1. A filming place with good lighting.
2. An interpreter to facilitate communication between the subject and the investigator.
3. The subject should wear dark colored clothing.
4. Pictures for the subject's father, mother, uncle, and brother should be provided where possible. These pictures will ease the communication with the subject when he is asked to sign for the concept that they represent.
5. The filming situation will be limited to the subject, the interpreter and the investigator.
6. The filming process will proceed as follows:
  - A. The camera will be fixed on a tripod stand.
  - B. The subject will stand ten feet in front of the camera.
  - C. The investigator will adjust the focus and the height of the camera.
  - D. The subject will see a written word and/or picture representing a concept.
  - E. Each time the subject sees the picture and the written word, he should sign for the concept they represent.
  - F. Pictures will be taken for each sign.

- G. The subject will continue in the same manner for the rest of the 100 concepts.
- H. The subject will be asked to sign the Arabic alphabet.
- I. The subject will be asked to use each concept in a simple sentence. These sentences will not be filmed.
- J. The number and the time of the sessions will vary according to the fatigue factor.
- K. In case of confusion or inquiry, the interpreter will be asked to clarify.

## APPENDIX F

### LIST OF 100 CONCEPTS



## APPENDIX F

### LIST OF 100 CONCEPTS

The Word	The Frequency of the Jordanian Study in Descending Order	Thorndike's Frequency*	Murphy's Frequency**
1. The	10,789	1a	6451
2. And	5,998	1a	3404
3. No (Not)	3,866	1a	1166
4. On	2,796	1a	839
5. From	2,279	1a	312
6. In	1,878	1a	2211
7. Children (boys)***	1,606	1a	201
8. Yes	1,553	1b	654****
9. Men	1,537	1a	477
10. One	1,419	1a	907

---

\* The "1" after a word indicates that it occurs among the first thousand words in the source list; "2" among the second thousand, etc. The letters "a" and "b" after the figures indicate, respectively, the first and the second five hundred of that thousand.

\*\* This study was the recording of spontaneous vocabulary of nursery school children for one year. A total of 371,281 frequencies were recorded.

\*\*\* The word "children" in the Arabic language does not include girls. There is a separate word for girl children.

\*\*\*\* The frequencies of "yes", "yah", "yeh", and "Yep" have been added together here.

		The Frequency of the Jordanian Study in Descending Order	Thorndike's Frequency	Murphy's Frequency
11.	House	1,369	1a	845
12.	God	1,097	1a	187
13.	Hand	1,043	1a	449
14.	Cars	910	1b	840
15.	This	877	1a	2493
16.	Head	817	1a	210
17.	Father	840	1a	513
18.	Hair	755	1a	357
19.	Have	730	1a	1903
20.	Hush	726	3a	----
21.	Tree	701	1a	372
22.	Three	688	1a	269
23.	Girl	622	1a	837
24.	Leg	601	1b	95
25.	Horse	592	1a	257
26.	With	588	1a	873
27.	Good Morning	587	1a	328
28.	Chairs	578	1b	679
29.	Schools	575	1a	354
30.	Tea	562	2a	241
31.	Site	545	1a	103
32.	Dog	541	1b	541*
33.	Meat	540	1b	93
34.	Two	532	2a	221
35.	Hey	512	--**	88
36.	Four	505	1a	242
37.	Water	499	1a	5559

---

\* The frequencies of the words "dog", "dogs", "doggies" and "doggie" have been included here.

\*\* This word may not have been used in 1940 when Thorndike assembled his list.

		The Frequency of the Jordanian Study in Descending Order	Thorndike's Frequency	Murphy's Frequency
38.	Trousers	483	4a	6
39.	Fingers	473	1b	195
40.	Five	472	1a	116
41.	Donkey	463	4a	63
42.	Iron	456	1b	134
43.	Mother	451	1a	980
44.	Table	441	1a	538
45.	Ten	426	1a	90
46.	Bird	424	1a	175*
47.	Mosque	423	--	---
48.	Tomato	419	5a	46
49.	Bread	416	1a	55
50.	White	408	1a	5
51.	Apple	407	1a	267
52.	For	405	1a	1774
53.	Glass	379	1b	77
54.	Wood	396	1a	54
55.	Piaster (=3¢)	392	--	---
56.	Rose	391	1b	17
57.	Six	382	1a	119
58.	All	373	1a	940
59.	People	366	1a	128
60.	Day	358	1a	183
61.	Chicken	357	2a	219**
62.	Rice	356	3a	3
63.	Seven	355	1b	101
64.	Thing	349	1a	608

---

\* The frequency of the words "bird", "birds", "birdie", and "birdies" has been included.

\*\* The frequencies of the words "chicken", "chickens", "chicks", and "chickie", and "chickies" have been added up and recorded.

		The Frequency of the Jordanian Study in		
The Word		Descending Order	Thorndike's Frequency	Murphy's Frequency
65.	Eggs	343	1a	235
66.	Abdomen	326	--*	---**
67.	Face	326	1a	103
68.	Red	312	1a	748
69.	I	309	1a	10357
70.	Or	309	1a	72
71.	Black	306	1a	119
72.	Eight	306	1b	57
73.	Soldier	305	1a	124
74.	Briefcase***	305	--	---
75.	Uncle****	304	1b	907
76.	Shoes	301	1b	237
77.	They*****	299	1a	3103
78.	Radio	298	--*****	72
79.	Woman	295	2a	30
80.	Nine	293	1b	33

---

\* The word "abdomen" was not found in Thorndike's list, instead, the word stomach was found with 4a frequency and the word "belly" was found with 6a frequency.

\*\* The word "abdomen" was not found in Murphy's study, instead, the words "tummy", "belly", and "stomach" have been mentioned.

\*\*\* The briefcase here means the leather or cloth case in which the school children put their books and pads.

\*\*\*\* In Arabic there are separate words for Uncle (mother's brother) and Uncle (father's brothers). The above mentioned frequencies were found with Uncle (father's brothers).

\*\*\*\*\* The word "they" was used here as the frequencies of "he", "she" and "they" were assimilated and added up for the three studies. This process was done because all of these words express the third person and because it was thought that it will be enough to know the Jordanian sign for just one of them.

\*\*\*\*\* The word crystal was found with a frequency of 4a instead of radio.

The Word	The Frequency of the Jordanian Study in Descending Order	Thorndike's Frequency	Murphy's Frequency
81. Grape	289	2a	100
82. Potato	286	2a	120
83. Rooster	282	5b	62
84. Plates	270	2a	62
85. When	274	1a	1143
86. Doctor	273	1b	198
87. Airplane	271	4b*	539
88. Nose	265	1b	131
89. Feast	265	2a	---
90. Door	261	1a	260
91. Window	260	1a	182
92. Pencil	256	2b	152
93. Clothes	253	1b	151
94. Noon	250	1b	---
95. Television	250	--	276
96. Fish	243	1b	139
97. Cows	240	1b	218
98. Night	240	1a	169
99. Brother	239	1a	232
100. Shirt	239	2b	126

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\*The word "plane" was found instead.

## APPENDIX G

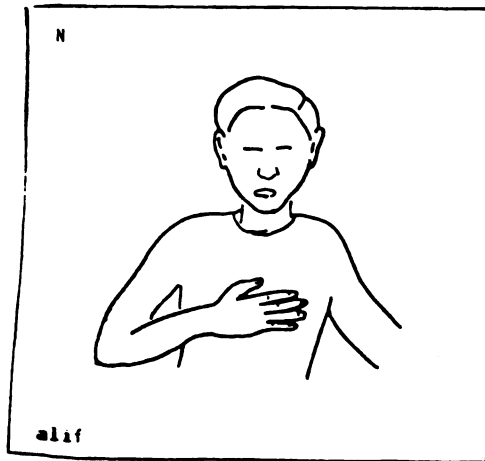
LINE DRAWINGS OF ARABIC ALPHABET SIGNS  
GIVEN BY BOTH SUBJECTS

## APPENDIX G

### LINE DRAWINGS OF ARABIC ALPHABET SIGNS

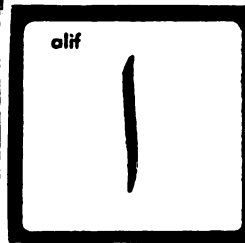
GIVEN BY BOTH SUBJECTS

The Older Subject's  
Signs

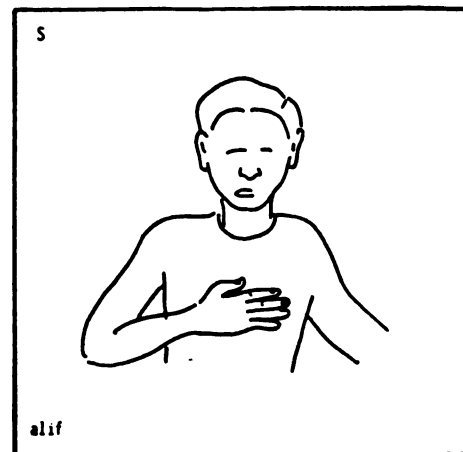


SIGN DESCRIPTION: Place the right palm on the chest while saying the letter.

The  
Alphabet



Younger Subject's  
Signs

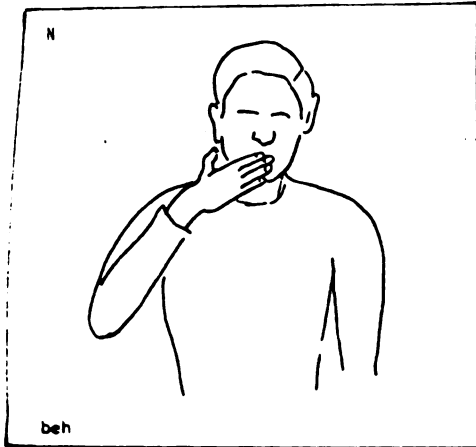


SIGN DESCRIPTION: Same as the older subject's sign.

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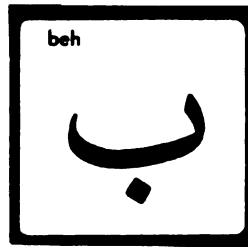
\*The letter on the top left side of the drawing indicates the initial of the subject's first name, the word on the bottom left side of the drawing is the English pronunciation of the alphabet character.

The Older Subject's  
Signs

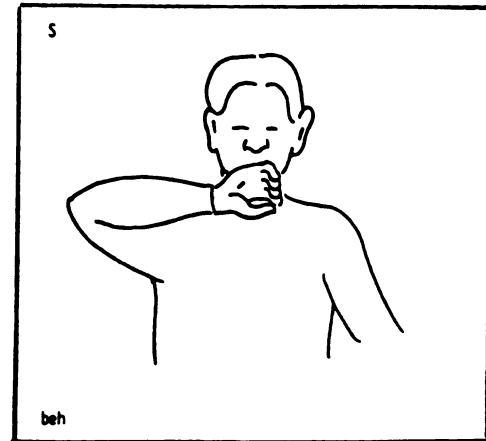


SIGN DESCRIPTION: Hold the right palm in front of the mouth while saying the letter.

The  
Alphabet



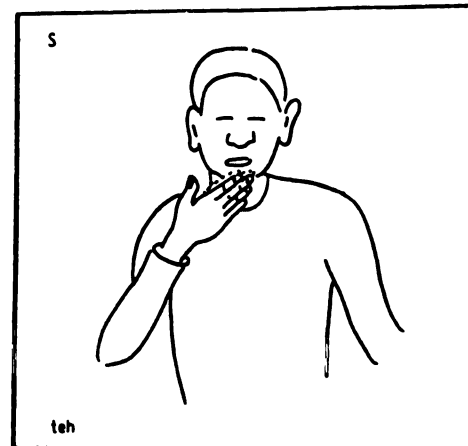
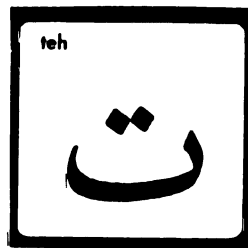
The Younger Subject's  
Signs



SIGN DESCRIPTION: Hold the back of the right hand in front of the mouth while saying the letter.



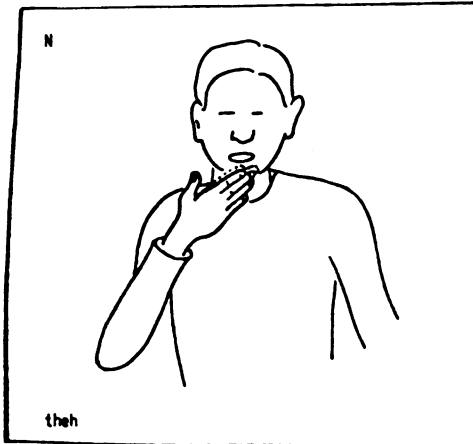
SIGN DESCRIPTION: Place the tips of the right fingers on the chin. Move the hand very slightly down while saying the letter.



SIGN DESCRIPTION: Same as the older subject's sign.

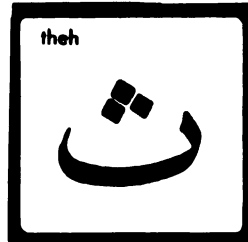


The Older Subject's  
Signs

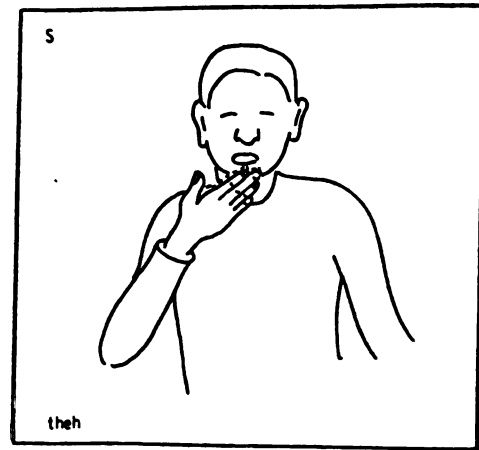


SIGN DESCRIPTION: Place the tips of the right fingers on the chin. Move the hand very slightly down while saying the letter.

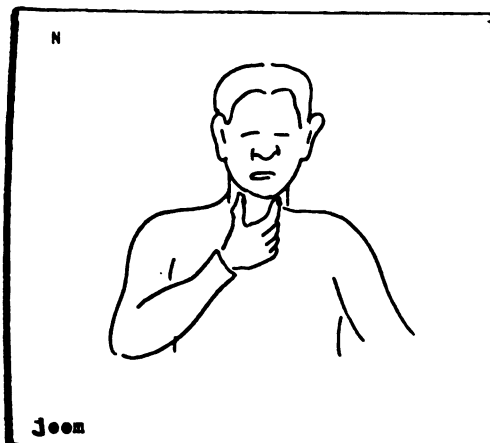
The  
Alphabet



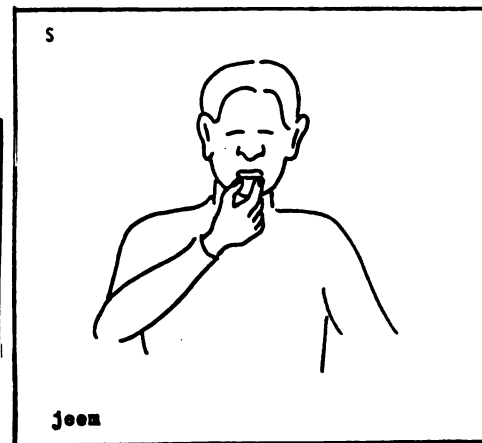
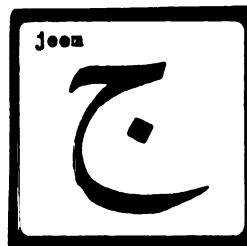
The Younger Subject's  
Signs



SIGN DESCRIPTION: Same as the older subject's sign.

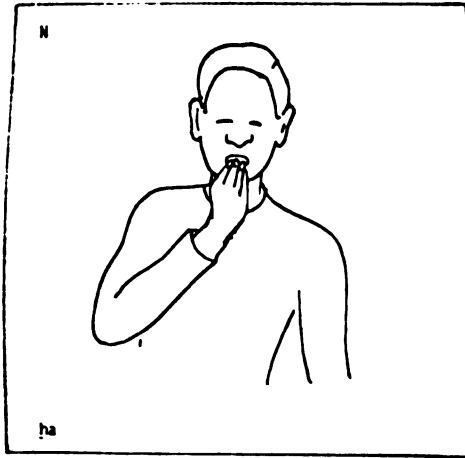


SIGN DESCRIPTION: Place the tips of the parallel thumb and index finger (separated) of the right hand on the throat, directly under the chin, while saying the letter.



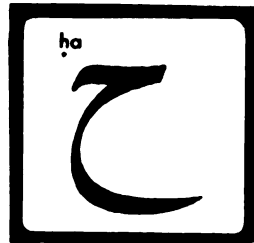
SIGN DESCRIPTION: Hold the tips of the parallel thumb and index finger (separated) of the right hand in front of the mouth while saying the letter.

The Older Subject's  
Signs

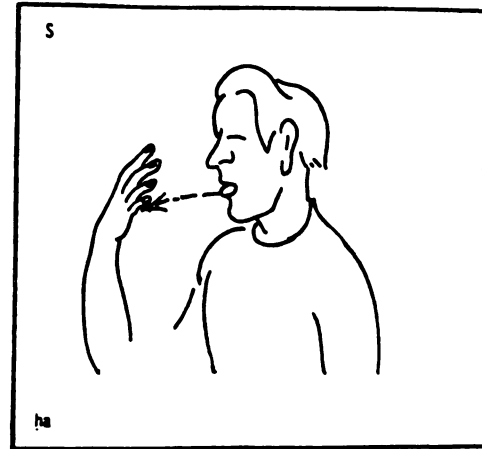


SIGN DESCRIPTION: Bring the tips of the fingers of the right hand together in front of the open mouth while saying the letter.

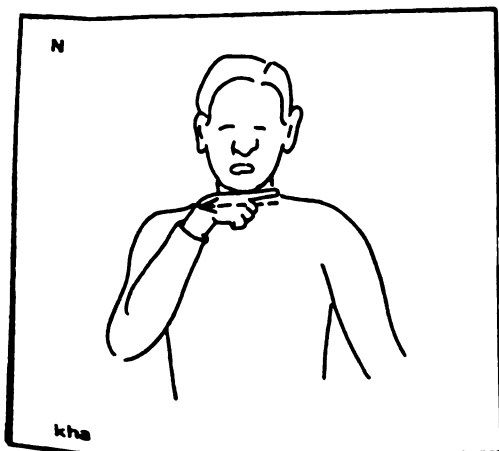
The  
Alphabet



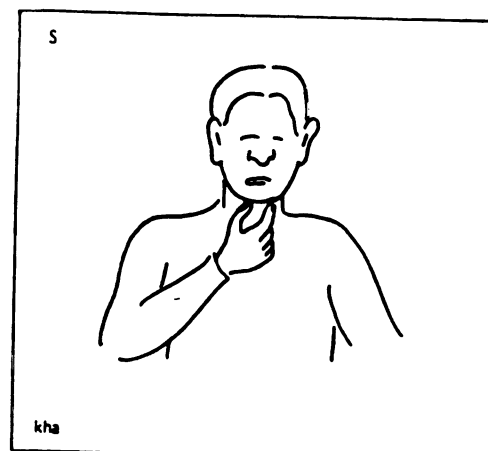
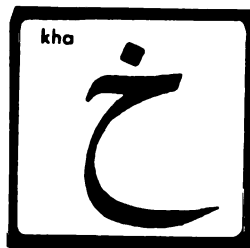
The Younger Subject's  
Signs



SIGN DESCRIPTION: Draw the right palm from the mouth forward while saying the letter.



SIGN DESCRIPTION: Move the side of the right index finger on the throat, directly under the chin, from left to right while saying the letter.

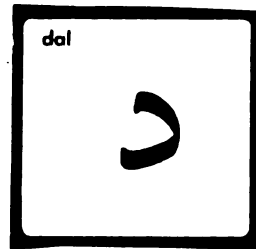
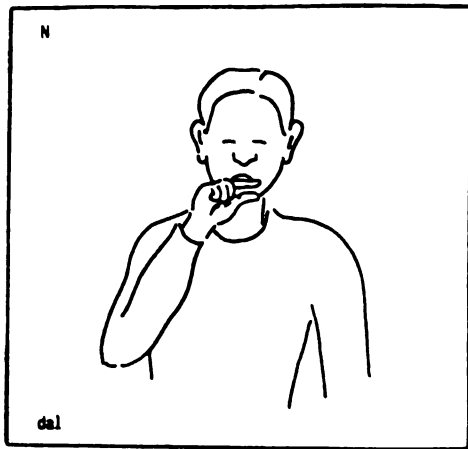


SIGN DESCRIPTION: Place the tips of the right thumb and index finger on the throat directly under the chin while saying the letter.

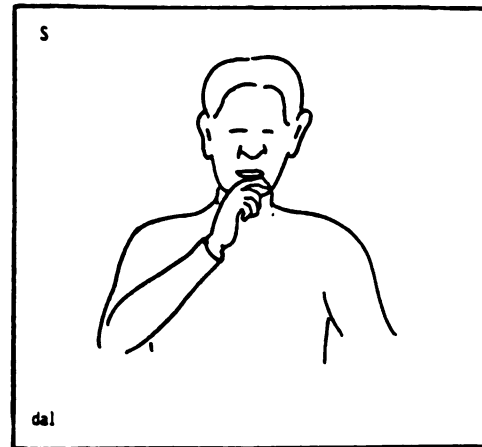
The Older Subject's  
Signs

The  
Alphabet

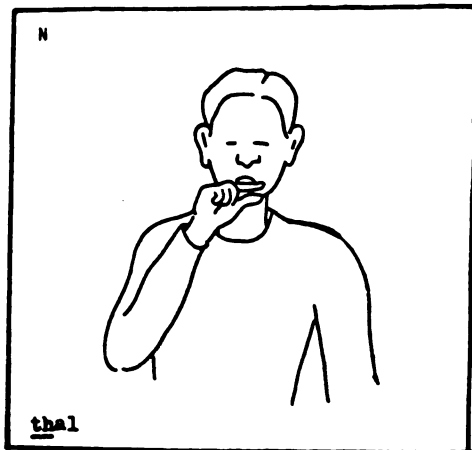
The Younger Subject's  
Signs



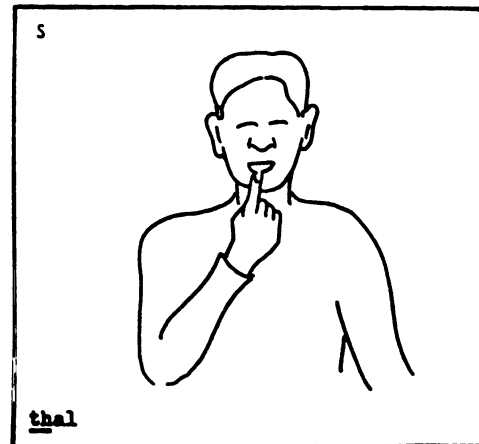
SIGN DESCRIPTION: Place the sides of the parallel thumb and index finger (separated) of the right hand in front of the mouth while saying the letter.



SIGN DESCRIPTION: Hold the chin with the right thumb and index finger, move the hand and the lower jaw (simultaneously) down while saying the letter.



SIGN DESCRIPTION: Same as the previous sign while saying the letter.

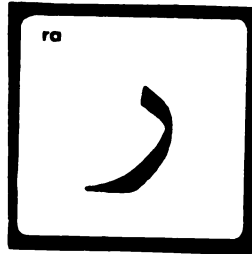
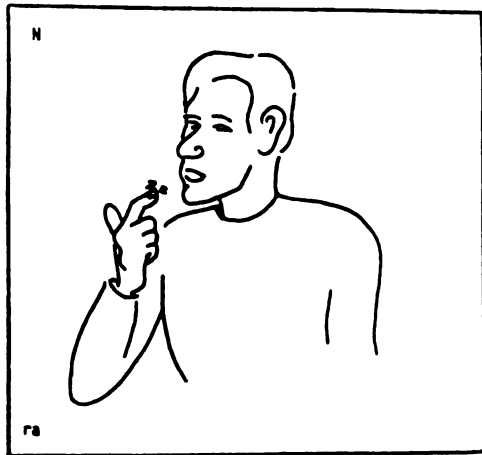


SIGN DESCRIPTION: The right index finger is pointing to the lower lip while saying the letter.

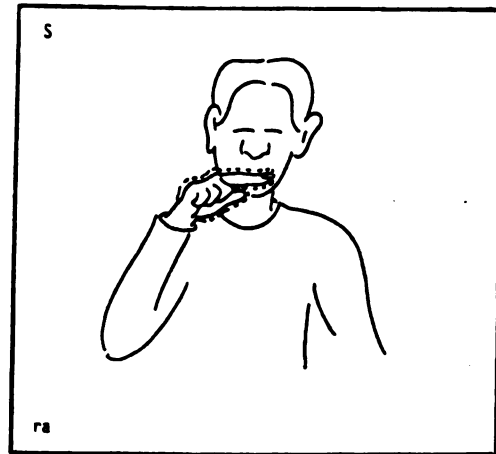
The Older Subject's  
Signs

The  
Alphabet

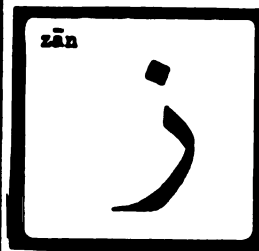
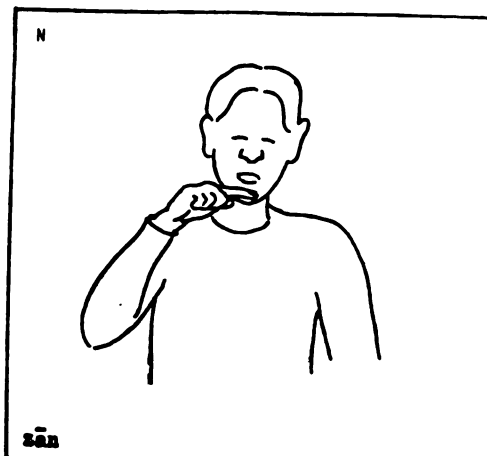
The Younger Subject's  
Signs



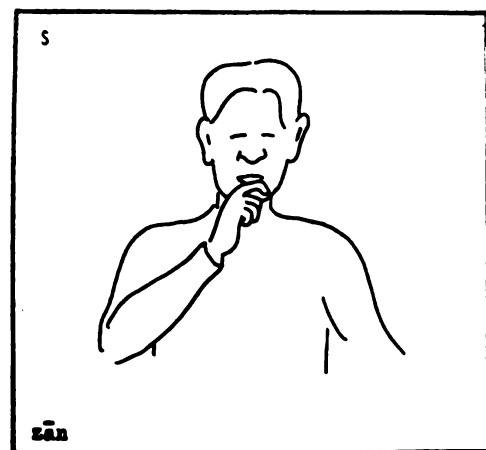
SIGN DESCRIPTION: Place the tip of the right index finger close to the right side of the mouth. Move it several times while saying the letter.



SIGN DESCRIPTION: Place the side of the right index finger in front of the mouth. Move it up and down slightly several times while saying the letter.



SIGN DESCRIPTION: Place the side of the right index finger in front of the mouth while saying the letter.

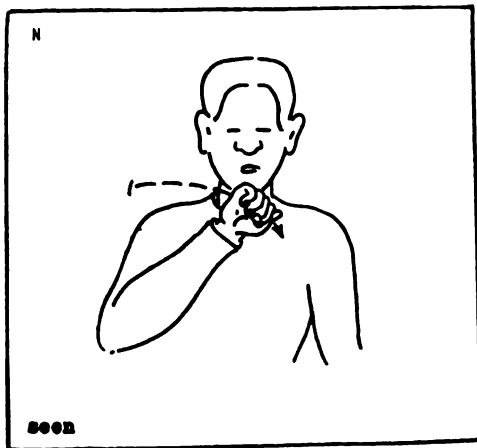


SIGN DESCRIPTION: Hold the chin with the right thumb and index finger while saying the letter.

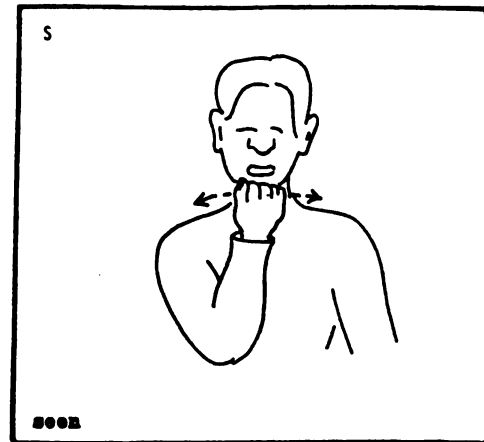
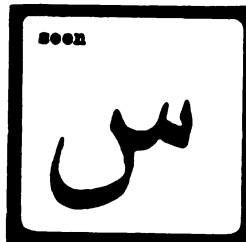
The Older Subject's  
Signs

The  
Alphabet

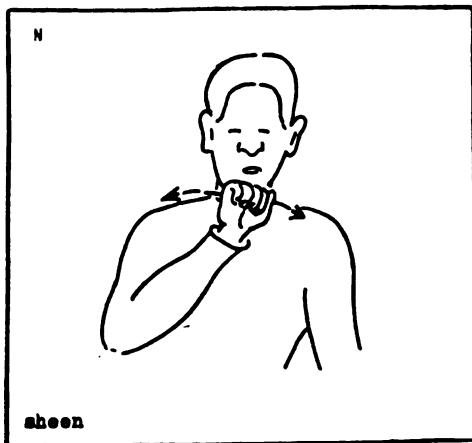
The Younger Subject's  
Signs



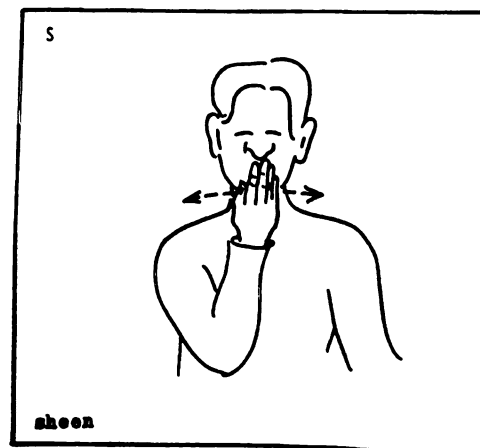
SIGN DESCRIPTION: Move the back of the right fist from right to left in front of the mouth (knuckles facing the chin) while saying the letter.



SIGN DESCRIPTION: Move the right fist (facing in) left and right several times in front of the mouth while saying the letter.



SIGN DESCRIPTION: Move the back of the right fist right and left several times in front of the mouth (knuckles facing the chin) while saying the letter.

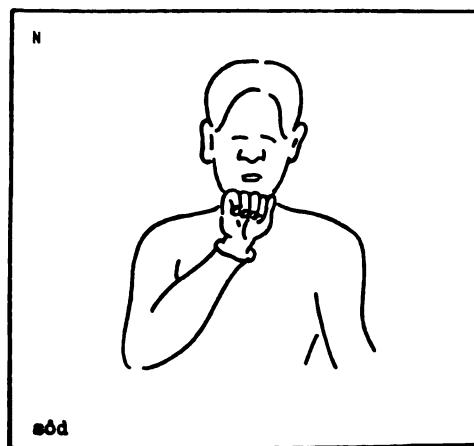


SIGN DESCRIPTION: Move the right palm left and right several times in front of the mouth while saying the letter.

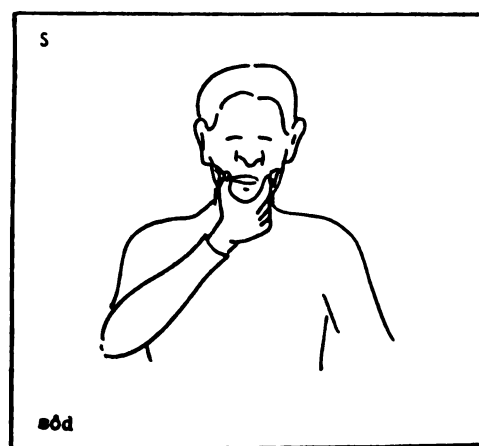
The Older Subject's  
Signs

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Alphabet

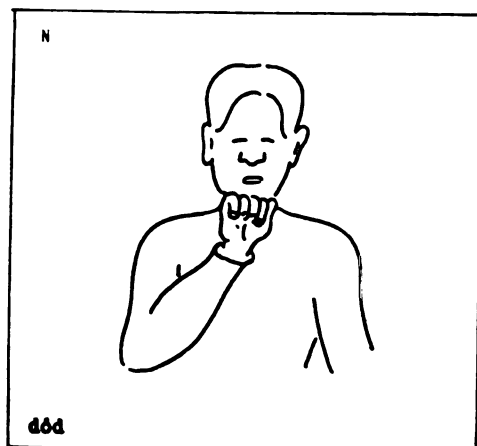
The Younger Subject's  
Signs



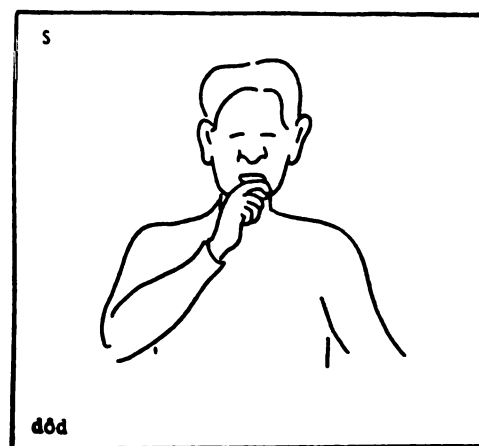
SIGN DESCRIPTION: Place the back of the right hand on the chin while saying the letter.



SIGN DESCRIPTION: Hold both cheeks between the right thumb and index finger while saying the letter.



SIGN DESCRIPTION: Same as the previous sign while saying the letter.



SIGN DESCRIPTION: Hold the chin with the right thumb and index finger, move the hand and the lower jaw (simultaneously) down while saying the letter.

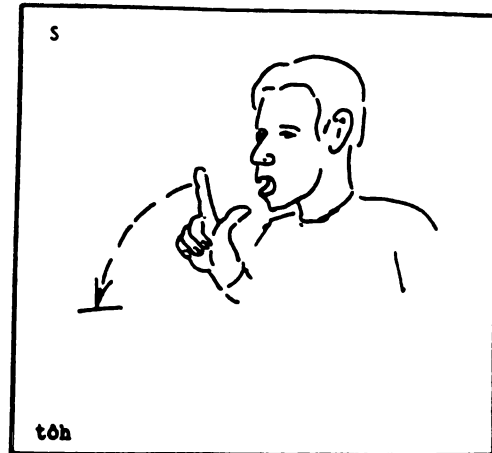
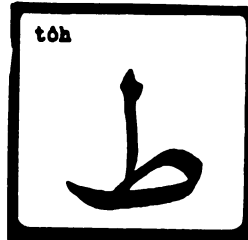
The Older Subject's  
Signs

The  
Alphabet

The Younger Subject's  
Signs



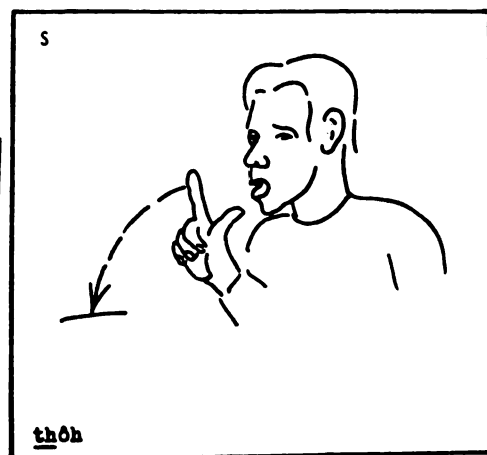
SIGN DESCRIPTION: Hold the right fist in front of the right side of the chin (joints facing left) while saying the letter.



SIGN DESCRIPTION: Hold the right hand in front of the right shoulder, (thumb and index finger are forming a right angle). Move the hand forward (slightly down) while saying the letter.



SIGN DESCRIPTION: Same as the previous sign while saying the letter.

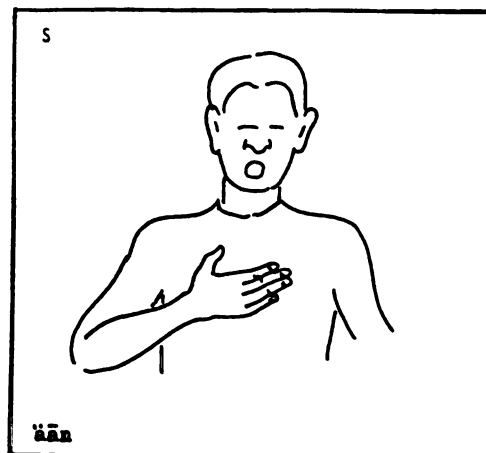
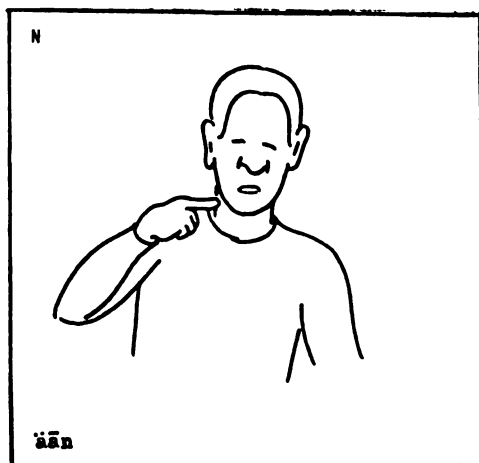


SIGN DESCRIPTION: Same as the previous sign while saying the letter.

The Older Subject's  
Signs

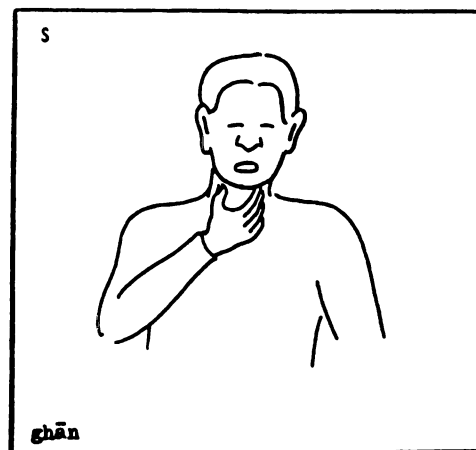
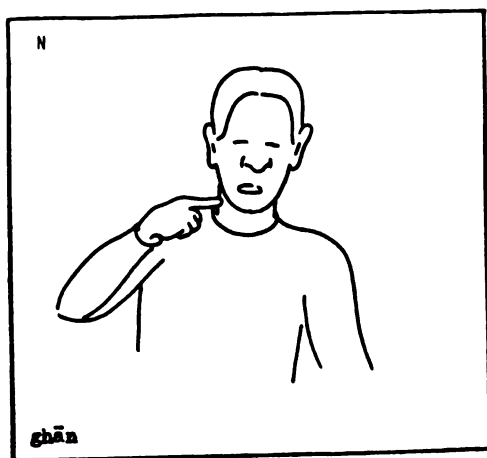
The  
Alphabet

The Younger Subject's  
Signs



SIGN DESCRIPTION: Point the right index finger (horizontally) to the right side of the neck while saying the letter.

SIGN DESCRIPTION: Place the right palm on the chest while saying the letter.



SIGN DESCRIPTION: Same as the previous sign of the older subject while saying the letter.

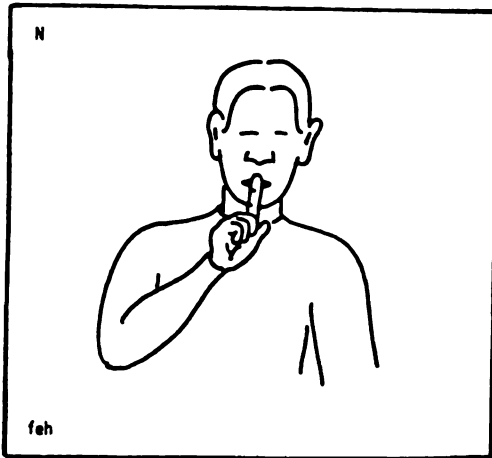
SIGN DESCRIPTION: Place the right thumb and index finger hand on the throat directly under the chin while saying the letter.



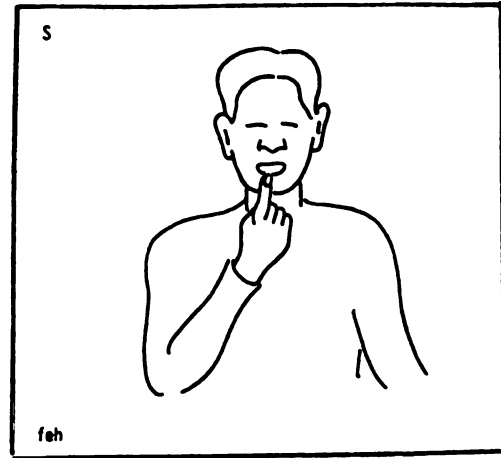
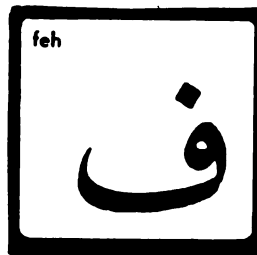
The Older Subject's  
Signs

The  
Alphabet

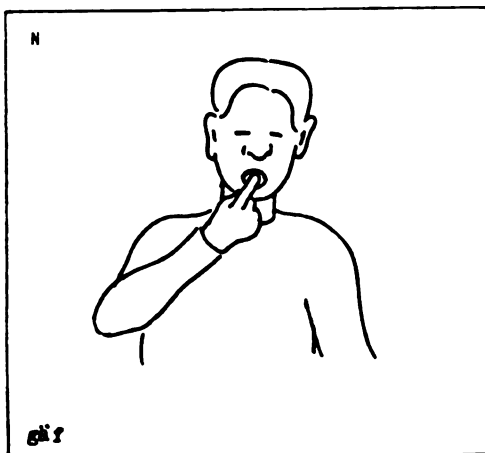
The Younger Subject's  
Signs



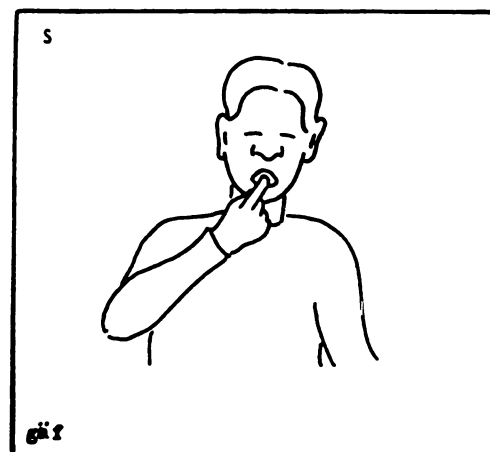
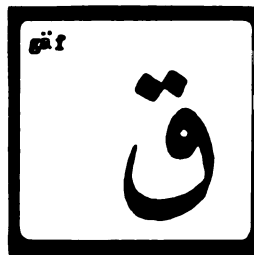
SIGN DESCRIPTION: Hold up the right index finger across the lips while saying the letter.



SIGN DESCRIPTION: The right index finger is pointing to the lower lip while saying the letter.



SIGN DESCRIPTION: The right index finger is pointing to the open mouth while saying the letter.

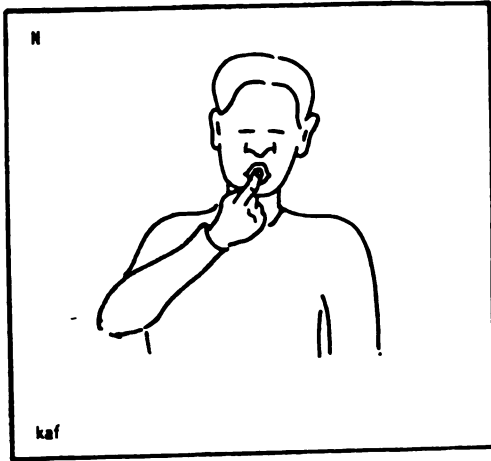


SIGN DESCRIPTION: Same as the older subject's sign while saying the letter.

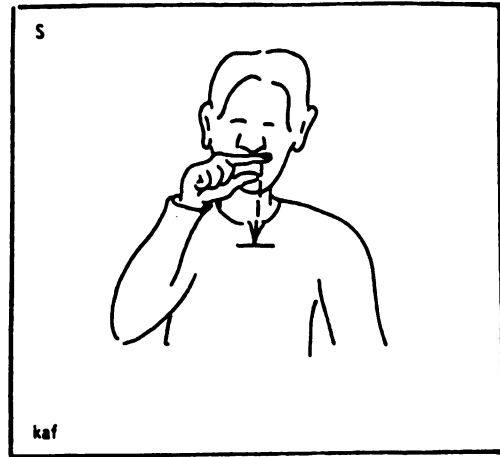
The Older Subject's  
Signs

The  
Alphabet

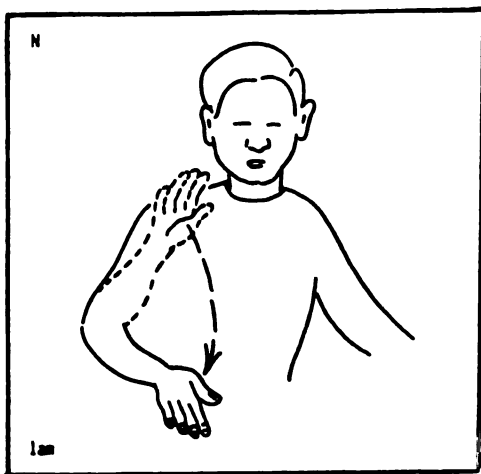
The Younger Subject's  
Signs



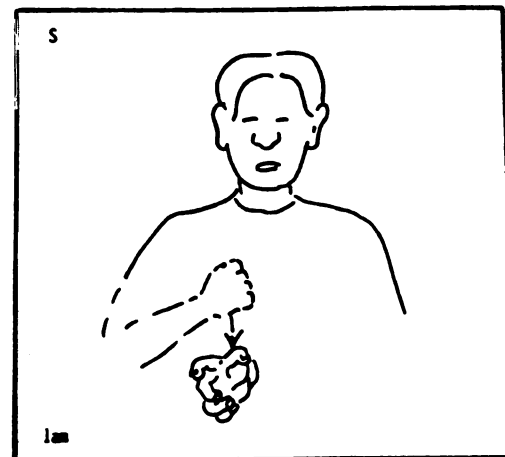
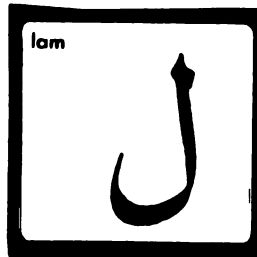
SIGN DESCRIPTION: Same as the previous sign.



SIGN DESCRIPTION: Move the side of the right curved index finger down in front of the mouth while saying the letter.



SIGN DESCRIPTION: Place the right hand in front of the right shoulder with palm facing out. Move the hand down (palm will face down) while saying the letter.

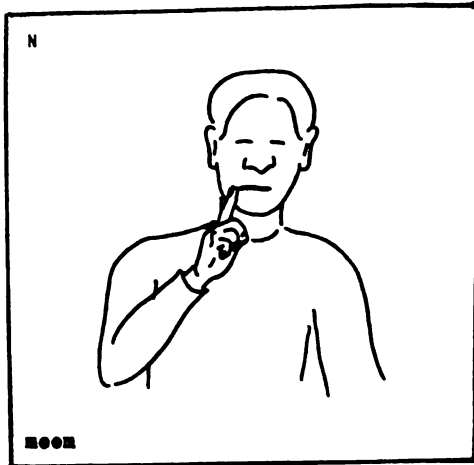


SIGN DESCRIPTION: Hold the right fist in front of the right shoulder. Move it down while opening the separation between the thumb and index finger while saying the letter.

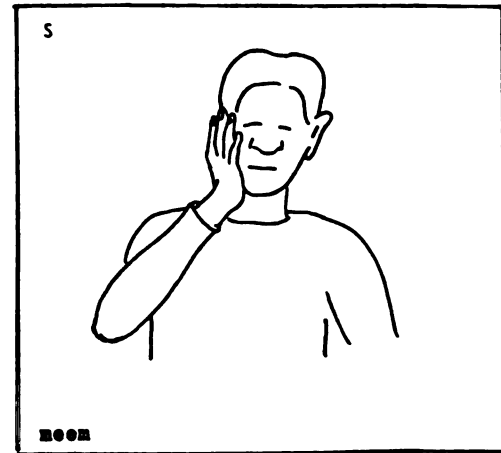
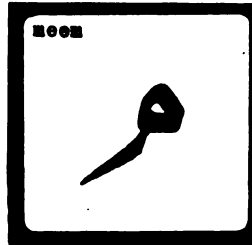
The Older Subject's  
Signs

The  
Alphabet

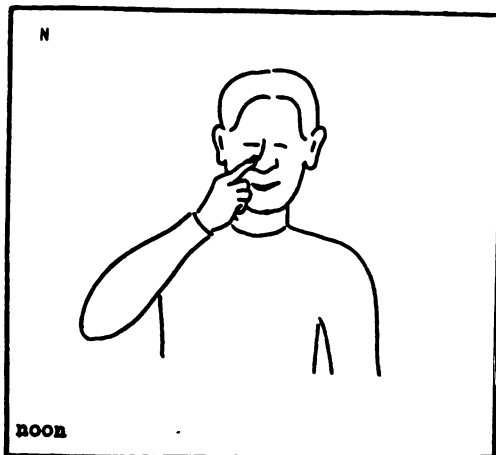
The Younger Subject's  
Signs



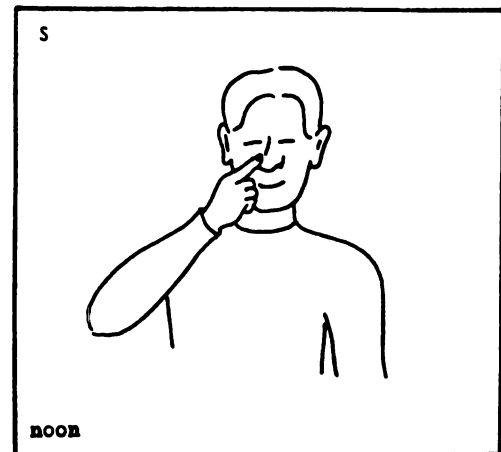
SIGN DESCRIPTION: Hold up the right index finger with its tip touching the right side of the mouth while saying the letter.



SIGN DESCRIPTION: Place the right palm on the right cheek while saying the letter.



SIGN DESCRIPTION: Hold up the right index finger with its tips touching the right side of the nose while saying the letter.

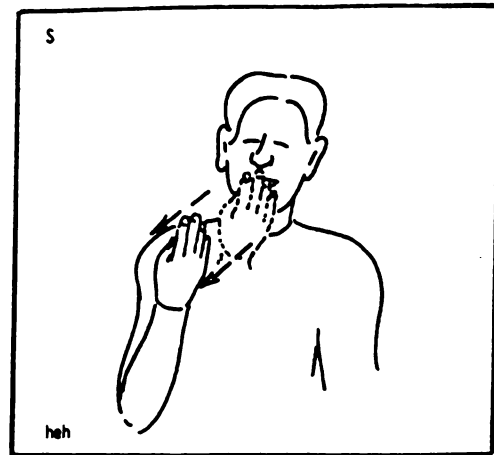
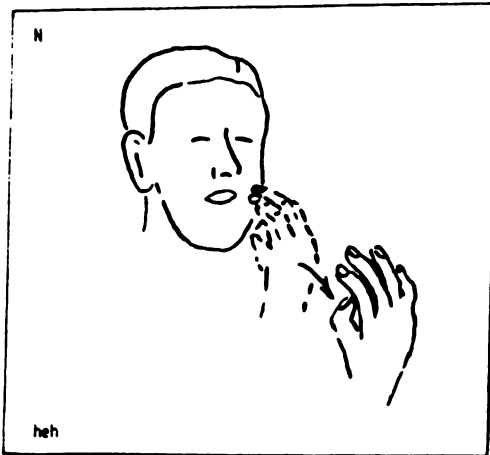


SIGN DESCRIPTION: Same as the older subject's sign while saying the letter.

The Older Subject's  
Signs

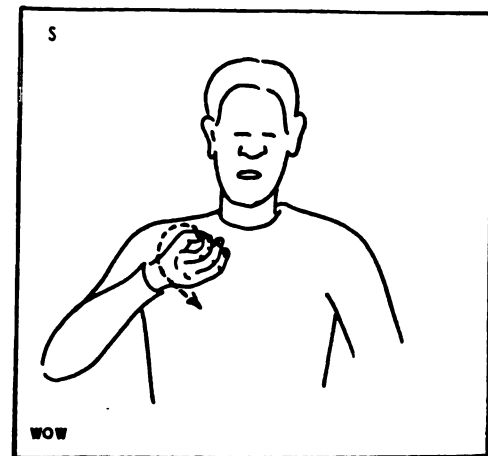
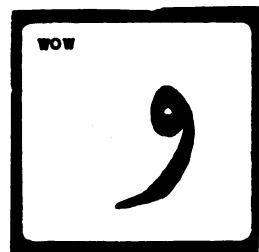
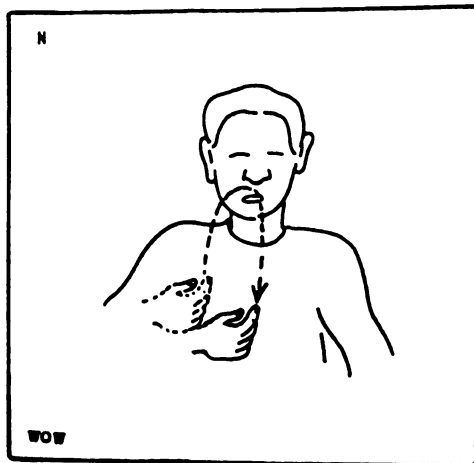
The  
Alphabet

The Younger Subject's  
Signs



SIGN DESCRIPTION: Place the right cupped hand in front of the mouth with palm facing the mouth. Draw the hand forward away from the mouth while opening the fingers and saying the letter.

SIGN DESCRIPTION: Move the right palm forward (slightly toward right) in front of the mouth, while saying the letter.



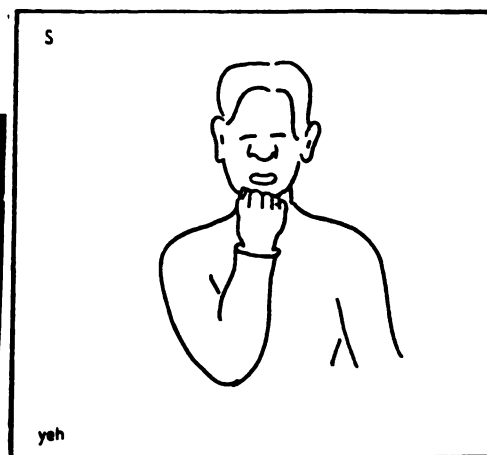
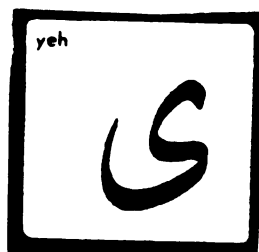
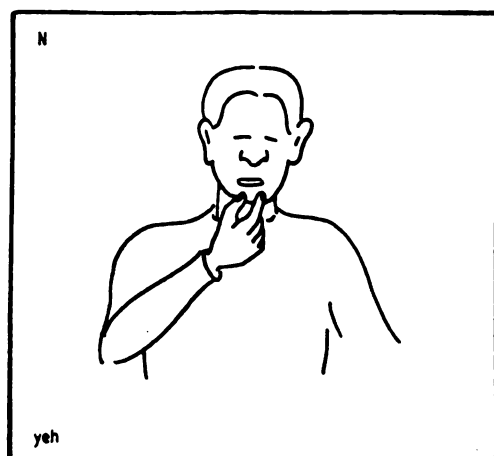
SIGN DESCRIPTION: Draw the right hand in up and down from the right side of the body to the middle (tips of parallel thumb and index finger (separated) are passing by the mouth) while saying the letter.

SIGN DESCRIPTION: Draw the right hand in a half circle motion in front of the right shoulder (tips of thumb and index finger are touching each other) while saying the letter.

The Older Subject's  
Signs

The  
Alphabet

The Younger Subject's  
Signs



SIGN DESCRIPTION: Place the tips of the right parallel thumb and index finger (separated) in front of the chin while saying the letter (palm facing in, other fingers bent).

SIGN DESCRIPTION: Place the joints of the right fist on the chin while saying the letter.

## APPENDIX H

LINE DRAWINGS OF 100 SIGNS GIVEN  
BY BOTH SUBJECTS

## APPENDIX H

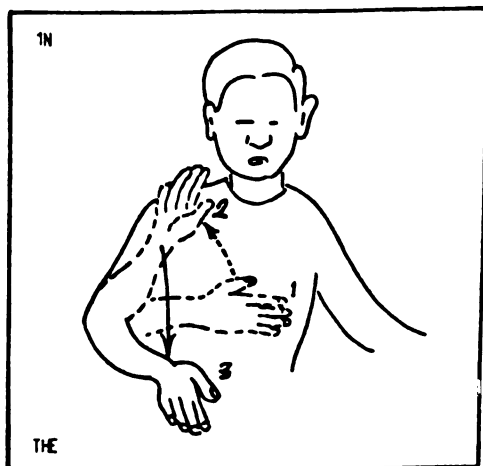
### LINE DRAWINGS OF 100 SIGNS GIVEN<sup>\*</sup>

BY BOTH SUBJECTS

#### Older Subject's Signs

#### Concept

#### Younger Subject's Signs

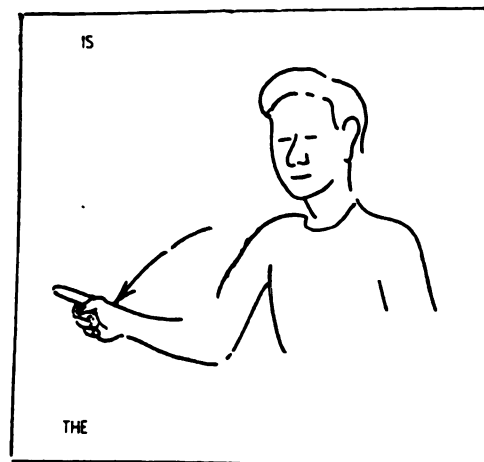


SIGN DESCRIPTION: Same as the subject's signs of the Arabic letters "alif" and "lam" respectively.

ORIGIN: "al" in Arabic means "THE". The phoneme consists of two Arabic letters "alif" + "lam". The first sign represents the letter "alif", the motions 2-3 represent the letter "lam".

EXAMPLE: THE boy is playing in the street.

THE

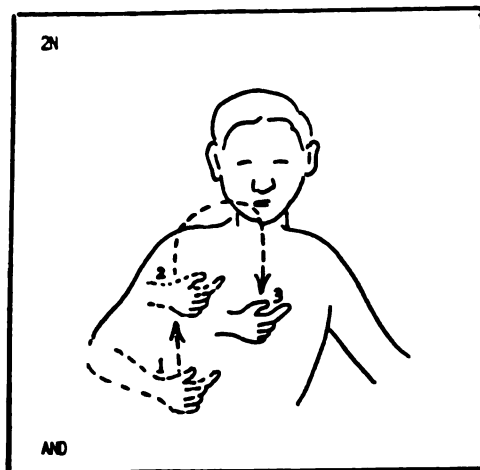


SIGN DESCRIPTION: Move the right index finger forward (slightly toward right) in a forceful manner).

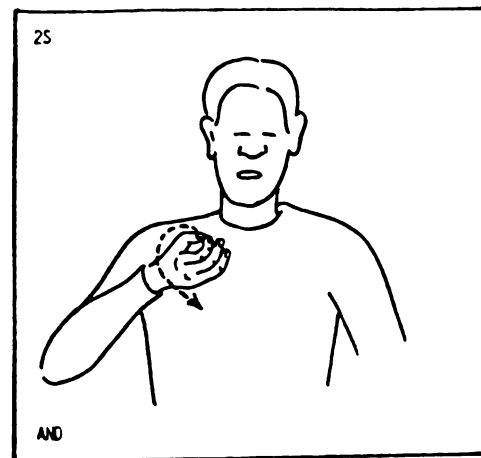
ORIGIN: Pointing to a specific object.

EXAMPLE: THE tree.

\* The number on the top left side of the square matches the number of the word from the vocabulary list. The letter beside the number relates to the first initial of the name of each subject. The bottom left side of the square contains the English word for the concept.

Older Subject's SignsConceptYounger Subject's Signs

AND



**SIGN DESCRIPTION:** Same as the subject's sign of the Arabic letter "wow".

**ORIGIN:** The sign represents the Arabic letter "wow" which means "AND".

**EXAMPLE:** We use AND when we add numbers.

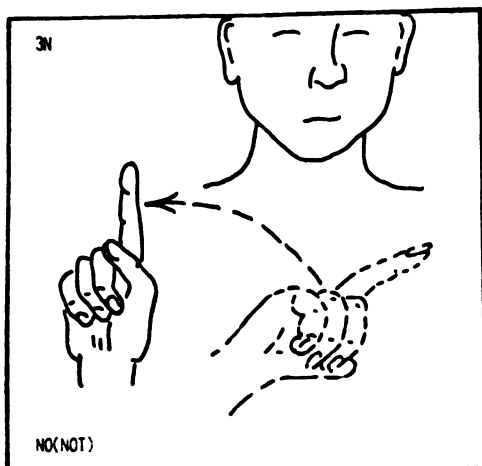
**SIGN DESCRIPTION:** Same as the subject sign of the Arabic letter "wow".

**ORIGIN:** The sign represents the Arabic letter "wow" which means "AND".

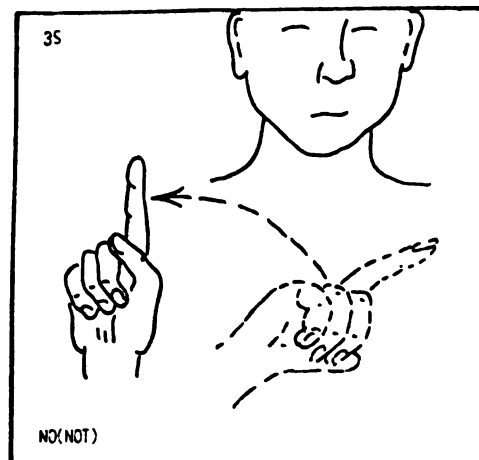
**EXAMPLE:** You AND You.\*

\*The subject pointed to me and his teacher.



Older Subject's SignsConceptYounger Subject's Signs

NO (NOT)



**SIGN DESCRIPTION:** Place the right hand in front of the left side of the body with index finger pointing toward left and palm facing down. Move the hand, sharply, toward right, index finger will point up and palm will face down.

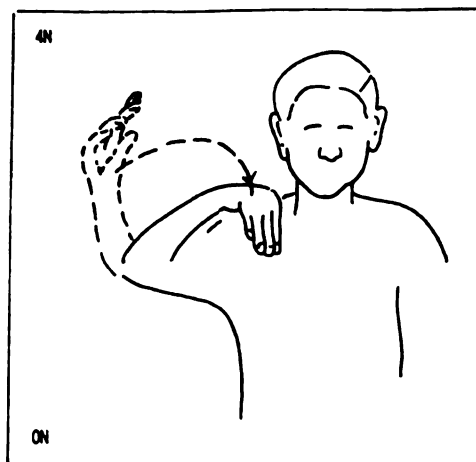
**ORIGIN:** Common usage of NO (NOT).

**EXAMPLE:** I am NOT hungry.

**SIGN DESCRIPTION:** Same as 3N

**ORIGIN:** Same as 3N.

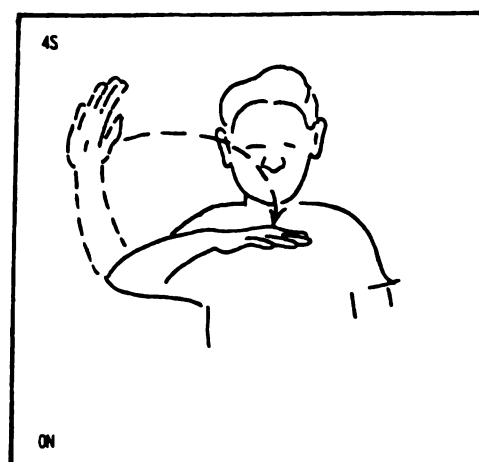
**EXAMPLE:** I do NOT forget to do my homework.

Older Subject's SignsConceptYounger Subject's Signs

**SIGN DESCRIPTION:** Move the right hand from the right side of the head down in front of the right shoulder while bringing the fingertips together pointing down.

**ORIGIN:** Putting something ON something.

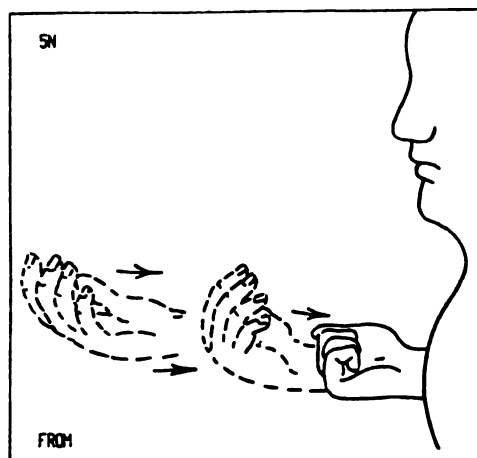
**EXAMPLE:** The glass is ON the table.



**SIGN DESCRIPTION:** Move the right hand from the right side of the head down just under the chin level with flat palm facing down, fingertips pointing left.

**ORIGIN:** Putting something ON something else.

**EXAMPLE:** The hat is ON the head.

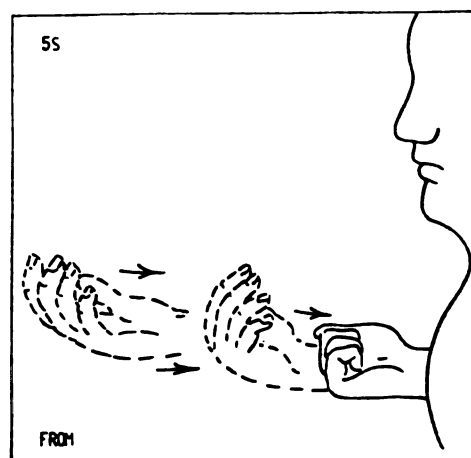


FROM

**SIGN DESCRIPTION:** Stretch the right hand in front of the body with palm facing up, draw it back toward the body while curling the fingers inward.

**ORIGIN:** Getting something FROM someone.

**EXAMPLE:** I take the car's key FROM my sister.

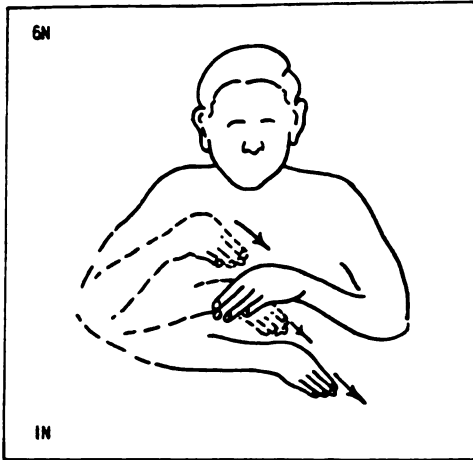


**SIGN DESCRIPTION:** Same as 5N.

**ORIGIN:** Same as 5N.

**EXAMPLE:** I took the pencil FROM Ali.\*

\*Note: Ali is one of the subject's classmates.

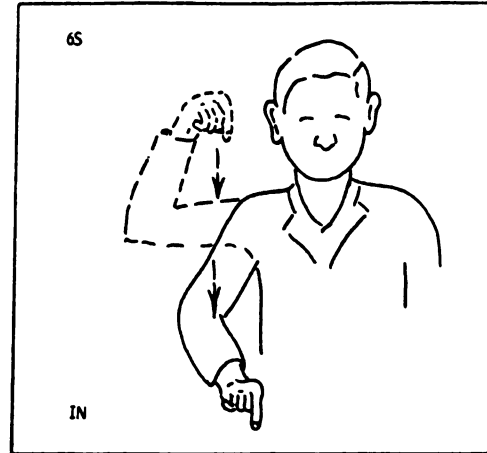
Older Subject's SignsConceptYounger Subject's Signs

IN

**SIGN DESCRIPTION:** Place the left hand in front of the body with palm facing down. Move the right hand toward left in a crosswise manner under the left hand with palm facing down.

**ORIGIN:** Putting something INTO something else.

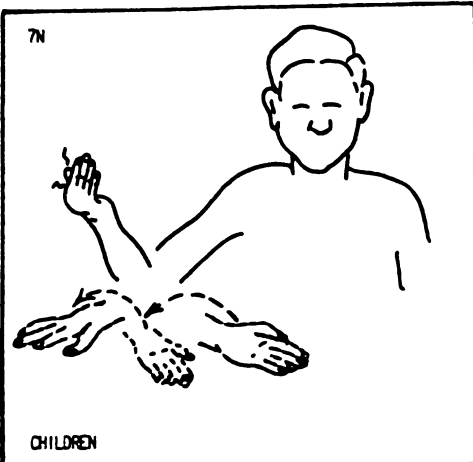
**EXAMPLE:** The clothes are IN the closet.



**SIGN DESCRIPTION:** Move the right index finger (pointing down) straight downward.

**ORIGIN:** Pointing INSIDE.

**EXAMPLE:** My books are IN my desk.

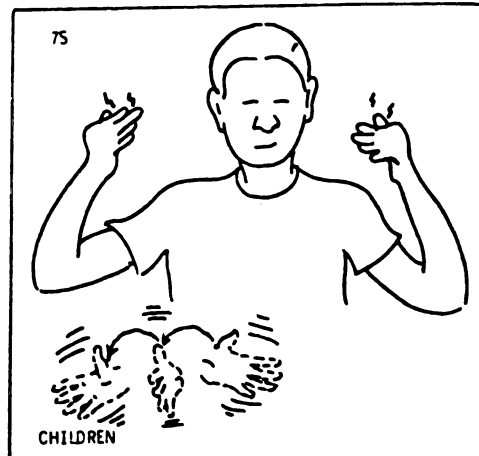


CHILDREN

**SIGN DESCRIPTION:** Place the right palm (facing down) to the level of the waist. Move it from left to right in stages. Then add the "many" sign.

**ORIGIN:** Tapping the CHILDREN heads.

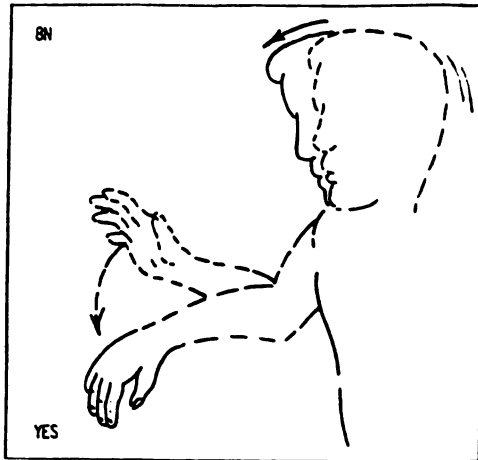
**EXAMPLE:** The CHILDREN play in the street.



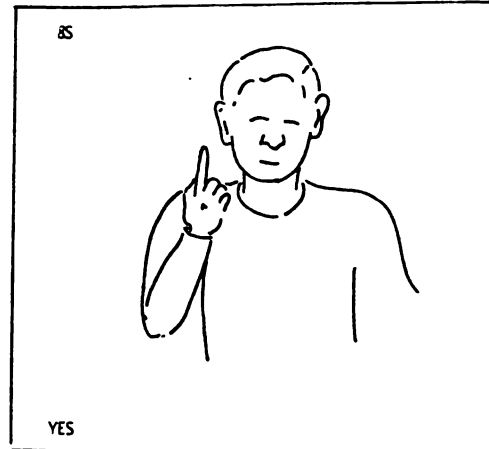
**SIGN DESCRIPTION:** Move the right hand from left to right in stages with palm facing left, then add the "many" sign.

**ORIGIN:** Showing the small stature of children.

**EXAMPLE:** There are many CHILDREN in this school.

Older Subject's SignsConceptYounger Subject's Signs

YES



**SIGN DESCRIPTION:** Move the right hand (palm facing down) downward in a firm manner while nodding the head slightly forward.

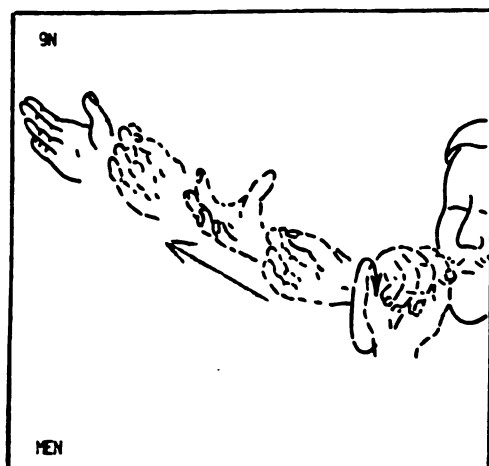
**ORIGIN:** The movement of the hand and head express and indicate acceptance.

**EXAMPLE:** When you understand what is said by someone you say YES.

**SIGN DESCRIPTION:** Hold up the right index finger with palm facing in.

**ORIGIN:** A motion used by hearing children to tell the teacher that they know the answer to his/her question and they are asking for his/her permission to answer the question.

**EXAMPLE:** We say YES in the classroom.

Older Subject's SignsConceptYounger Subject's Signs

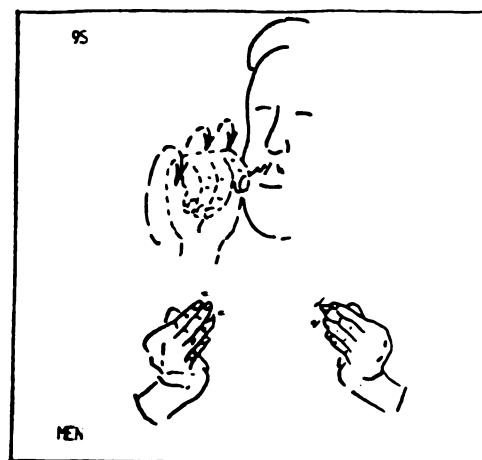
MEN

**SIGN DESCRIPTION:** Twist the right hand downward in a circle motion while holding the right side of the (presumed) moustach with the thumb and index finger. Then move the hand toward right (slightly up) while tapping the fingers of the "many" sign.

**ORIGIN:** MEN around have moustaches.

**EXAMPLE:** The MEN are building this house.\*

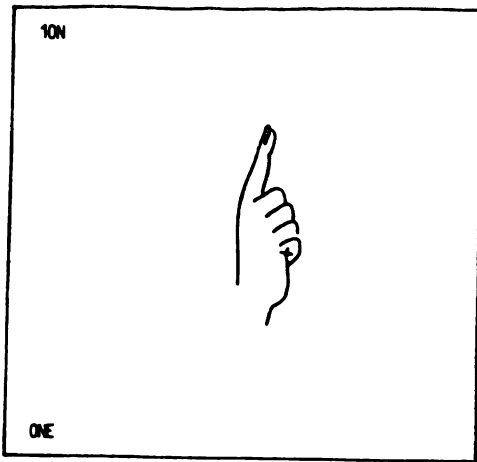
\*The subject pointed out to a new house nearby.



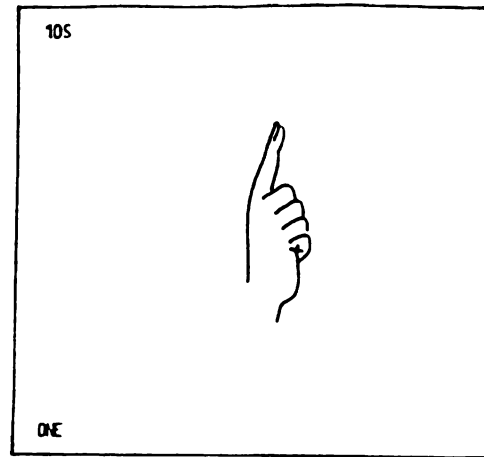
**SIGN DESCRIPTION:** Twist the right hand downward in a circle motion while holding the right side of the (presumed) moustach with the thumb and index finger. Then add the "many" sign.

**ORIGIN:** The MAN has moustach.

**EXAMPLE:** When I get older I will be a MAN.

Older Subject's SignsConceptYounger Subject's Signs

ONE



**SIGN DESCRIPTION:** Hold up the right index finger with palm facing inward.

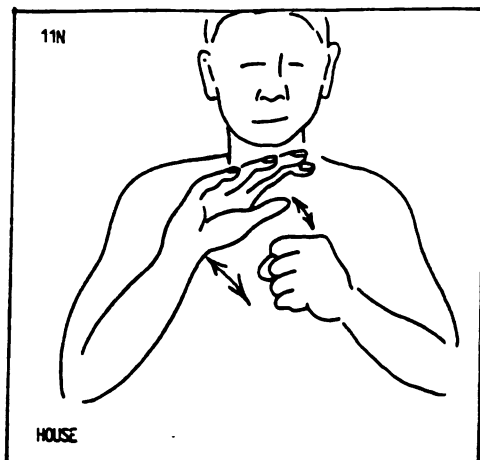
**ORIGIN:** One finger represents the numeral ONE.

**EXAMPLE:** We have ONE car.

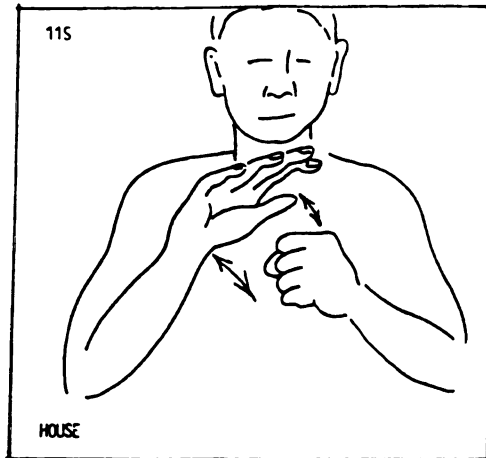
**SIGN DESCRIPTION:** Same as 10N.

**ORIGIN:** Same as 10N.

**EXAMPLE:** I have ONE piaster in my pocket.



HOUSE



**SIGN DESCRIPTION:** Tap the side (the thumb side) of the left fist with the right palm several times.

**ORIGIN:** Knocking the door of the house.

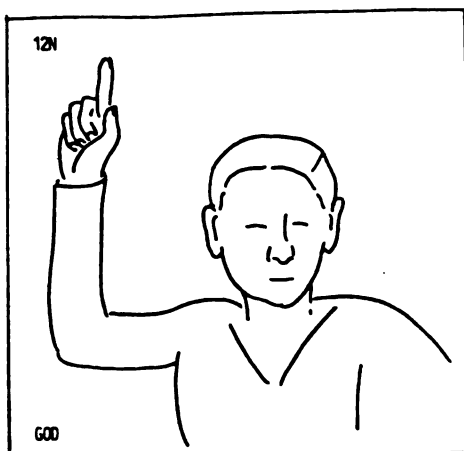
**EXAMPLE:** We live in a HOUSE.

**SIGN DESCRIPTION:** Same as 11N.

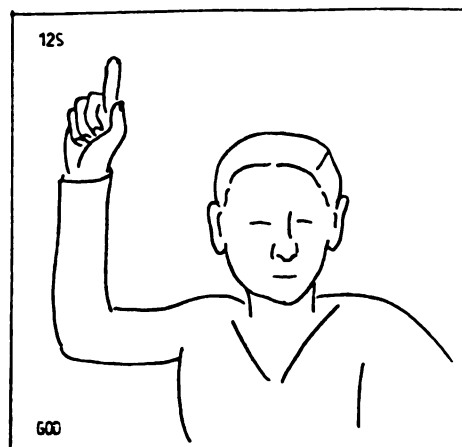
**ORIGIN:** Same as 11N.

**EXAMPLE:** HOUSES like those.\*

\*The subject pointed out some houses nearby.

Older Subject's SignsConceptYounger Subject's Signs

GOD



**SIGN DESCRIPTION:** Hold up the right index finger high with palm facing out.

**ORIGIN:** GOD is up.

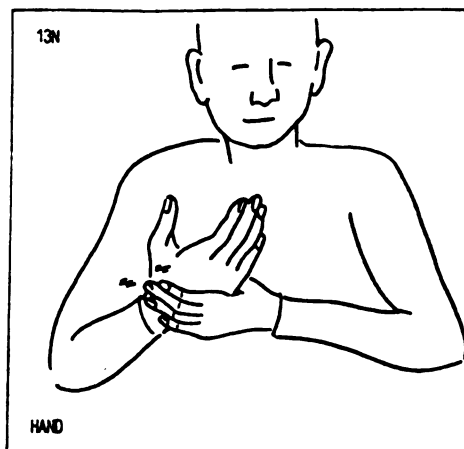
**EXAMPLE:** We pray to GOD.

\*Notice the difference between 8S, 10N, 10S, 12N, 12S.

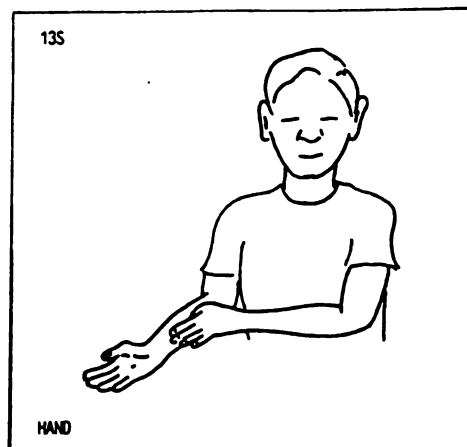
**SIGN DESCRIPTION:** Same as 12N.

**ORIGIN:** Same as 12N.

**EXAMPLE:** GOD is good.



HAND



**SIGN DESCRIPTION:** Hold the right hand with the left hand with palms facing up.

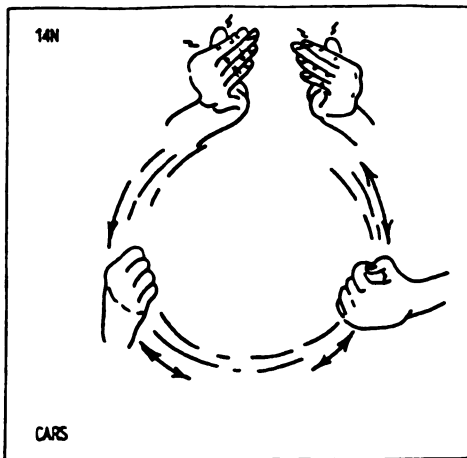
**ORIGIN:** Showing the HAND.

**EXAMPLE:** This is my HAND.

**SIGN DESCRIPTION:** Set the left fingers on the inside right forearm.

**ORIGIN:** Showing the HAND.

**EXAMPLE:** I use my HANDS to lift things.

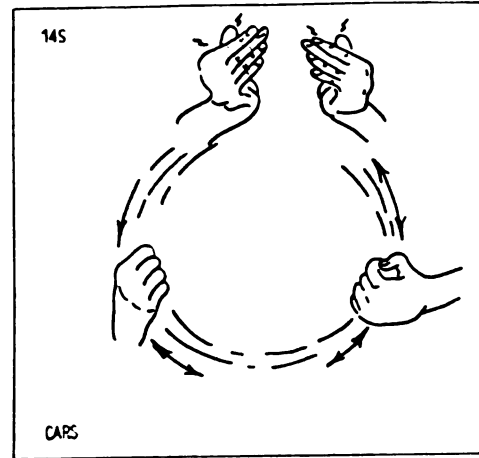
Older Subject's SignsConceptYounger Subject's Signs

CARS

**SIGN DESCRIPTION:** Move both hands up and down, alternately, in a circle motion as if driving a car, then add the "many" sign.

**ORIGIN:** Natural motion of driving a CAR.

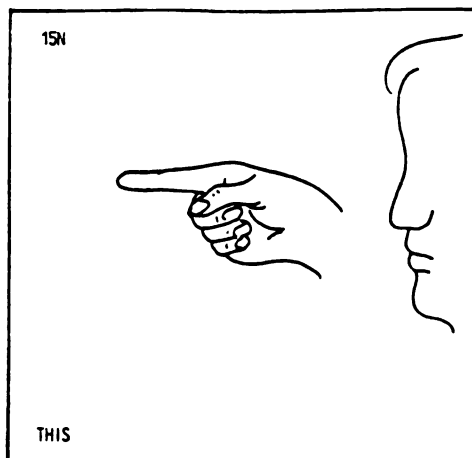
**EXAMPLE:** I can drive a CAR.



**SIGN DESCRIPTION:** Same as 14N.

**ORIGIN:** Same as 14N.

**EXAMPLE:** We have one CAR in the school.

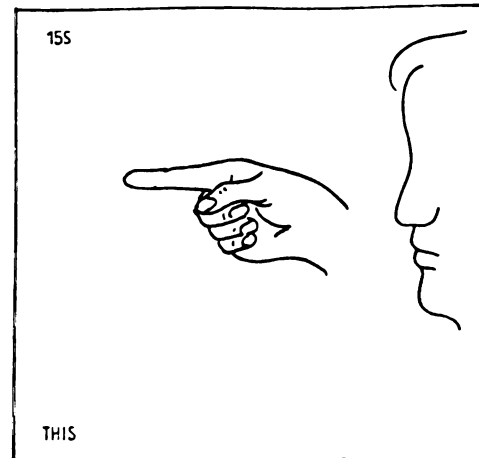


THIS

**SIGN DESCRIPTION:** Point right index finger forward with other fingers bent.

**ORIGIN:** Pointing to a specific object.

**EXAMPLE:** THIS is our house.



**SIGN DESCRIPTION:** \* Same as 15N.

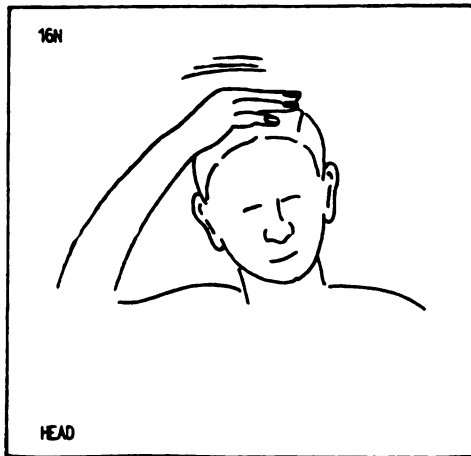
**ORIGIN:** Same as 15N.

**EXAMPLE:** THIS is your camera.\*\*

\*Notice the similarity with 1S "THE" sign.

\*\*The subject pointed to the research camera.



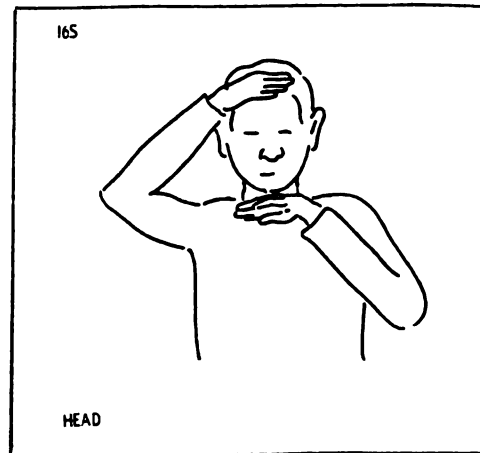
Older Subject's SignsConceptYounger Subject's Signs

HEAD

**SIGN DESCRIPTION:** Tap the head with the right palm.

**ORIGIN:** Showing the HEAD.

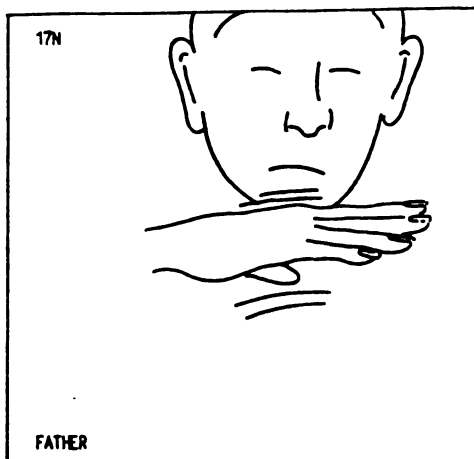
**EXAMPLE:** This is my HEAD.



**SIGN DESCRIPTION:** Place the right palm on the head and the back of the left hand under the chin.

**ORIGIN:** Showing the HEAD.

**EXAMPLE:** It is easier to clean the HEAD when the hair is short.

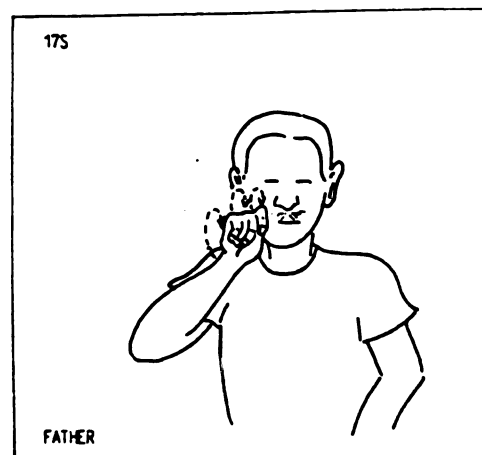


FATHER

**SIGN DESCRIPTION:** Place the side (forefinger side) of the right flat hand under the chin with palm facing down. Move the other side (little-finger side) of the hand slightly up and down several times.

**ORIGIN:** The FATHER has beard.

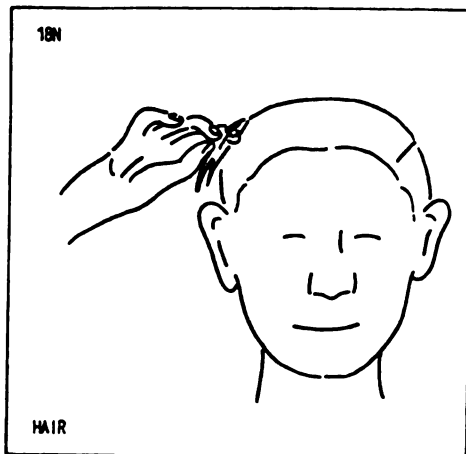
**EXAMPLE:** My FATHER is deceased.



**SIGN DESCRIPTION:** Twist the right hand downward in a circle motion while holding the right side of the (presumed) mustache with the thumb and index finger.

**ORIGIN:** FATHER has a moustach.

**EXAMPLE:** My FATHER visits me on the weekend.

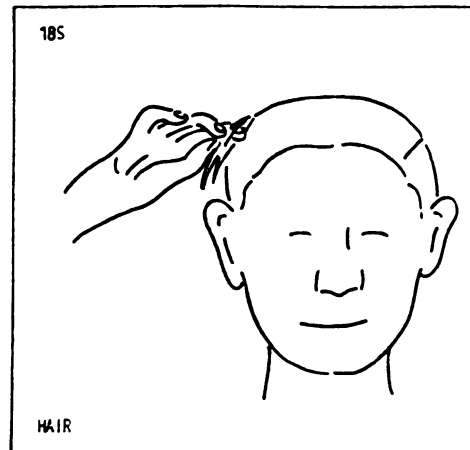
Older Subject's SignsConceptYounger Subject's Signs

HAIR

**SIGN DESCRIPTION:** Hold some HAIR with the right fingers.

**ORIGIN:** Showing the HAIR.

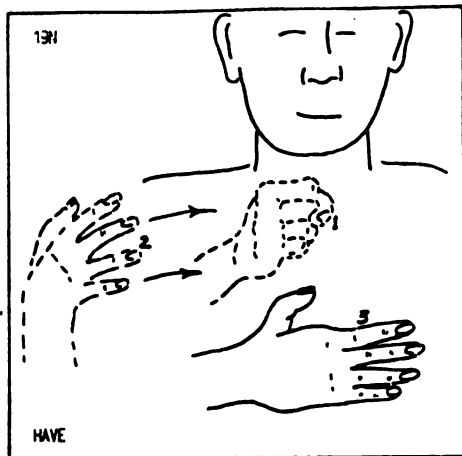
**EXAMPLE:** Your HAIR is black.



**SIGN DESCRIPTION:** Same as 18N.

**ORIGIN:** Same as 18N.

**EXAMPLE:** We get a HAIR cut every two weeks.

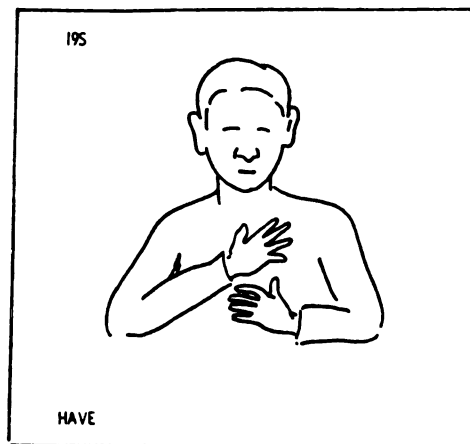


HAVE

**SIGN DESCRIPTION:** Move the right hand (palm facing left) from right to left while curling the fingers then place the palm on the abdomen.

**ORIGIN:** Getting something and HAVING it.

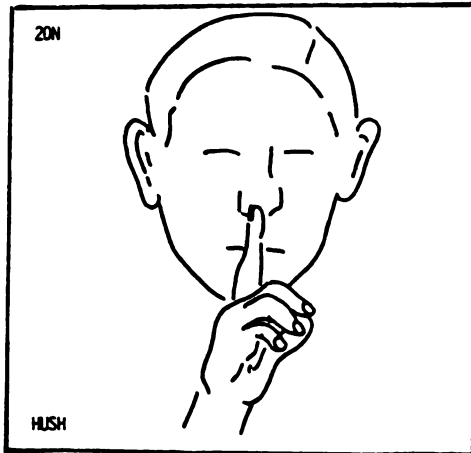
**EXAMPLE:** We HAVE a car.



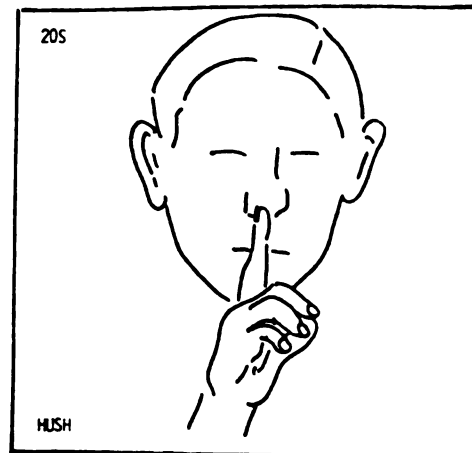
**SIGN DESCRIPTION:** Place both palms over the chest.

**ORIGIN:** Natural motion of owning (HAVING).

**EXAMPLE:** I HAVE two shoes.

Older Subject's SignsConceptYounger Subject's Signs

HUSH



**SIGN DESCRIPTION:** Place the right index finger against the mouth, palm facing left.

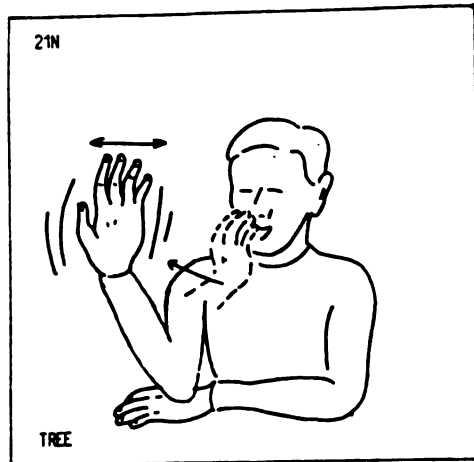
**ORIGIN:** Motion of asking someone to keep quiet.

**EXAMPLE:** People should be quiet when they go to visit someone in the hospital.

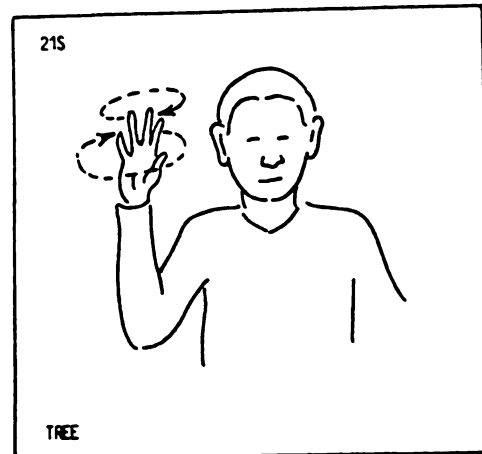
**SIGN DESCRIPTION:** Same as 20N.

**ORIGIN:** Same as 20N.

**EXAMPLE:** When we make noise the teacher says HUSH.

Older Subject's SignsConceptYounger Subject's Signs

TREE



**SIGN DESCRIPTION:** Set the right elbow on the back of the left hand, place the right hand on the nose and draw it forward (while opening the fingers) as if smelling. Then move the right hand right and left several times.

**ORIGIN:** TREE smells and its branches move right and left.

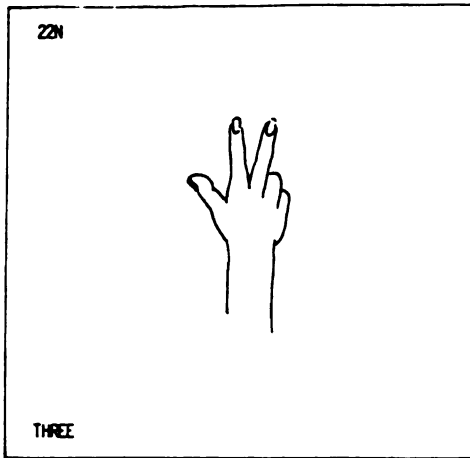
**EXAMPLE:** This is a TREE.\*

\*The subject pointed to a tree in the house yard.

**SIGN DESCRIPTION:** Hold up the right hand (fingers separated) and twist it in a circle motion several times.

**ORIGIN:** The movements of the TREE branches.

**EXAMPLE:** We have many TREES in the school.

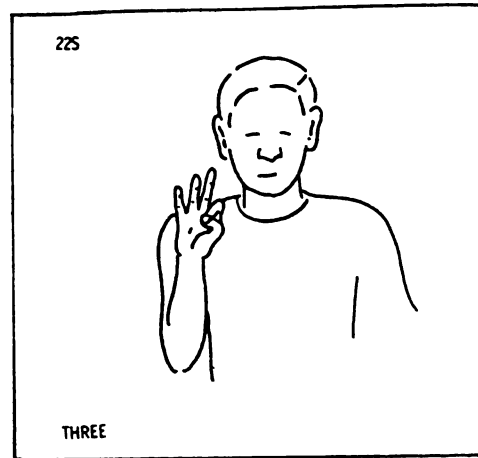
Older Subject's SignsConceptYounger Subject's Signs

THREE

**SIGN DESCRIPTION:** Hold up the right thumb, index and middle fingers with palm facing in.

**ORIGIN:** The three fingers represent the numeral THREE.

**EXAMPLE:** There are THREE rooms in our house.

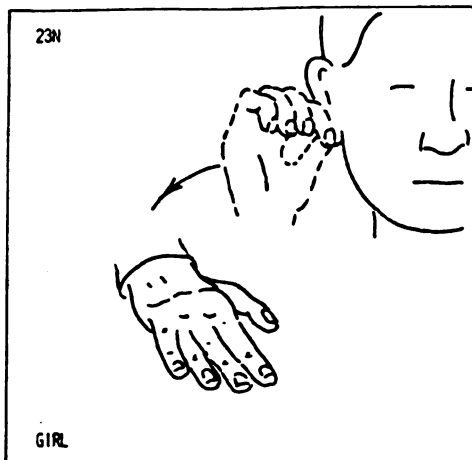


**SIGN DESCRIPTION:** Hold up the right middle, ring, and little fingers with palm facing out.

**ORIGIN:** The three fingers represent the numeral THREE.

**EXAMPLE:** We are THREE.\*

\*The subject pointed to me, the interpreter and himself.

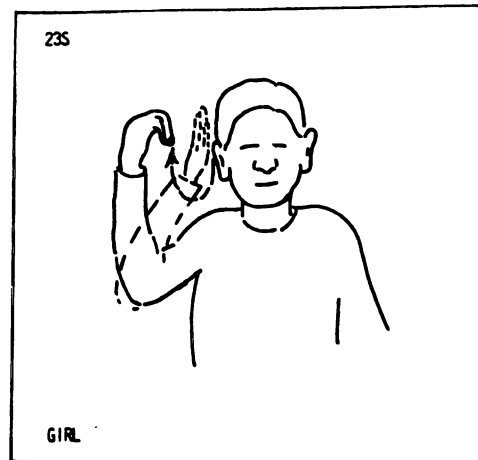


GIRL

**SIGN DESCRIPTION:** Hold the lobe of the right ear with the right thumb and index finger. Then move the hand down to the abdomen level with palm facing down.

**ORIGIN:** The person who puts on earrings and has small stature is a GIRL.

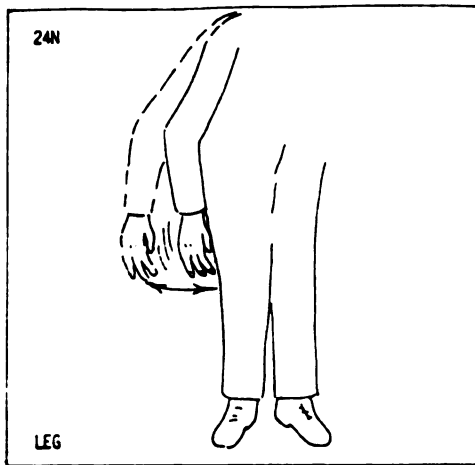
**EXAMPLE:** My sister is a GIRL.



**SIGN DESCRIPTION:** Hold up the right palm across the right cheek. Draw it down, then up in a half circle motion.

**ORIGIN:** Showing the hair of the GIRL.

**EXAMPLE:** There are GIRLS in the school.

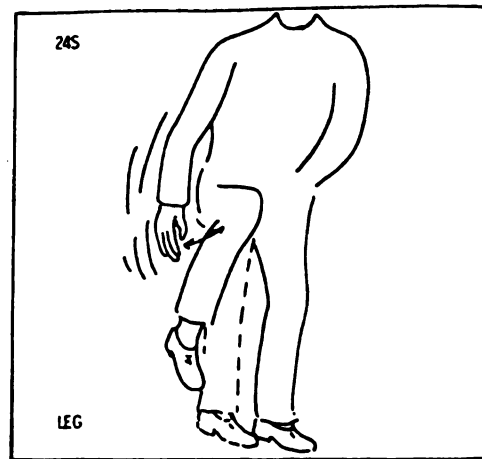
Older Subject's SignsConceptYounger Subject's Signs

LEG

**SIGN DESCRIPTION:** Tap the outside of the right leg with the right palm several times.

**ORIGIN:** Showing the LEG.

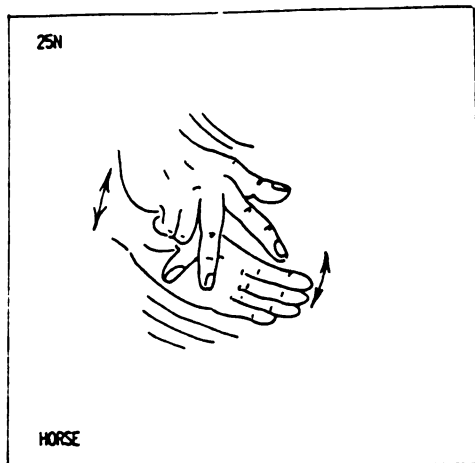
**EXAMPLE:** I have two LEGS.



**SIGN DESCRIPTION:** Lift your right leg slightly up, then tap it from outside with the right palm several times.

**ORIGIN:** Showing the LEG.

**EXAMPLE:** We use our LEGS to walk.

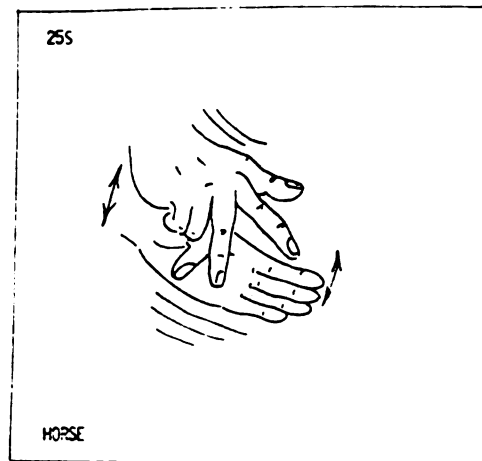


HORSE

**SIGN DESCRIPTION:** Place the separation of the right index and middle fingers on the side of the left hand (forefinger side) with left palm facing right. Move both hands up and down as if riding a horse.

**ORIGIN:** The motion shows a HORSE riding.

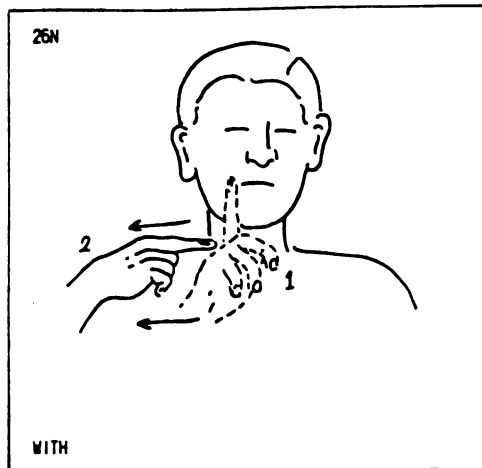
**EXAMPLE:** I can ride a HORSE.



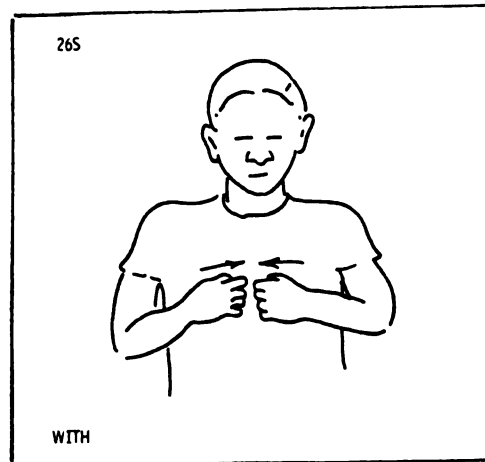
**SIGN DESCRIPTION:** Same as 25N.

**ORIGIN:** Same as 25N.

**EXAMPLE:** HORSES are big.

Older Subject's SignsConceptYounger Subject's Signs

WITH



**SIGN DESCRIPTION:** Same as the subject's sign of the Arabic letters "meem" and "ään" respectively.

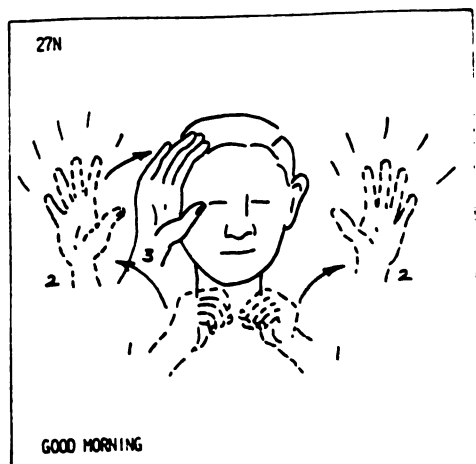
**ORIGIN:** "ma" in Arabic means "WITH". The phoneme consists of two Arabic letters "meem" + "ään". The first sign represents the letter "meem", the second sign represents the letter "ään".

**EXAMPLE:** I live WITH my family.

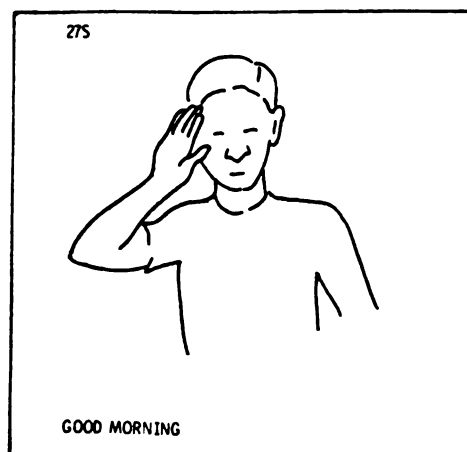
**SIGN DESCRIPTION:** Bring both fists against each other in front of the body.

**ORIGIN:** A hand WITH another one.

**EXAMPLE:** When we go shopping we have to stay WITH the teacher.

Older Subject's SignsConceptYounger Subject's Signs

GOOD  
MORNING



**SIGN DESCRIPTION:** Place both hands (slightly bent with palms facing down) in front of the body, move both hands up to the sides while separating the fingers (palms will face out). Then place the right hand on the right side of the head as if saluting.

**ORIGIN:** The motions indicate the salutation (greeting) when the sun rises in the morning.

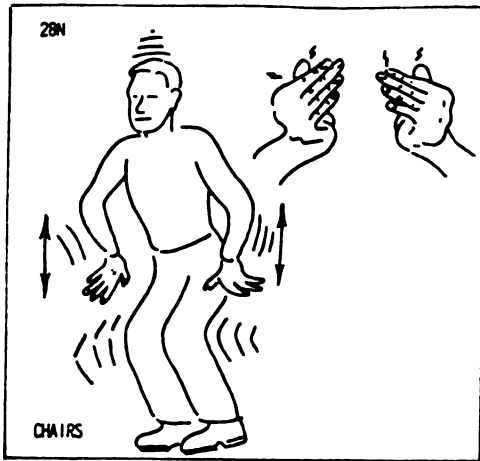
**EXAMPLE:** When we wake up in the morning we say GOOD MORNING.

**SIGN DESCRIPTION:** Place the right hand on the right side of the head as if saluting.

**ORIGIN:** Motion of salutation (Greeting).

**EXAMPLE:** When we say hi in the morning.



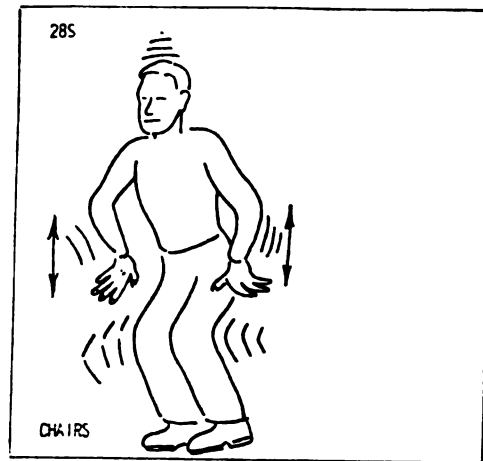
Older Subject's SignsConceptYounger Subject's Signs

CHAIRS

**SIGN DESCRIPTION:** Squat, slightly, several times with palms facing down as if holding the chair's hands. Then add the "many" sign.

**ORIGIN:** Motion of sitting in a CHAIR.

**EXAMPLE:** When I feel tired I sit in the CHAIR.

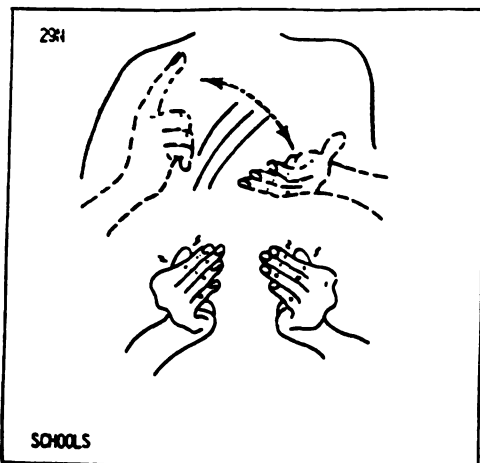


**SIGN DESCRIPTION:** Same as 28N.\*

**ORIGIN:** Same as 28N

**EXAMPLE:** There are many CHAIRS in the classroom.

\*The subject did not add the "many" sign.

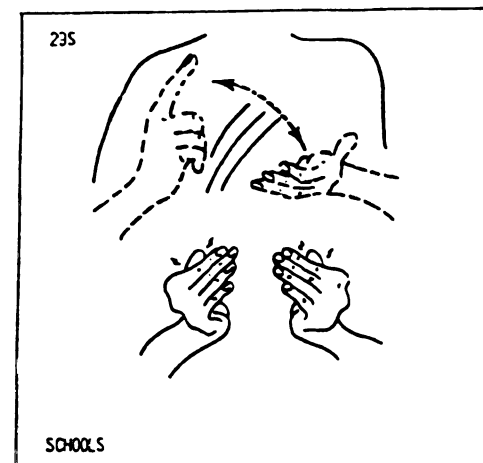


SCHOOLS

**SIGN DESCRIPTION:** Strike the right index finger into the left palm several times. Then add the "many" sign.

**ORIGIN:** The motion indicates a stick that is used to punish the children in the SCHOOLS.

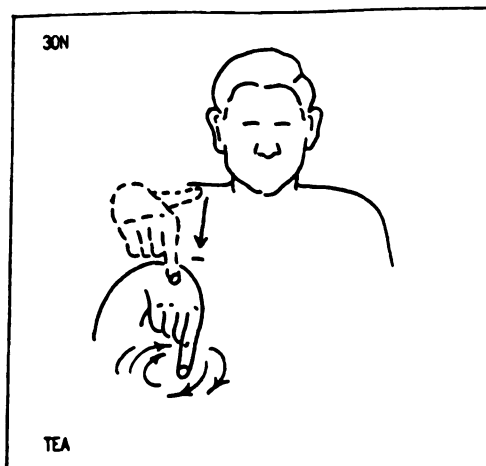
**EXAMPLE:** Children go to SCHOOLS.



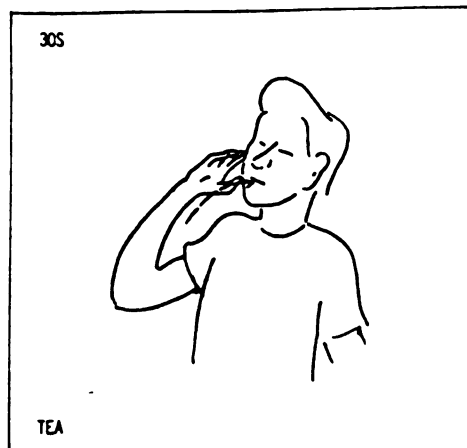
**SIGN DESCRIPTION:** Same as 29N.

**ORIGIN:** Same as 29N.

**EXAMPLE:** SCHOOLS are for learning.

Older Subject's SignsConceptYounger Subject's Signs

TEA



**SIGN DESCRIPTION:** Place the right hand in front of the right shoulder with palm facing in, index finger pointing down, thumb pointing left and other fingers bent. Move the hand slightly down and twist the index finger in a circle motion as if stirring the sugar in a glass of TEA.

**ORIGIN:** Holding a small glass of tea and stirring the sugar in it.

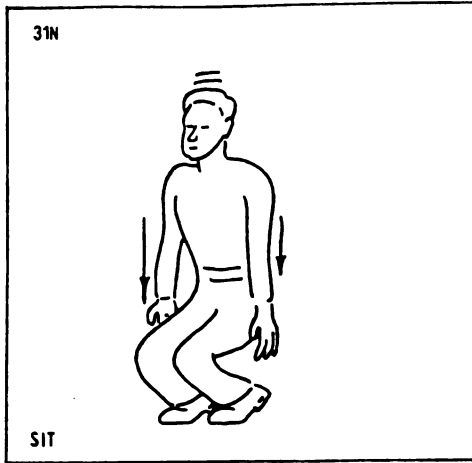
**EXAMPLE:** We drink TEA with breakfast.

**SIGN DESCRIPTION:** Cup the right hand as if holding a glass\* between the thumb and the other fingers. Move the hand toward the mouth as if drinking.

**ORIGIN:** Natural sign of drinking.

**EXAMPLE:** We drink TEA with breakfast.

\*In Jordan, the common way to drink tea is from small juice size glasses.

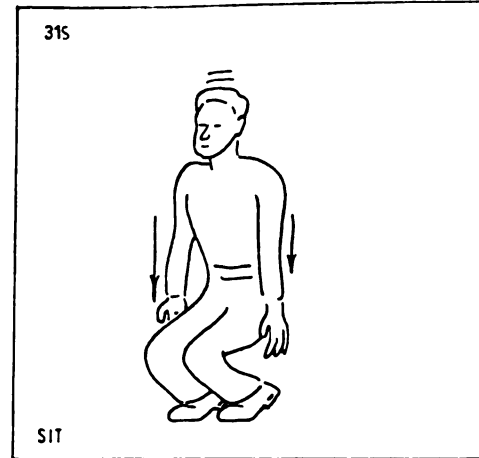
Older Subject's SignsConceptYounger Subject's Signs

SIT

**SIGN DESCRIPTION:** Squat as if sitting.

**ORIGIN:** Natural motion of sitting.

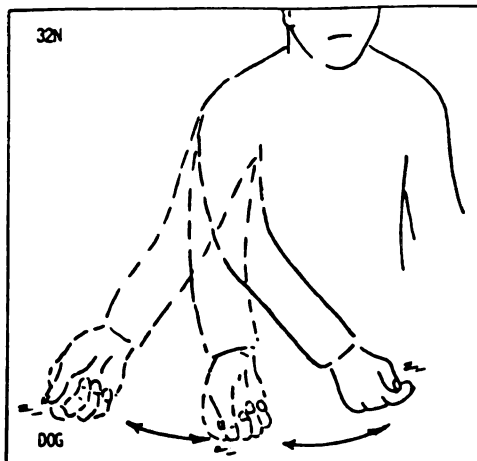
**EXAMPLE:** When we feel tired we SIT down.



**SIGN DESCRIPTION:** Same as 31N.

**ORIGIN:** Same as 31N.

**EXAMPLE:** We SIT down at our desks in the class-room.

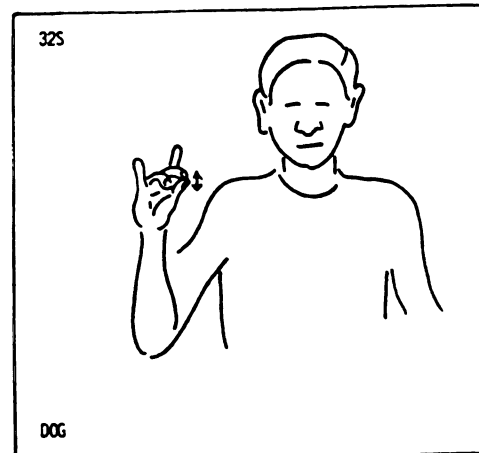


DOG

**SIGN DESCRIPTION:** Stretch the right hand down, swing it left and right several times while tapping the thumb and the first two fingers together (palm facing out).

**ORIGIN:** Familiar sign for calling or playing with the DOG.

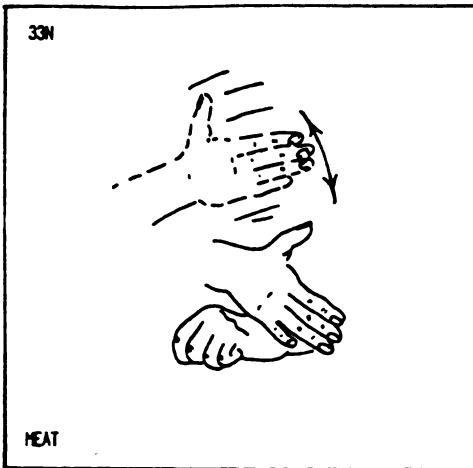
**EXAMPLE:** The DOG is loyal guard.



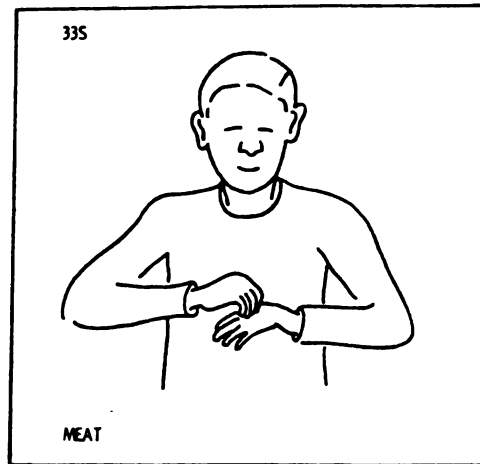
**SIGN DESCRIPTION:** Hold up the right hand with index and little finger pointing up and palm facing out, tap the thumb and the middle two fingers together.

**ORIGIN:** The motion represents the DOG barking.

**EXAMPLE:** Our school principal has a DOG.

Older Subject's SignsConceptYounger Subject's Signs

MEAT



MEAT

**SIGN DESCRIPTION:** Chop the open right hand up and down over the back of the left fist several times.

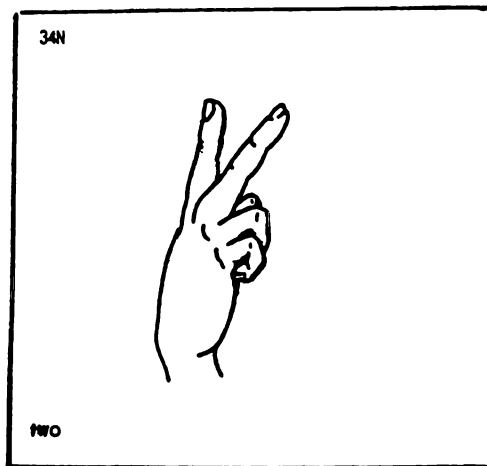
**ORIGIN:** As if cutting a piece of meat with a butcher's knife.

**EXAMPLE:** MEAT is expensive.

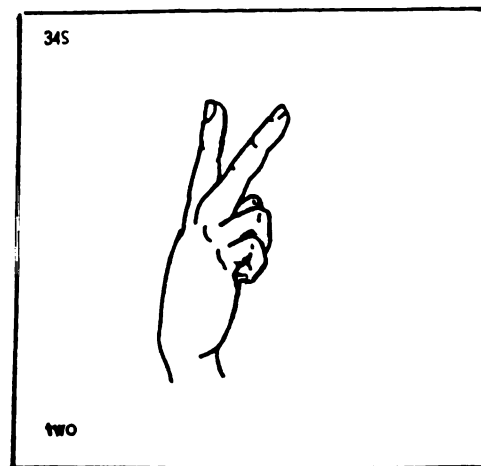
**SIGN DESCRIPTION:** Lift up the skin on the back side of the left hand with right thumb and fingers.

**ORIGIN:** Showing the MEAT of the hand.

**EXAMPLE:** We often eat MEAT for dinner.



TWO



TWO

**SIGN DESCRIPTION:** Hold up the right index and middle fingers (separated) with palm facing in.

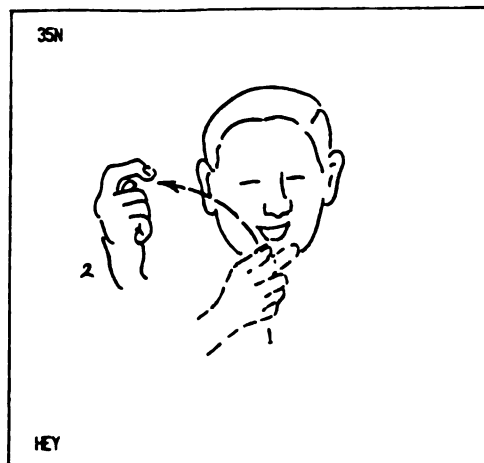
**ORIGIN:** Two fingers represent the numeral TWO.

**EXAMPLE:** I ate TWO eggs today.

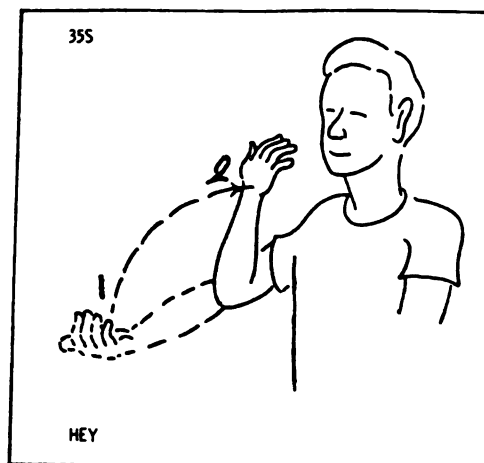
**SIGN DESCRIPTION:** Same as 34N.

**ORIGIN:** Same as 34N.

**EXAMPLE:** I have TWO brothers.

Older Subject's SignsConceptYounger Subject's Signs

HEY



**SIGN DESCRIPTION:** Same as the subject's sign of the Arabic letter "yeh", then extend the hand toward right.

**ORIGIN:** "Ya" in Arabic means "hey". The phoneme consists of the Arabic letter "yeh" (while it is drawn out). The first sign represents the letter "yeh", the motion represents drawing it out.

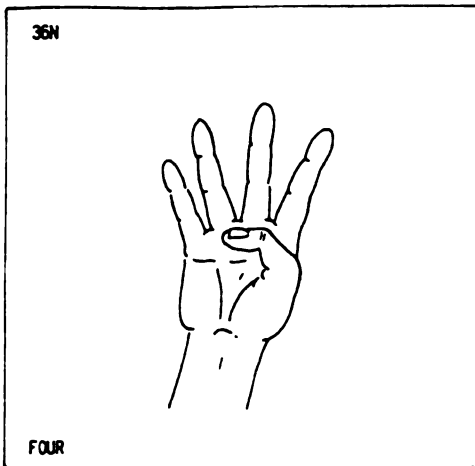
**EXAMPLE:** See the following note.

**NOTE:** The subject explained through the interpreter that he learned in the school that this sign is used to call someone but he never used or needed it.

**SIGN DESCRIPTION:** Stretch the right hand in front of the body with fingers, slightly bent with palm facing up. Move the forearm straight back toward the body.

**ORIGIN:** As if calling someone to come over.

**EXAMPLE:** When the teacher calls one of us he says "HEY".

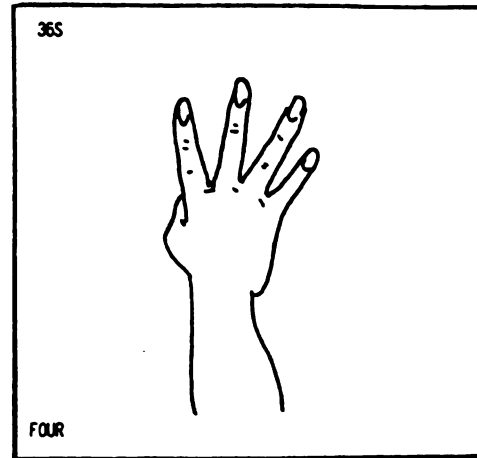
Older Subject's SignsConceptYounger Subject's Signs

FOUR

**SIGN DESCRIPTION:** Hold up the right four fingers (separated) except the thumb which is bent inward, palm facing out.

**ORIGIN:** Four fingers represent the numeral FOUR.

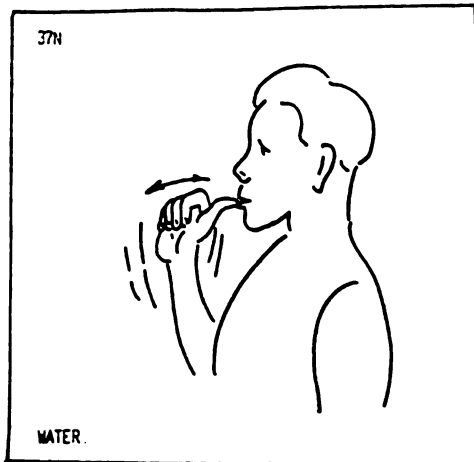
**EXAMPLE:** I have FOUR sisters.



**SIGN DESCRIPTION:** Same as 36N except the palm is facing inward instead of outward.

**ORIGIN:** Same as 36N.

**EXAMPLE:** The car has FOUR wheels.

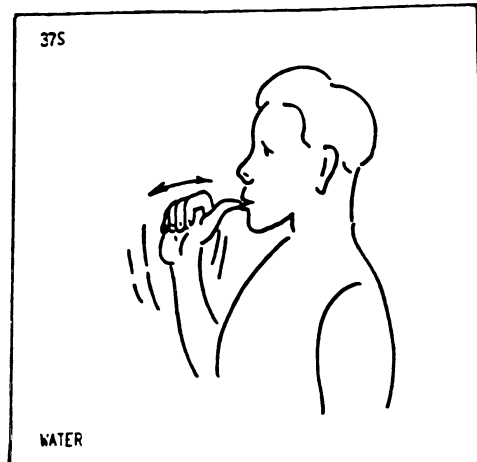


WATER

**SIGN DESCRIPTION:** Move the tip of the extended right thumb back and forth in front of the mouth as if drinking, other fingers bent, palm facing left.

**ORIGIN:** Natural sign of drinking WATER from a ceramic container.

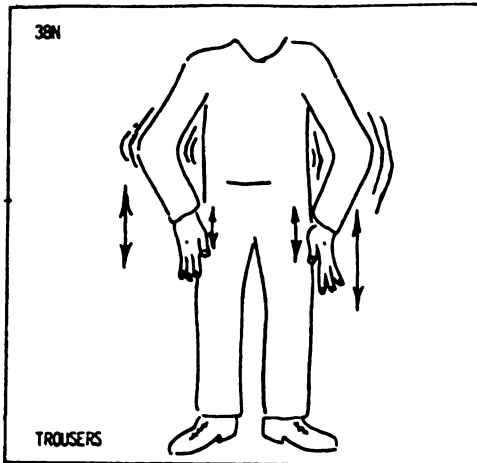
**EXAMPLE:** When we feel thirsty, we drink WATER.



**SIGN DESCRIPTION:** Same as 37N.

**ORIGIN:** Same as 37N.

**EXAMPLE:** If we want a drink of WATER we leave the classroom.

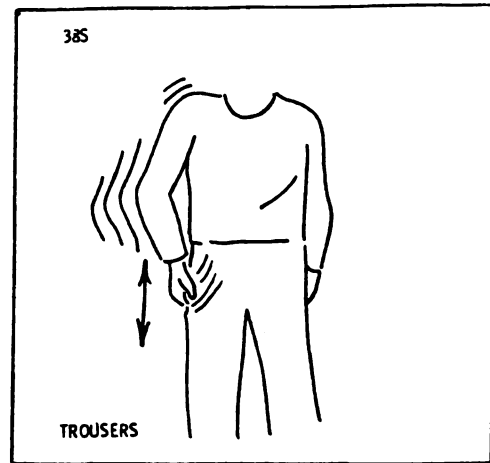
Older Subject's SignsConceptYounger Subject's Signs

TROUSERS

**SIGN DESCRIPTION:** Draw the palms up and down against the outsides of the thighs.

**ORIGIN:** Showing the TROUSERS.

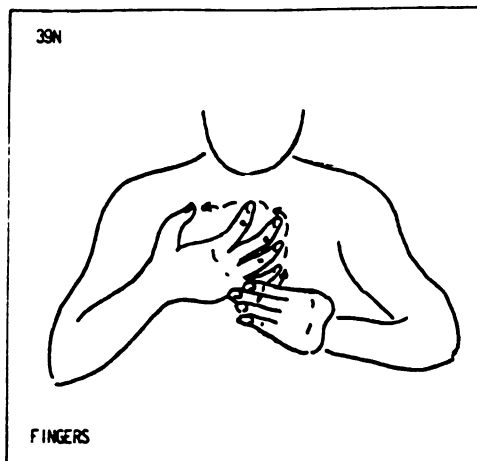
**EXAMPLE:** These are my TROUSERS.



**SIGN DESCRIPTION:** Pull the right side of the pants up and down with the right thumb and index finger.

**ORIGIN:** Showing the TROUSERS.

**EXAMPLE:** Our TROUSERS should be clean all the time.

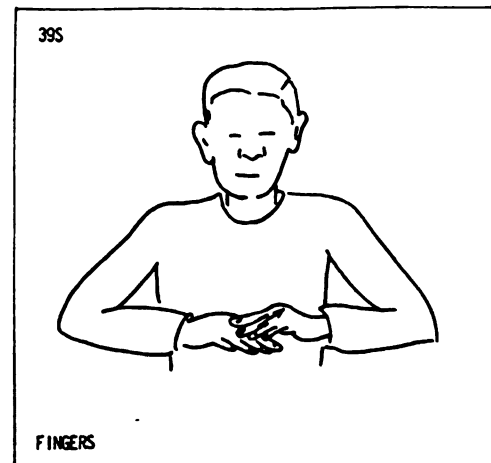


FINGERS

**SIGN DESCRIPTION:** Grasp the fingers of the right hand one by one (starting with the little finger) with the left hand.

**ORIGIN:** Showing the FINGERS.

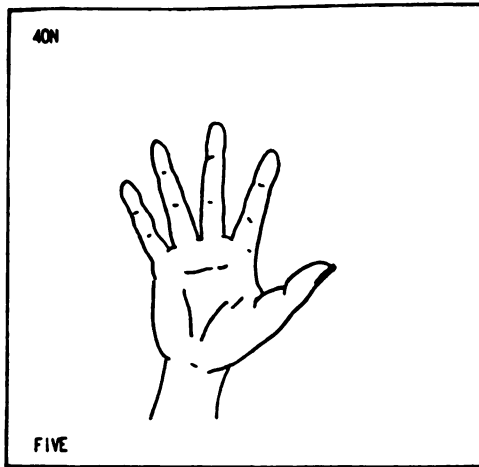
**EXAMPLE:** I use my FINGERS to grasp things.



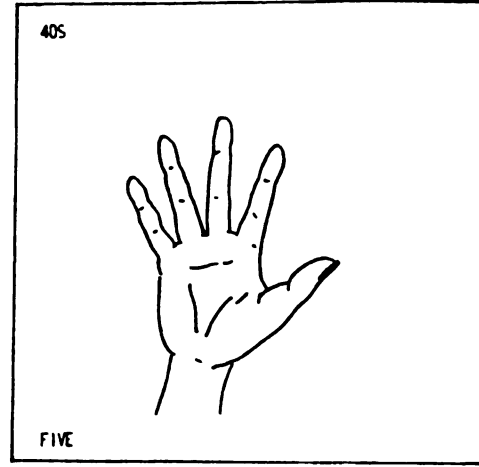
**SIGN DESCRIPTION:** Draw the left hand across the back of the right fingers.

**ORIGIN:** Showing the FINGERS.

**EXAMPLE:** Our FINGERS' nails should be cut every week.

Older Subject's SignsConceptYounger Subject's Signs

FIVE



**SIGN DESCRIPTION:** Hold up the right five fingers (separated) with palm facing out.

**ORIGIN:** Five fingers represent the numeral FIVE.

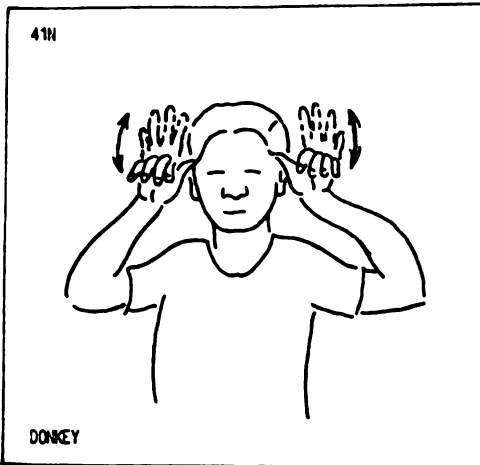
**EXAMPLE:** I have FIVE piasters in my pocket.

**SIGN DESCRIPTION:** Same as 40N.

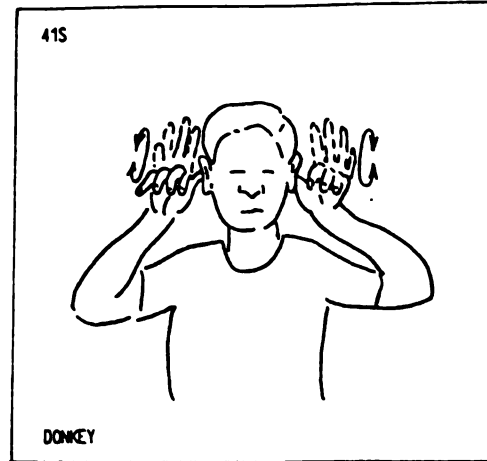
**ORIGIN:** Same as 40N.

**EXAMPLE:** We eat dinner at FIVE o'clock.



Older Subject's SignsConceptYounger Subject's Signs

DONKEY



**SIGN DESCRIPTION:** Place the tips of the thumbs on the temples, other fingers (separated) pointing up, palms facing out. Move the fingers down and up in a half circle motion several times.

**ORIGIN:** The DONKEY has long ears.

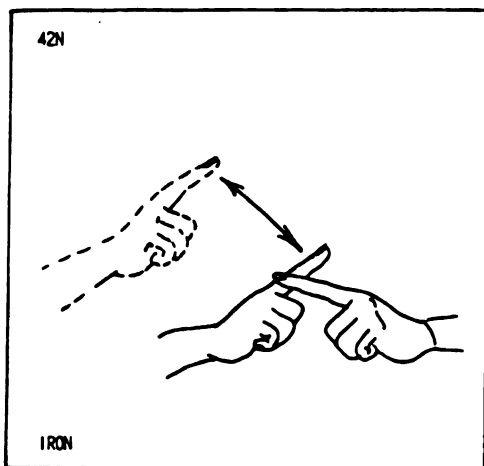
**EXAMPLE:** DONKEYS are used to carry heavy things.

**SIGN DESCRIPTION:** Place the tips of the thumbs behind the ears, other fingers (separated) toward up, palms facing out. Move the fingers down and up in a half circle motion several times.

**ORIGIN:** The DONKEY has long ears.

**EXAMPLE:** We see many DONKEYS passing by the school.\*

\*The school is located in a rural area.

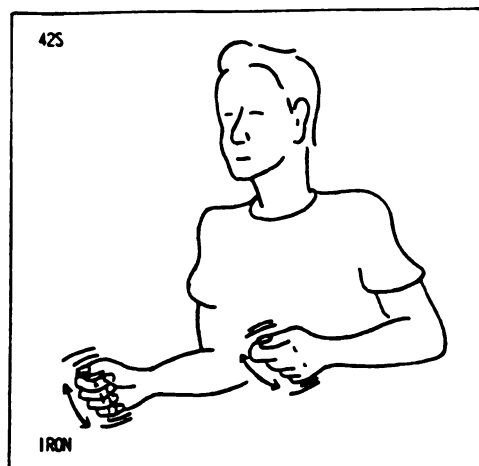
Older Subject's SignsConceptYounger Subject's Signs

IRON

**SIGN DESCRIPTION:** Strike the right index finger up and down across the left index finger.

**ORIGIN:** As if malleating the iron.

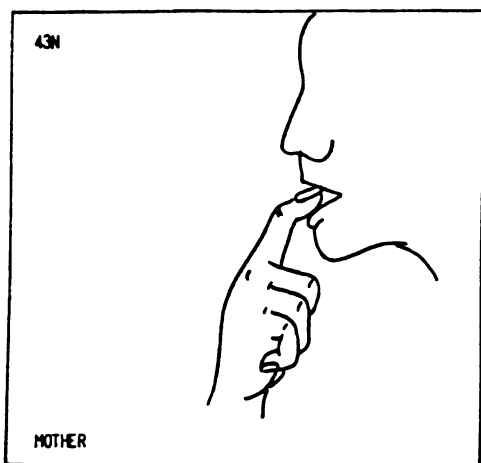
**EXAMPLE:** Big machines are made from IRON.



**SIGN DESCRIPTION:** Hold the fists in front of the body with palms facing each other and thumbs resting on the top of the fingers. Move the hands slightly up and down.

**ORIGIN:** Showing the roughness of the IRON.

**EXAMPLE:** We weld the IRON in the school workshop.

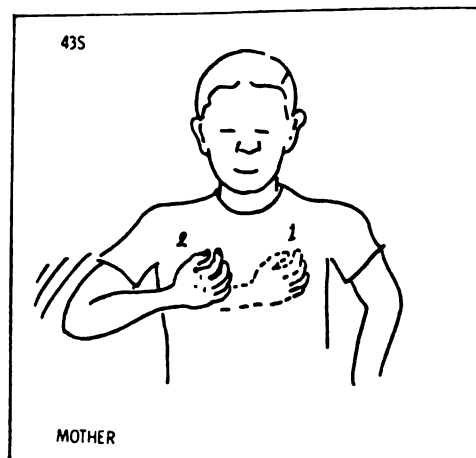
Older Subject's SignsConceptYounger Subject's Signs

MOTHER

**SIGN DESCRIPTION:** Put the tip of the crooked right index finger between the lips as if sucking.

**ORIGIN:** Motion of feeding the baby from the MOTHER's breast.

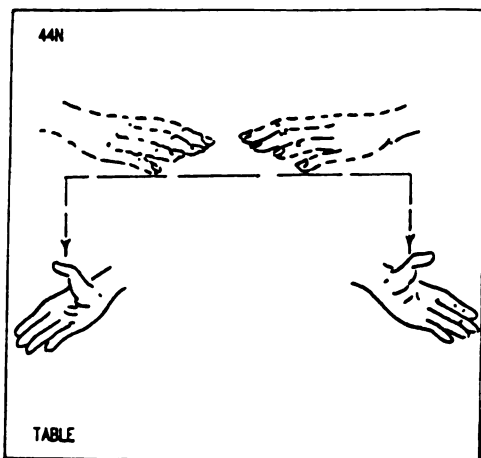
**EXAMPLE:** The MOTHER takes care of the house.



**SIGN DESCRIPTION:** Place the cupped right hand on the left breast then the right breast.

**ORIGIN:** MOTHERS have breasts.

**EXAMPLE:** MOTHERS love their children.

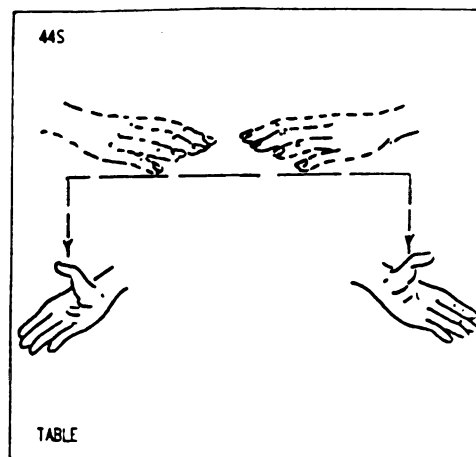


TABLE

**SIGN DESCRIPTION:** Place the flat hands with palms facing down in front of the body. Draw them straight to the sides by moving the right hand to the right and the left hand to the left. Then draw them straight down (palms will face each other).

**ORIGIN:** A shape of a TABLE.

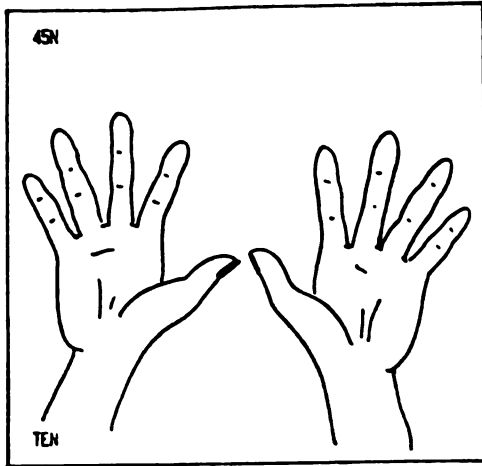
**EXAMPLE:** We eat on the TABLE.



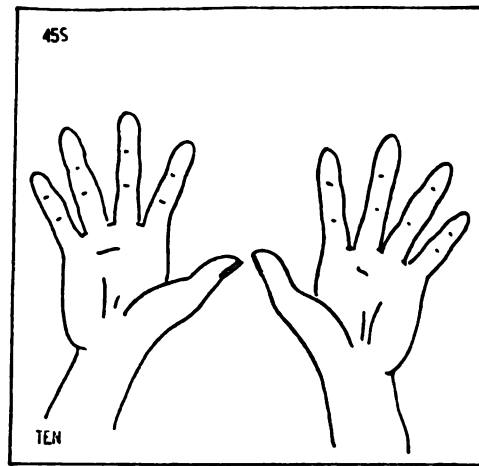
**SIGN DESCRIPTION:** Same as 44N.

**ORIGIN:** Same as 44N.

**EXAMPLE:** There is a teacher's TABLE in every classroom.

Older Subject's SignsConceptYounger Subject's Signs

TEN



**SIGN DESCRIPTION:** Hold up all fingers (separated) with palms facing out.

**ORIGIN:** The TEN fingers represent the numeral TEN.

**EXAMPLE:** TEN like this.\*

\*The subject showed a coin of ten piasters.

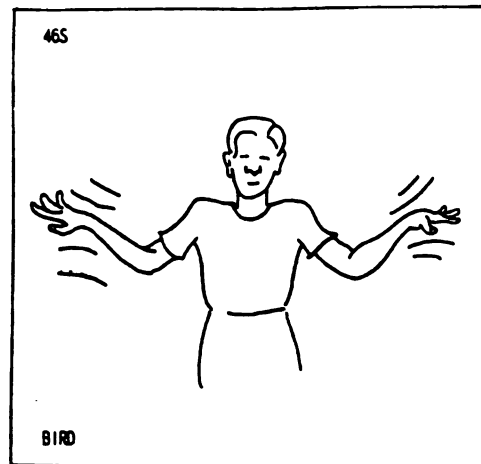
**SIGN DESCRIPTION:** Same as 45N.

**ORIGIN:** Same as 45N.

**EXAMPLE:** I have TEN fingers.



BIRD



**SIGN DESCRIPTION:** Move the fingers (slightly separated) up and down several times in front of the body, palms facing down. Then cup the right hand in front of the right side of the body with palm facing out and finger tips toward up.

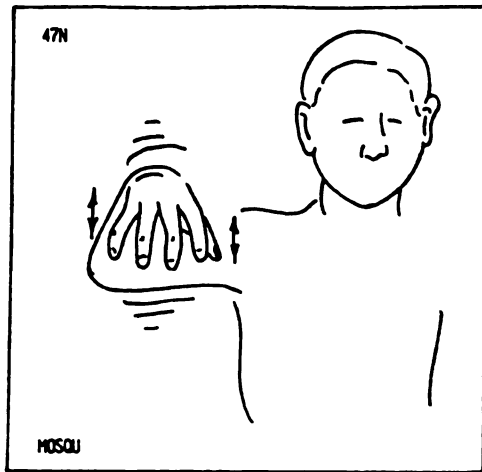
**ORIGIN:** A flying BIRD.

**EXAMPLE:** Our neighbor has a BIRD.

**SIGN DESCRIPTION:** Move both hands up and down at the sides of your body as if flying.

**ORIGIN:** Flying BIRD.

**EXAMPLE:** There are many BIRDS flying over the trees.

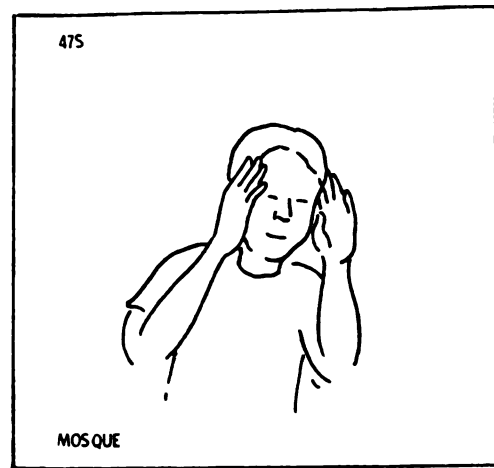
Older Subject's SignsConceptYounger Subject's Signs

MOSQUE

**SIGN DESCRIPTION:** Cup the right hand at the level of the shoulder with palm facing down. Move it slightly up and down.

**ORIGIN:** A shape of the mosque's dome.

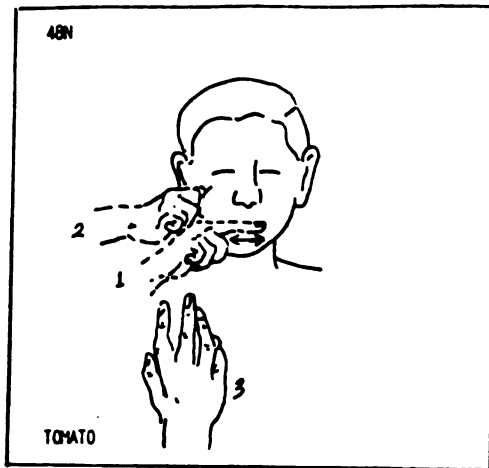
**EXAMPLE:** People pray in the MOSQUE.



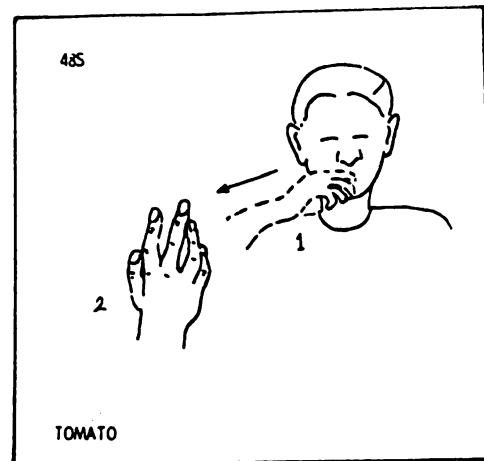
**SIGN DESCRIPTION:** Right palm is facing the right cheek and left palm is facing the left cheek with fingers tips up.

**ORIGIN:** Natural motion of praying in the MOSQUE.

**EXAMPLE:** People go to the MOSQUES to pray to God.

Older Subject's SignsConceptYounger Subject's Signs

TOMATO



**SIGN DESCRIPTION:** Move the right index finger (its tip toward left) right and left on the lips. Then use the same hand to hold the right cheek with the thumb and index finger. Then cup the same hand in front of the right side of the body (palm facing in, fingers toward up) as if holding a ball.

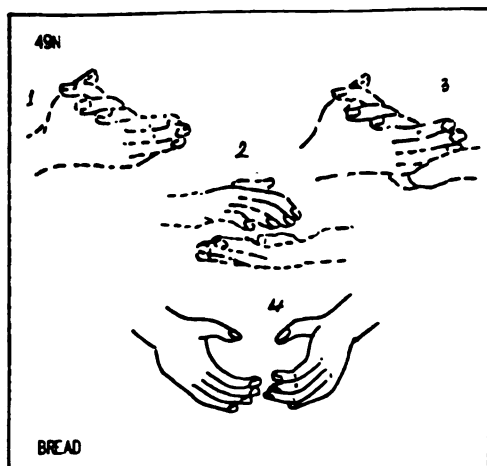
**ORIGIN:** Lips, cheeks and TOMATO are red.

**EXAMPLE:** TOMATO is expensive.

**SIGN DESCRIPTION:** Place the right hand close to the mouth as if eating a tomato. Then cup the hand as 48N.

**ORIGIN:** Motion of eating a TOMATO.

**EXAMPLE:** We eat cooked TOMATO often.

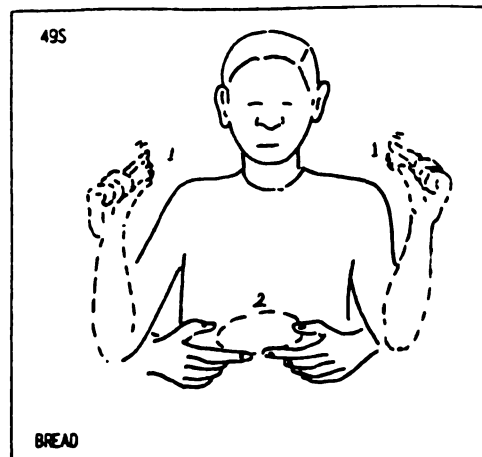
Older Subject's SignsConceptYounger Subject's Signs

BREAD

**SIGN DESCRIPTION:** Put palms over each other in a crosswise manner alternately several times, then make a circle shape with the thumbs and index fingers of both hands.

**ORIGIN:** Natural motion of flipping the dough of the pita BREAD.

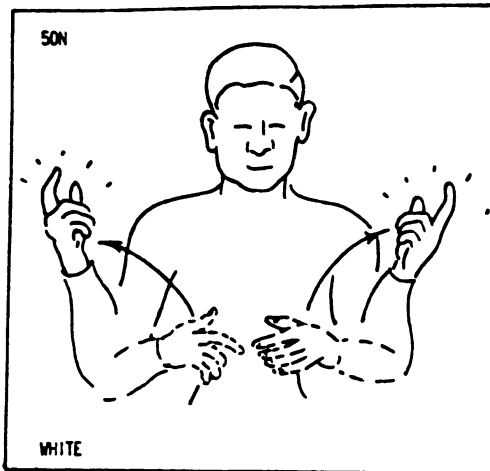
**EXAMPLE:** I eat BREAD with food.



**SIGN DESCRIPTION:** Place hands in front of the shoulders with palms out (slightly facing each other) tap the thumb and the index finger (of each hand) together, other fingers bent. Then form a circle as 49N.

**ORIGIN:** Showing the crumbs of the pita BREAD.

**EXAMPLE:** We should not throw the left over BREAD.

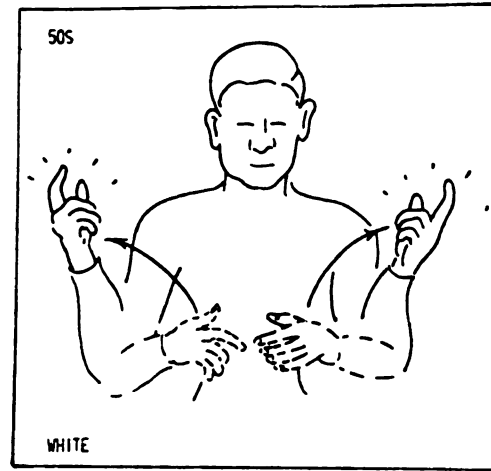
Older Subject's SignsConceptYounger Subject's Signs

WHITE

**SIGN DESCRIPTION:** Place both hands in front of the body (fingers half bent, palms facing in). Draw them up above the shoulders (the separated thumb and index finger toward up, other fingers bent).

**ORIGIN:** Motion of the brightness of WHITE.

**EXAMPLE:** I have WHITE shirt.

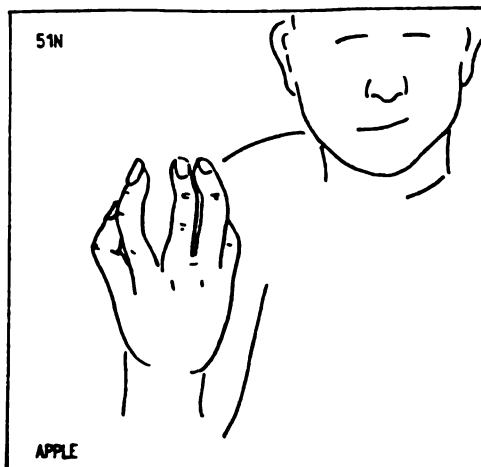


**SIGN DESCRIPTION:** Same as 50N.

**ORIGIN:** Same as 50N.

**EXAMPLE:** This car is WHITE.\*

\*The subject pointed to a white car in the school parking lot.

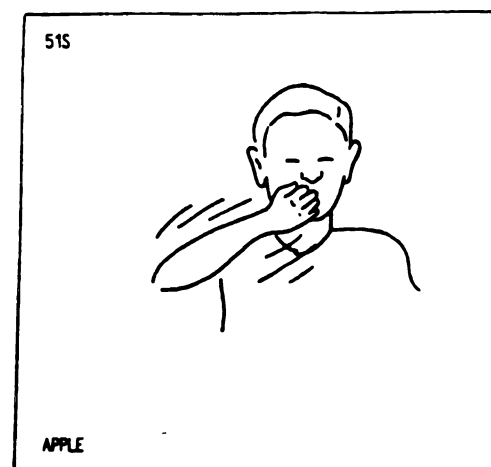


APPLE

**SIGN DESCRIPTION:** Cup the right hand in front of the right side of the body with palm facing in and fingers up.

**ORIGIN:** Holding and shaping an APPLE.

**EXAMPLE:** I like APPLES.

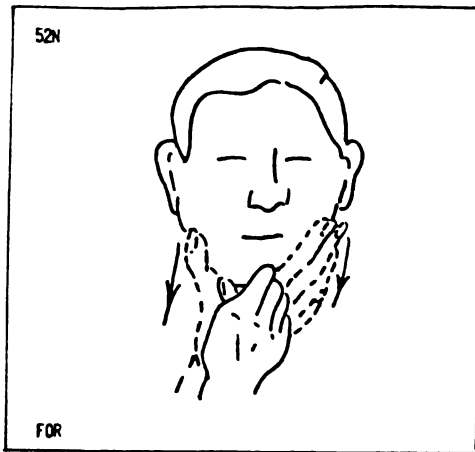


**SIGN DESCRIPTION:** Place the right hand close to the mouth as if eating an apple.

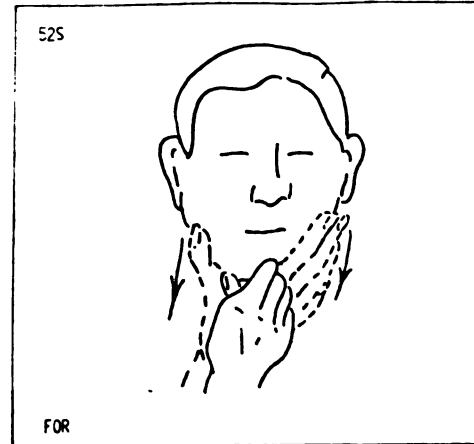
**ORIGIN:** Motion of eating an apple.

**EXAMPLE:** Each one gets one apple with dinner.



Older Subject's SignsConceptYounger Subject's Signs

FOR



**SIGN DESCRIPTION:** Hold both cheeks between the thumb and the other fingers of the right hand. Draw the hand down to the chin.

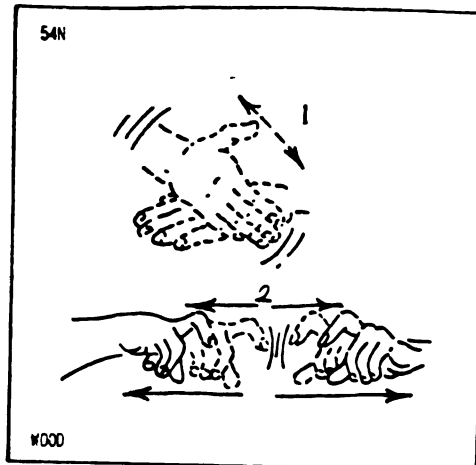
**ORIGIN:** Motion of respect for old and religious people who have beards.

**EXAMPLE:** My mother cooks for us.

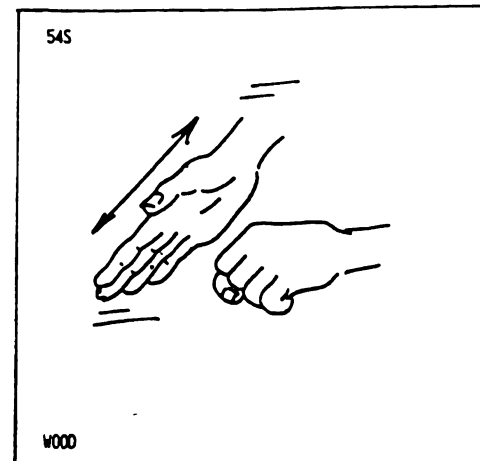
**SIGN DESCRIPTION:** Same as 52N.

**ORIGIN:** Same as 52N.

**EXAMPLE:** We do good things FOR God.

Older Subject's SignsConceptYounger Subject's Signs

WOOD



**SIGN DESCRIPTION:** Move the little fingerside of the right hand on the back of the left hand back and forth as if sawing. Then place both hands with palms facing down, thumb and index fingers (of each hand) forming 3/4 circle and other fingers bent. Move hands away from each other.

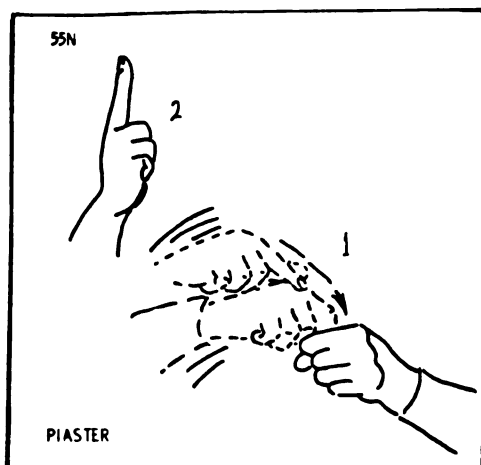
**ORIGIN:** Motion of sawing a piece of WOOD.

**EXAMPLE:** Some doors are made from WOOD.

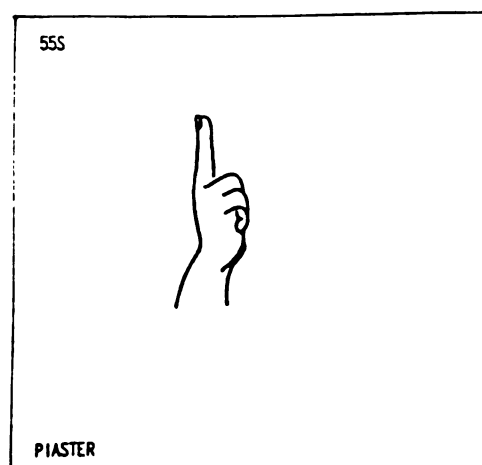
**SIGN DESCRIPTION:** Hold the left fist in front of the body with palm facing down. Move the right hand with palm facing left, down beside it as if sawing.

**ORIGIN:** As if sawing a piece of WOOD.

**EXAMPLE:** We make closets from the WOOD in the school workshop.

Older Subject's SignsConceptYounger Subject's Signs

PIASTER



**SIGN DESCRIPTION:** Place the index finger of the right hand (other fingers bent) inside the closed left hand. Then take it out and hold it up.

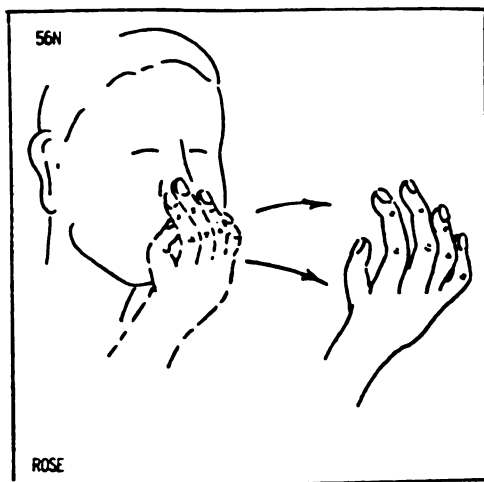
**ORIGIN:** Banking one PIASTER.

**EXAMPLE:** You can't buy anything with one PIASTER.

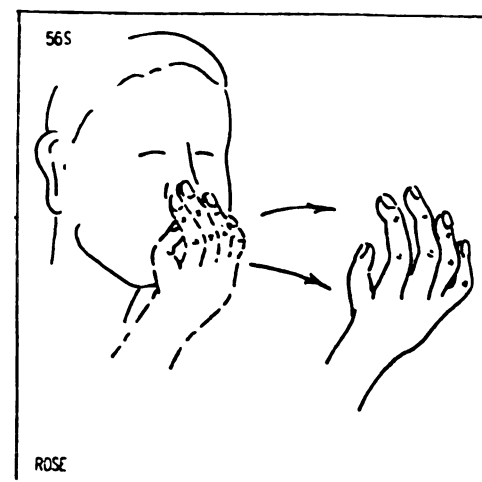
**SIGN DESCRIPTION:** Hold up the right index finger with palm facing left.

**ORIGIN:** Showing one PIASTER.

**EXAMPLE:** If we find one PIASTER on the floor we should give it to the teacher.



ROSE



**SIGN DESCRIPTION:** Bring the tips of the right fingers together on the nose. Draw them forward while opening the fingers.

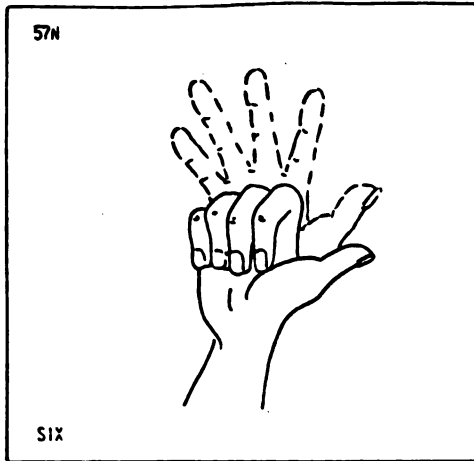
**ORIGIN:** Natural motion of smelling a ROSE.

**EXAMPLE:** ROSES are beautiful.

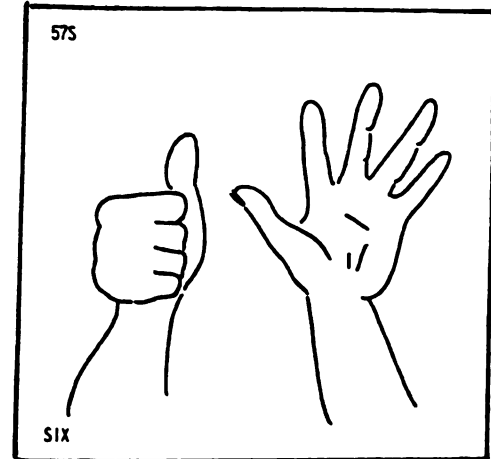
**SIGN DESCRIPTION:** Same as 56N.

**ORIGIN:** Same as 56N.

**EXAMPLE:** ROSES grow in Spring.

Older Subject's SignsConceptYounger Subject's Signs

SIX



**SIGN DESCRIPTION:** Hold up the right fingers (separated) with palm facing out. Keep the thumb as it is and bend the remaining four fingers downward.

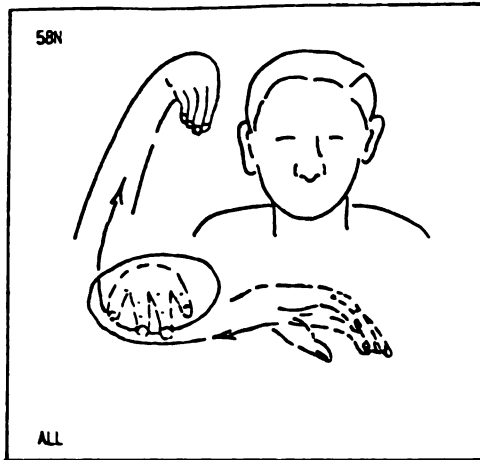
**ORIGIN:** Six fingers represent the numeral SIX.

**EXAMPLE:** I work SIX days a week.

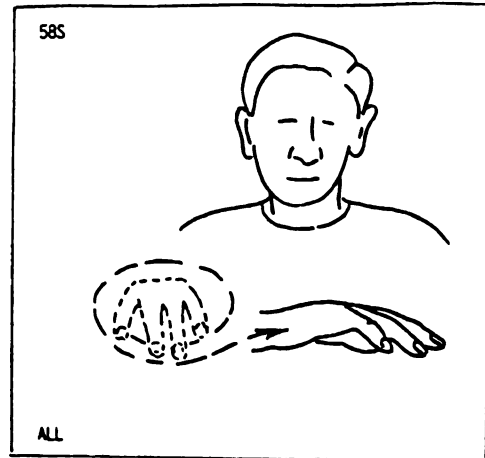
**SIGN DESCRIPTION:** Hold up the left fingers (separated) and the right thumb (extended), left palm facing out, palm of right fist facing left, and the remaining right four fingers bent inward.

**ORIGIN:** Six fingers represent the numeral SIX.

**EXAMPLE:** I have SIX brothers and sisters.

Older Subject's SignsConceptYounger Subject's Signs

ALL



**SIGN DESCRIPTION:** Place the open right hand in front with palm facing down. Move the hand from left to right while making a circle motion, then draw it up while bringing the fingers together pointing down.

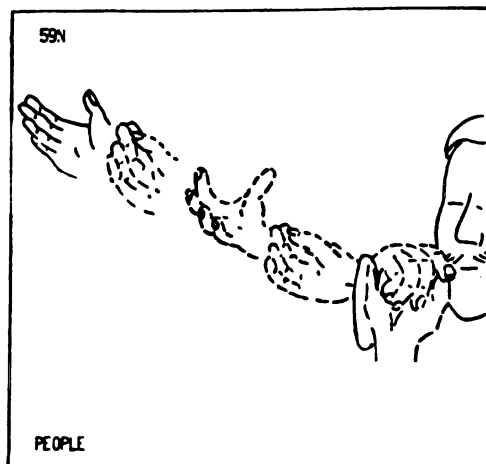
**ORIGIN:** The motion covers everyone (ALL) around.

**EXAMPLE:** ALL my friends are deaf.

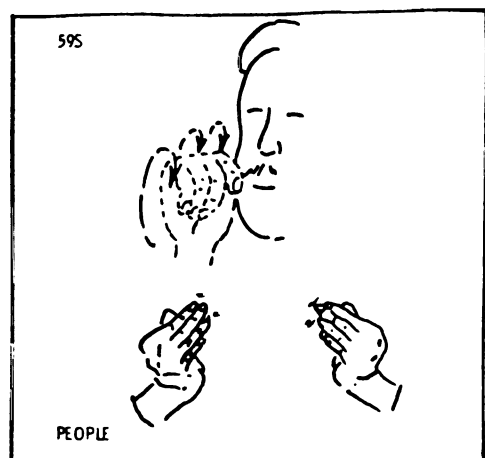
**SIGN DESCRIPTION:** Place the right hand in front of the right side of the body with palm facing down. Move it to the left while making a circle motion.

**ORIGIN:** The motion covers everyone (ALL) around.

**EXAMPLE:** Sometimes we clean ALL the school yards.



PEOPLE



**SIGN DESCRIPTION:** Same as 9N "MEN" sign.\*

**ORIGIN:** Same as 9N "MEN" sign.

**EXAMPLE:** There are many "PEOPLE" walking downtown.

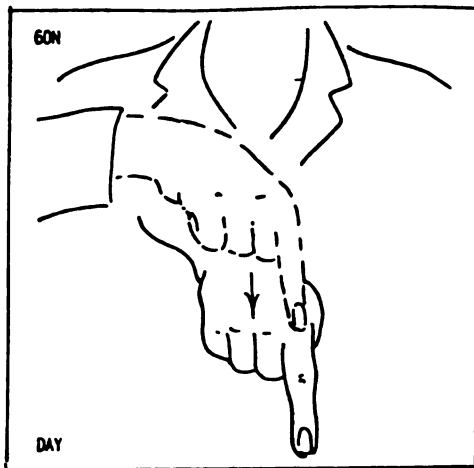
\*The reason that both signs are similar is because the Arabic translation of "PEOPLE" tends not to include women.

**SIGN DESCRIPTION:** Same as 9S "MEN" sign.\*

**ORIGIN:** PEOPLE are men.\*

**EXAMPLE:** PEOPLE visit our school every now and then.

\*See note in 59N.

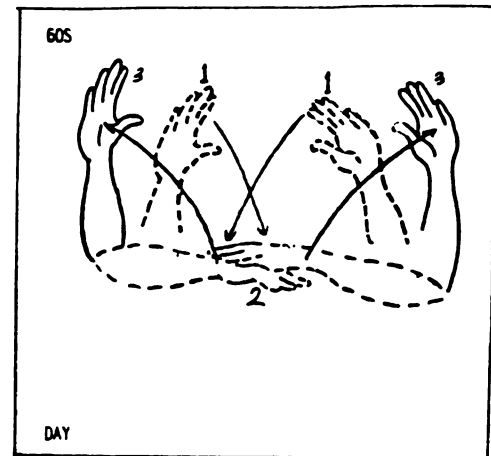
Older Subject's SignsConceptYounger Subject's Signs

DAY

**SIGN DESCRIPTION:** Move the right index finger straight down sharply, other fingers bent.

**ORIGIN:** Indication of a specific period of time (DAY).

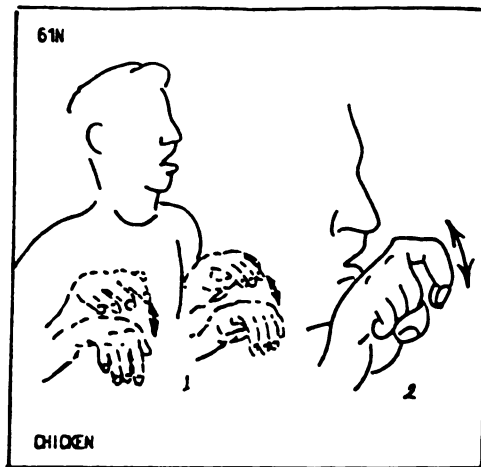
**EXAMPLE:** I didn't go to work TODAY.



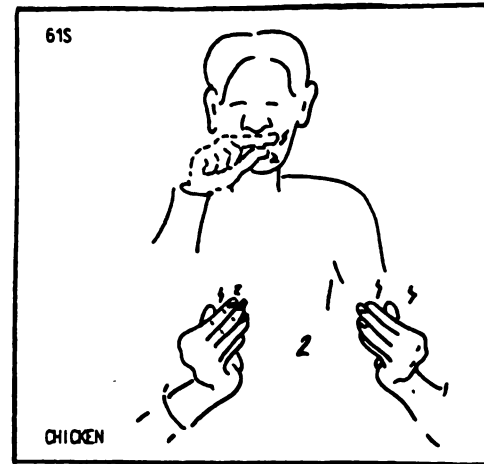
**SIGN DESCRIPTION:** Place both hands up to the level of the head with palms facing each other. Draw them down (right hand toward left and left hand toward right) in front of the chest with palms facing down, then up again.

**ORIGIN:** The sun sets and rises in one DAY.

**EXAMPLE:** The week is seven DAYS.

Older Subject's SignsConceptYounger Subject's Signs

CHICKEN



**SIGN DESCRIPTION:** Move both hands up and down in front of the body, palms facing down, fingers relaxed. Then place the back of the right crooked index finger under the nose, other fingers bent. Shake the wrist up and down several times.

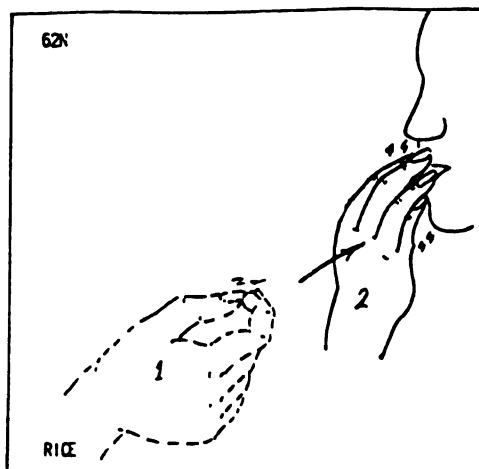
**ORIGIN:** Motion of flying CHICKENS that have beaks.

**EXAMPLE:** My mother cooks CHICKEN every now and then.

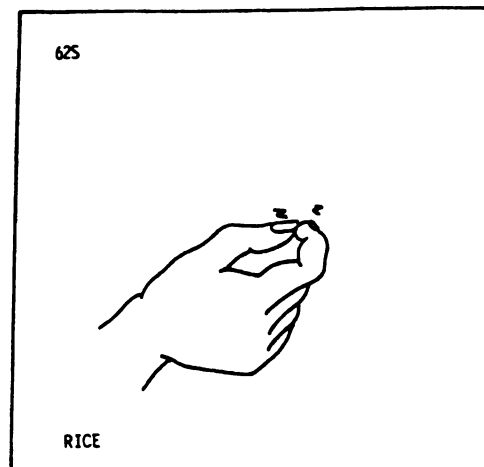
**SIGN DESCRIPTION:** Place the thumb and index finger of the right hand close to the mouth, finger tips left, tap the second joint of the index finger and the tip of the thumb together, other fingers are slightly crooked. Then add the "many" sign.

**ORIGIN:** CHICKENS have beaks.

**EXAMPLE:** We eat CHICKEN often.

Older Subject's SignsConceptYounger Subject's Signs

RICE



**SIGN DESCRIPTION:** Tap the right thumb and index finger together in front of the body, palm left, other fingers bent. Then move the hand toward the mouth as if eating.

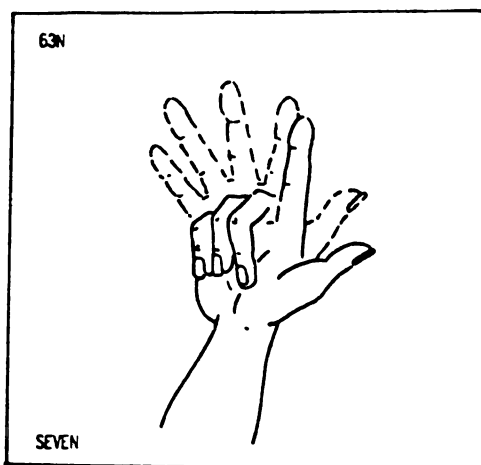
**ORIGIN:** Motion of holding a piece of RICE and eating it.

**EXAMPLE:** We eat RICE often.

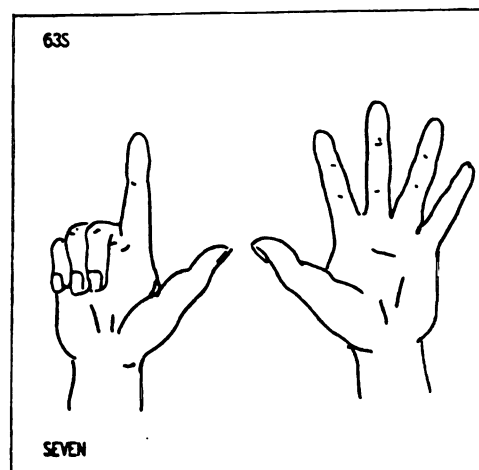
**SIGN DESCRIPTION:** Same as the first motion of 62N.

**ORIGIN:** Holding a piece of RICE.

**EXAMPLE:** We eat RICE every day.



SEVEN



**SIGN DESCRIPTION:** Hold up the right fingers (separated), then keep the thumb and the index finger as they are and bend the remaining three fingers inward, palm facing out.

**ORIGIN:** Seven fingers represent the numeral SEVEN.

**EXAMPLE:** Our neighbor has SEVEN children.

**SIGN DESCRIPTION:** Hold up the left fingers (separated) and the right thumb and index finger (separated) with palm facing out.

**ORIGIN:** Seven fingers represent the numeral SEVEN.

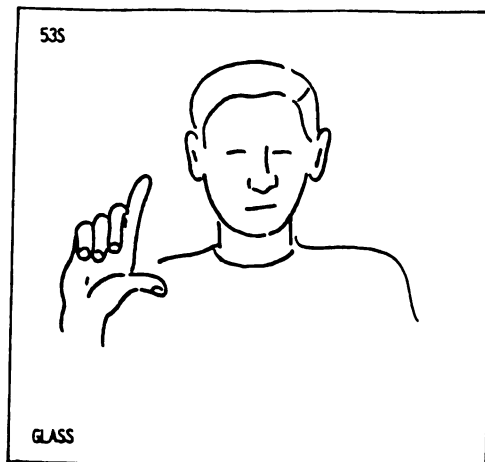
**EXAMPLE:** One, two, three...  
...SEVEN.\*

\*The subject counted on his fingers.



Older Subject's SignsConceptYounger Subject's Signs

GLASS



**SIGN DESCRIPTION:** Hold up the right hand near the right cheek with index finger up, thumb toward left and other fingers bent. Then move the index finger, sharply, down through the left parallel thumb and index finger (separated).

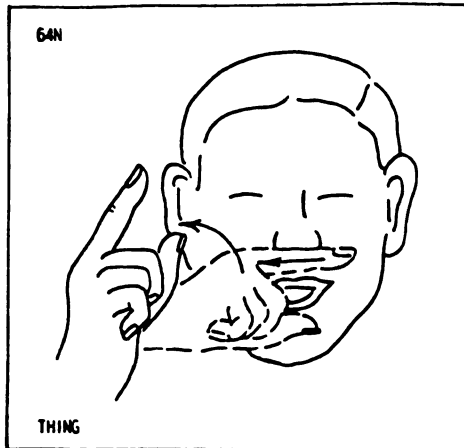
**ORIGIN:** You can see through the GLASS.

**EXAMPLE:** We drink water in the GLASS-

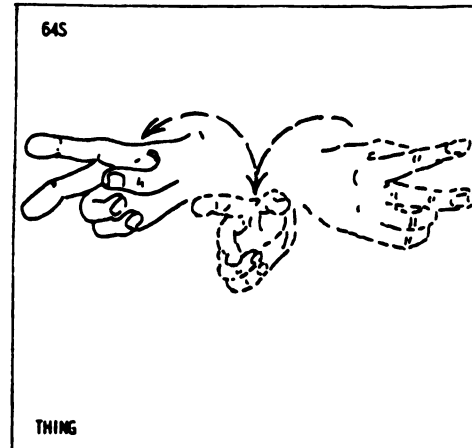
**SIGN DESCRIPTION:** Hold up the right hand near the right cheek with index finger up, thumb toward left and other fingers bent.

**ORIGIN:** A GLASS shape.

**EXAMPLE:** We should be careful when we carry GLASS so as not to break it.

Older Subject's SignsConceptYounger Subject's Signs

THING



SIGN DESCRIPTION: Same as the subject's sign of the Arabic letter "sheen", then extend the hand (toward right) of the Arabic letter "yeh".

ORIGIN: "Shae" in Arabic means "THING". "shae" consists of the Arabic letters "sheen" + the drawn out (toward right) letter "yeh". The first sign represents the letter "sheen", the motion represents the drawn out letter "yeh".

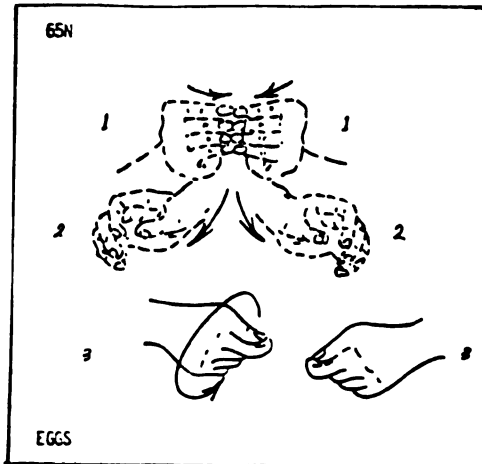
EXAMPLE: You find many THINGS to buy in the market.

SIGN DESCRIPTION: Point the right thumb, index and middle fingers (separated) forward, other fingers bent, palm facing left. Bounce the hand from left to right in stages at the waist level.

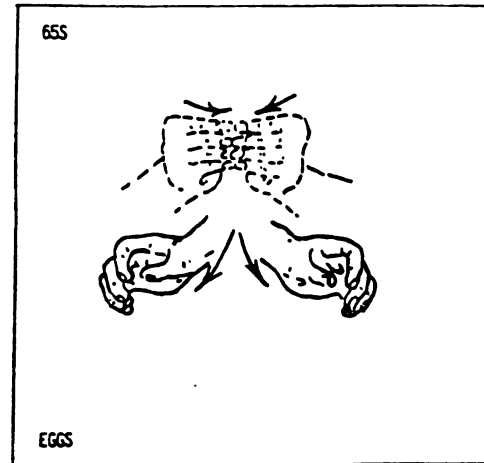
ORIGIN: Pointing to THINGS around.

EXAMPLE: This, this and this are THINGS.\*

\*The subject pointed out to different objects around him.

Older Subject's SignsConceptYounger Subject's Signs

EGGS



**SIGN DESCRIPTION:** Bring fingertips of both hands together to face each other, let hands go with separated fingers' tips down. Then place the left hand as if holding a frying pan handle and move the right hand back and forth in a circle motion as if scrambling eggs.\*

**ORIGIN:** Natural motion of breaking off two EGGS together, putting them in a frying pan and scrambling them.

**EXAMPLE:** We eat EGGS in the morning.

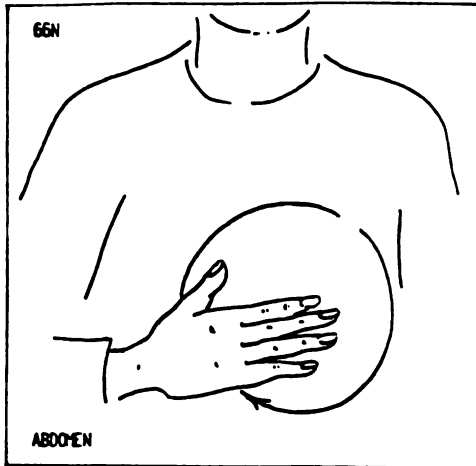
\*The subject did not add the "many" sign here, probably, because the word "EGGS" is used commonly to indicate singular and plural.

**SIGN DESCRIPTION:**\* Bring fingertips of both hands together to face each other, then let hands go with separated fingers' tips down.

**ORIGIN:** Natural motion of breaking off two EGGS together and putting them in a frying pan.

**EXAMPLE:** Everyone gets one boiled EGG with breakfast.

\*See note under 65N.

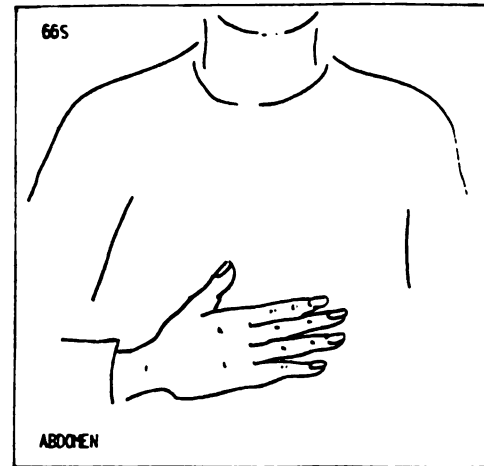
Older Subject's SignsConceptYounger Subject's Signs

ABDOMEN

**SIGN DESCRIPTION:** Move the right palm on the ABDOMEN in a circle motion.

**ORIGIN:** Showing the ABDOMEN.

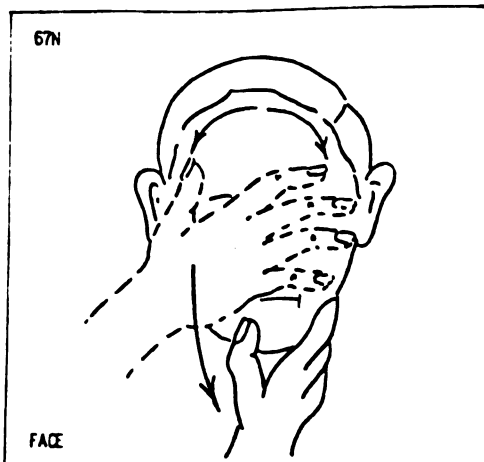
**EXAMPLE:** I have never felt a stomach ache.



**SIGN DESCRIPTION:** Same as 66N without making a circle motion.

**ORIGIN:** Same as 66N.

**EXAMPLE:** When we eat our ABDOMENS get bigger.

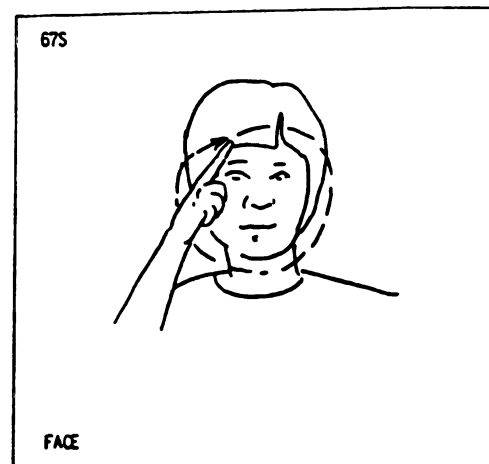


FACE

**SIGN DESCRIPTION:** Draw the palm of the right hand down on the face.

**ORIGIN:** Showing the FACE.

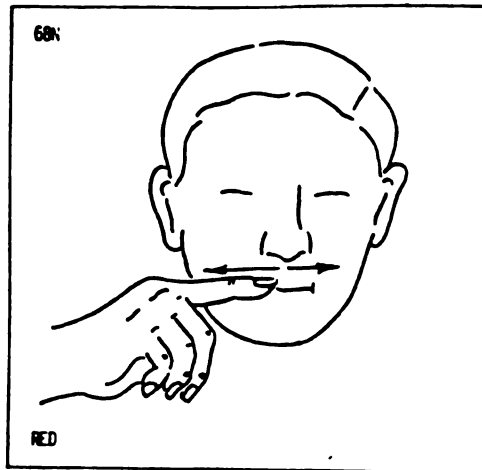
**EXAMPLE:** I wash my FACE every day.



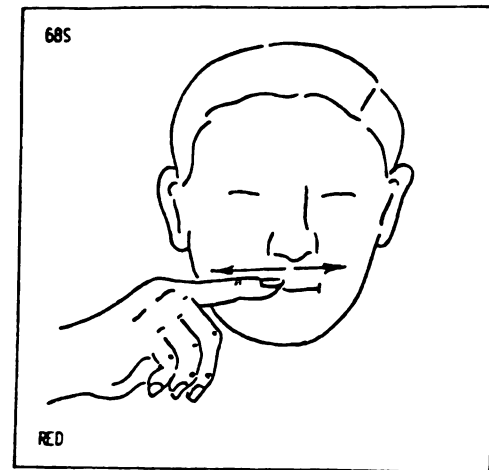
**SIGN DESCRIPTION:** Use the right index finger to draw a circle around the FACE.

**ORIGIN:** Showing the FACE.

**EXAMPLE:** We should wash our FACES every morning.

Older Subject's SignsConceptYounger Subject's Signs

RED



SIGN DESCRIPTION: Move the right index finger (its tip toward left) right and left on the lips.

ORIGIN: Lips are RED.

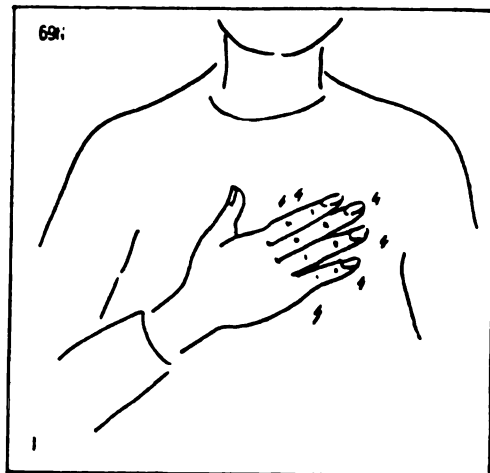
EXAMPLE: The blood is RED.

SIGN DESCRIPTION: Same as 68N.

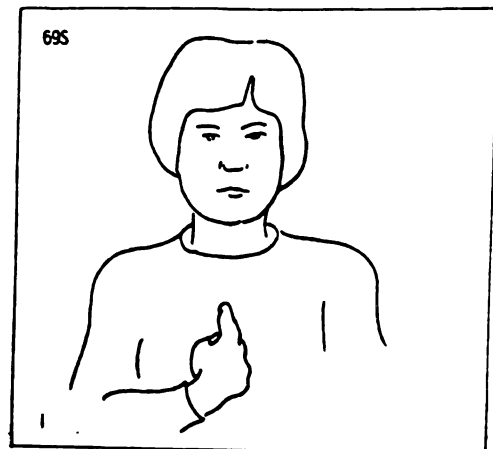
ORIGIN: Same as 68N.

EXAMPLE: My shirt is RED.\*

\*The subject pointed to his RED shirt.



I



SIGN DESCRIPTION: Tap the chest slightly with the right palm.

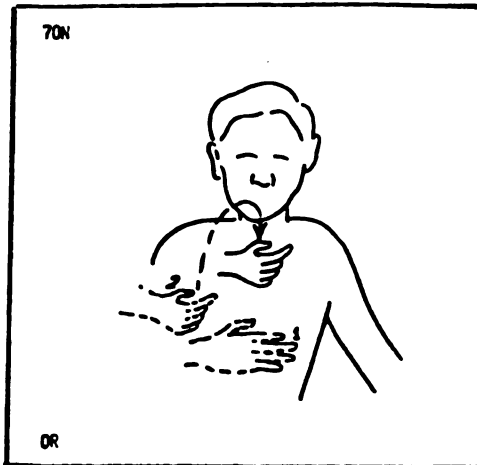
ORIGIN: Indicating self.

EXAMPLE I can drive the car.

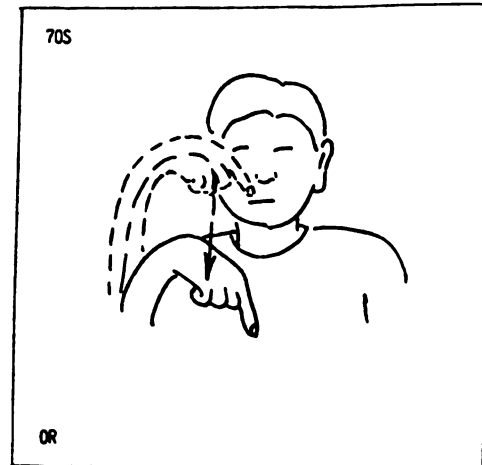
SIGN DESCRIPTION: Point the right index finger toward the chest.

ORIGIN: Indicating self.

EXAMPLE: I am boy.

Older Subject's SignsConceptYounger Subject's Signs

OR



SIGN DESCRIPTION: Same as the subject's signs of the Arabic letters "alif" and "wow" respectively.

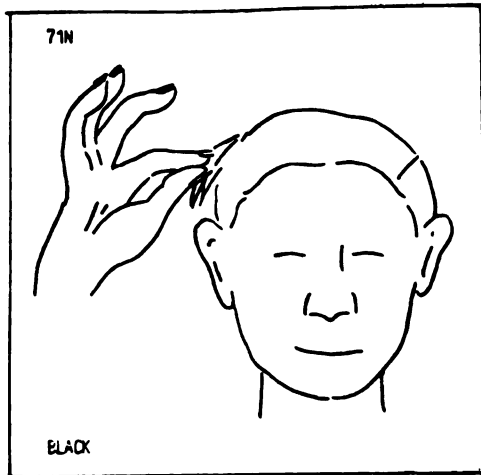
ORIGIN: "Ou" in Arabic means "OR". The phoneme consists of the Arabic letters "alif" + "wow". The first sign represents the letter "alif", the second motion represents the letter "wow".

EXAMPLE: Food can be cooked either by my mother OR by my sister.

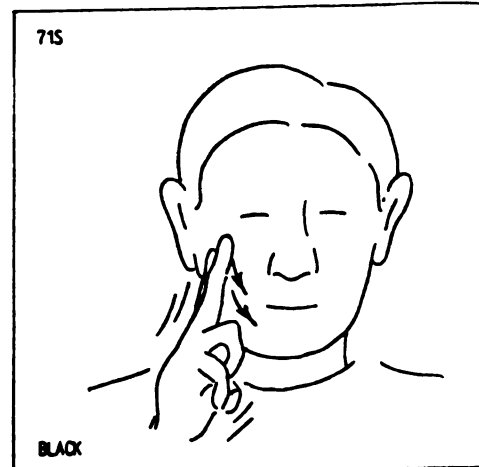
SIGN DESCRIPTION: Bring the right index finger up and down (in a half circle motion) in front of the right shoulder.

ORIGIN: Motion used when talking about more than one choice.

EXAMPLE: Me OR you.

Older Subject's SignConceptYounger Subject's Sign

BLACK



**SIGN DESCRIPTION:** Hold some hair by the right thumb and index finger.

**ORIGIN:** Showing the BLACK hair.

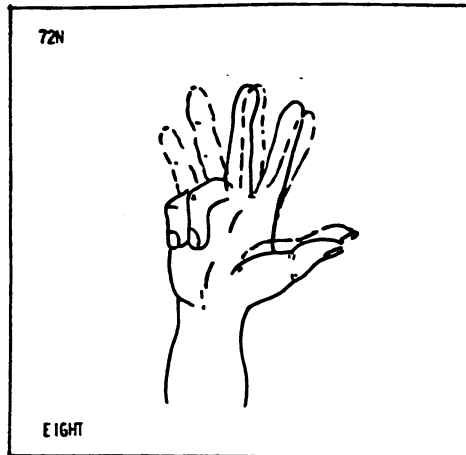
**EXAMPLE:** I have BLACK pants.

**SIGN DESCRIPTION:** Brush the right cheek downward with the tips of the right index and middle fingers.

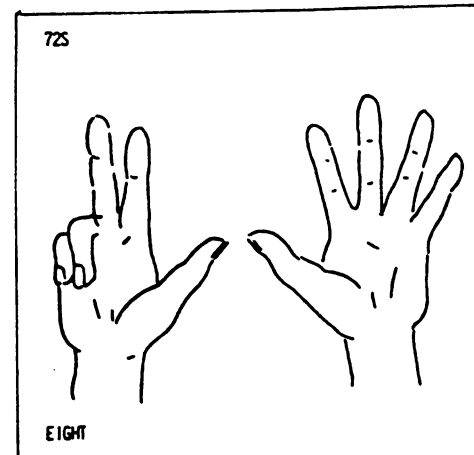
**ORIGIN:** Black skin.

**EXAMPLE:** The pants are BLACK.\*

\*The subject pointed to his teacher's pants.

Older Subject's SignsConceptYounger Subject's Signs

EIGHT



**SIGN DESCRIPTION:** Hold up the right fingers (separated), keep the thumb, index and middle fingers as they are and bend the remaining two fingers downward palm facing out.

**ORIGIN:** Eight fingers represent the numeral EIGHT.

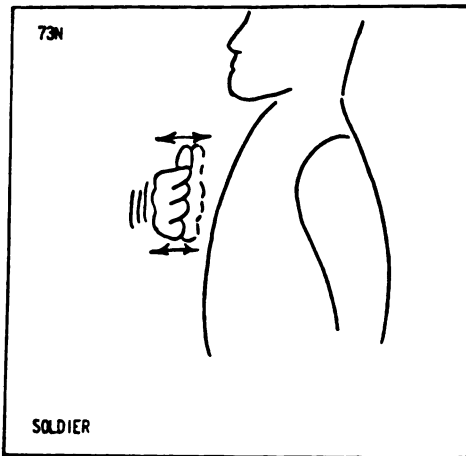
**EXAMPLE:** It costs EIGHT piasters to have a shirt ironed.

**SIGN DESCRIPTION:** Hold up the left fingers (separated) and the right thumb, index, and middle fingers (separated), the right ring and little fingers are bent inward, palms facing outward.

**ORIGIN:** EIGHT fingers represent the numeral EIGHT.

**EXAMPLE:** My brother is EIGHT years old.



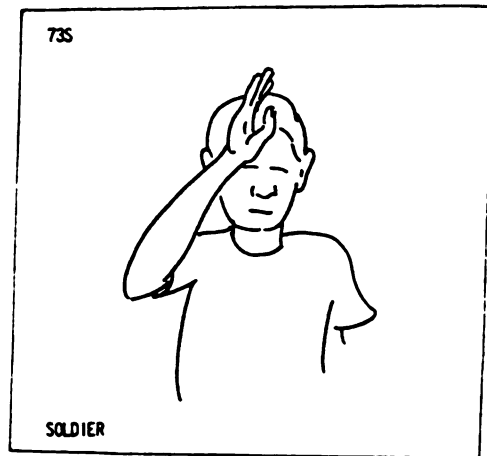
Older Subject's SignsConceptYounger Subject's Signs

SOLDIER

**SIGN DESCRIPTION:** Place the right fist (with palm facing in and thumb up) in front of the chest. Move the hand slightly in and out on the chest several times.

**ORIGIN:** A SOLDIER carrying a gun.

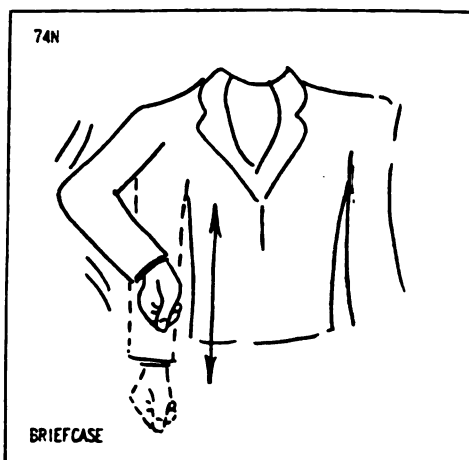
**EXAMPLE:** The SOLDIERS defend the country.



**SIGN DESCRIPTION:** Place the side of the right hand on the forehead with thumb and index fingers touching the forehead, palm facing left.

**ORIGIN:** Representation of the crown on the SOLDIER'S hat.

**EXAMPLE:** The SOLDIERS carry rifles.

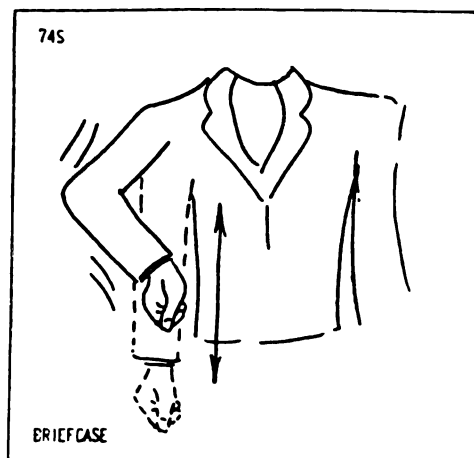


BRIEFCASE

**SIGN DESCRIPTION:** Move the right fist up and down against the right side of the waist.

**ORIGIN:** As if carrying a BRIEFCASE.

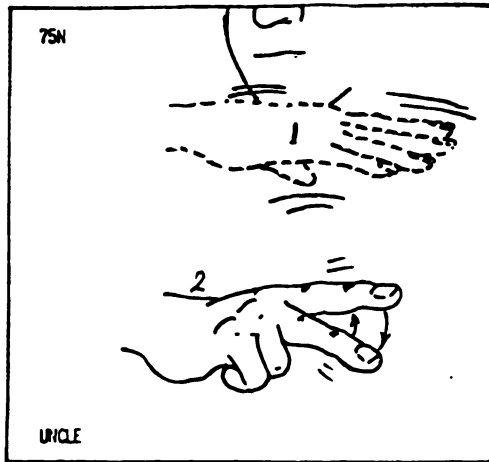
**EXAMPLE:** When we travel we carry a BRIEFCASE.



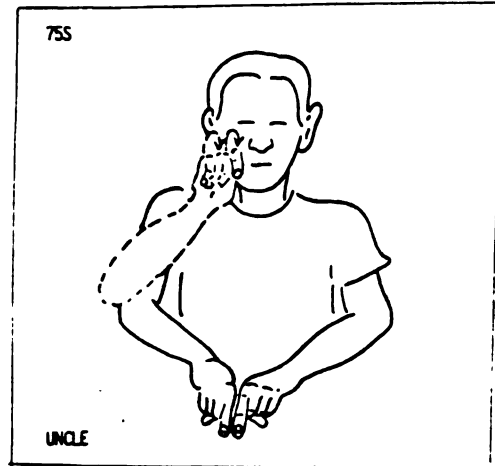
**SIGN DESCRIPTION:** Same as 74N.

**ORIGIN:** Same as 74N.

**EXAMPLE:** I put my books in the BRIEFCASE.

Older Subject's SignConceptYounger Subject's Sign

UNCLE



**SIGN DESCRIPTION:** Same as "FATHER" sign 17N, then move the stretched index and middle finger up and down alternately in front of you, other fingers bent, palm facing down.

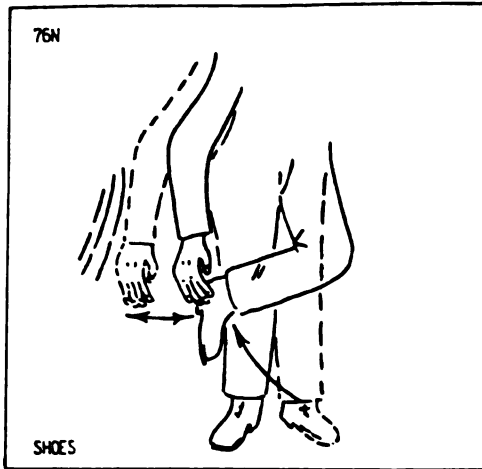
**ORIGIN:** The two fingers indicate the brotherhood relationship.

**EXAMPLE:** I don't see my UNCLE often.

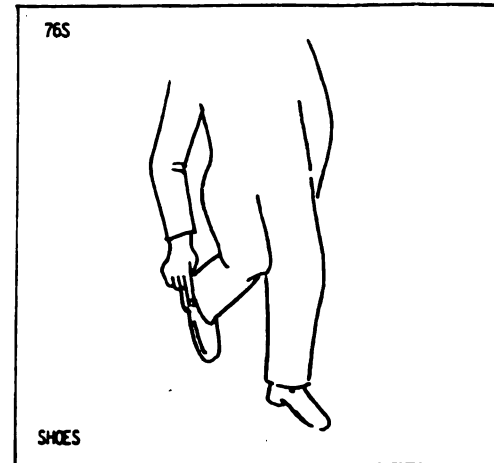
**SIGN DESCRIPTION:** Same as "FATHER" sign 17S, then bring both index fingers together (touching each other) in front of you.

**ORIGIN:** Same as 75N.

**EXAMPLE:** My UNCLE lives nearby.

Older Subject's SignsConceptYounger Subject's Signs

SHOES



SIGN DESCRIPTION:\* Lift up the left leg in front of the right leg. Tap the left shoe with the right hand several times.

ORIGIN: Showing the SHOE.

EXAMPLE: I don't like tight SHOES.

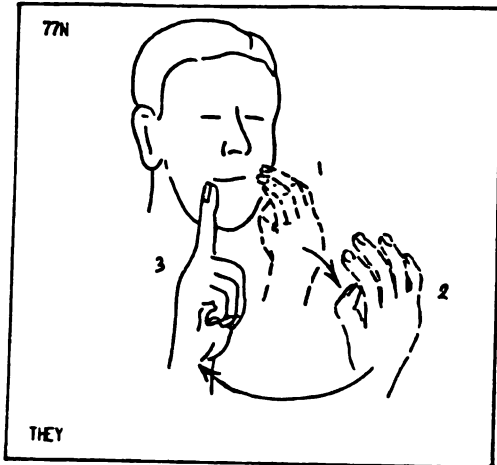
\*The subject did not add the "many" sign because the word SHOES is commonly used as singular.

SIGN DESCRIPTION:\* Lift up the right leg slightly and point the right index finger to the shoe.

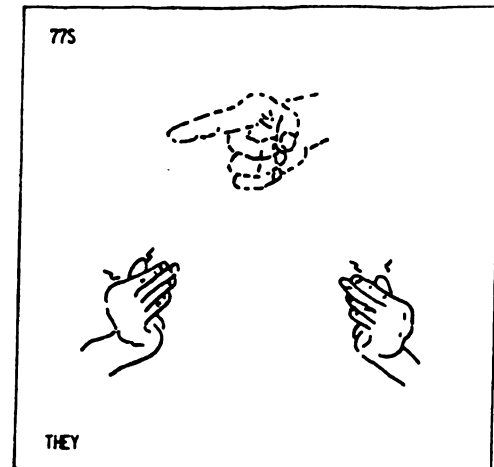
ORIGIN: Showing the SHOE.

EXAMPLE: We should keep our SHOES clean.

\*See note under 76N.

Older Subject's SignsConcept

THEY

Younger Subject's Signs

SIGN DESCRIPTION: Same as the subject's signs of the letters "heh" and "meem", respectively.

ORIGIN: "hom" in Arabic means "THEY". The phoneme consists of two Arabic letters "heh" + "meem". The motion represents the letter "heh", the last sign represents the letter "meem".

EXAMPLE: See the following note.

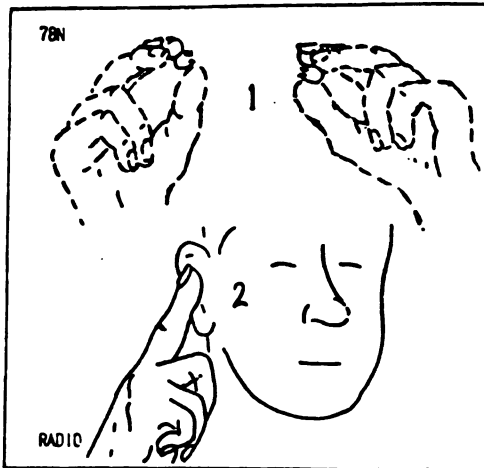
NOTE: The subject explained that THEY is like his brother's family.

SIGN DESCRIPTION: Same as "THIS" sign 15N. Then add the "many" sign.

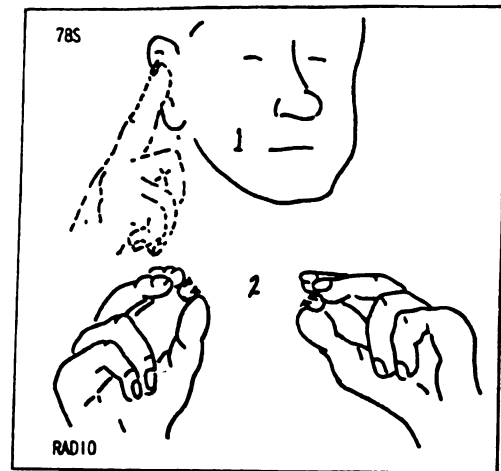
ORIGIN: Pointing to someone, then adding the sign of "many" to indicate more than one.

EXAMPLE: THEY are still in the classroom.\*

\*The subject pointed out to his classroom and meant his classmates, according to our interpreter.

Older Subject's SignsConceptYounger Subject's Signs

RADIO



**SIGN DESCRIPTION:** Place both hands in front with palms slightly out. Twist the thumb, index and middle fingers of each hand right and left in a circle motion. Then put the tip of the right index finger on the right ear.

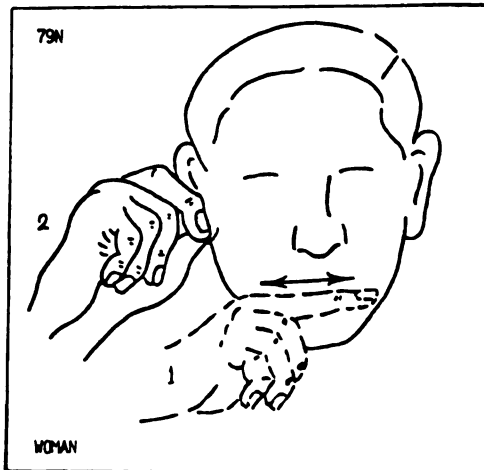
**ORIGIN:** As if tuning, then listening to a RADIO.

**EXAMPLE:** Hearing people can listen to the RADIO.

**SIGN DESCRIPTION:** Same as 78N, reversing the order of the motions.

**ORIGIN:** Same as 78N.

**EXAMPLE:** The principal has a RADIO.

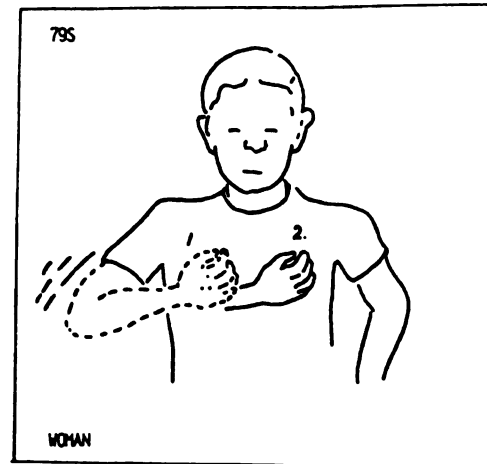
Older Subject's SignsConceptYounger Subject's Signs

WOMAN

**SIGN DESCRIPTION:** Same as "RED" sign as 68N. Then hold the lobe of the right ear with the right thumb and index finger (as the first motion of the "GIRL" sign).

**ORIGIN:** The red lips and the earrings represent a woman.

**EXAMPLE:** Many WOMEN work where I work.

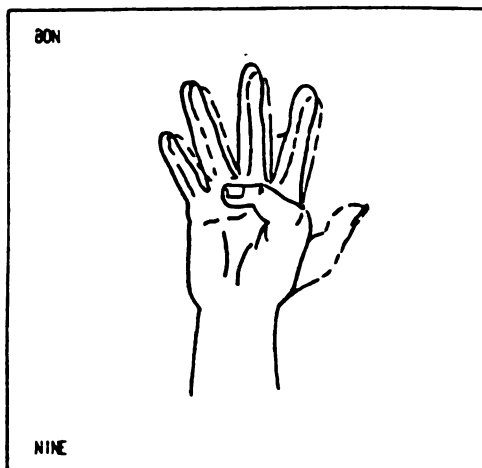


**SIGN DESCRIPTION:** Place the cupped right hand on the right breast then on the left breast.\*

**ORIGIN:** WOMEN have breasts.

**EXAMPLE:** A WOMAN like our teacher.

\*The only difference between this sign and 43S "MOTHER" sign is that the subject signed "MOTHER" by moving the hand from left to right instead of moving it from right to left. It is believed that this difference in order had not been done by the subject intentionally and that the subject would give the same sign for both concepts in either order.

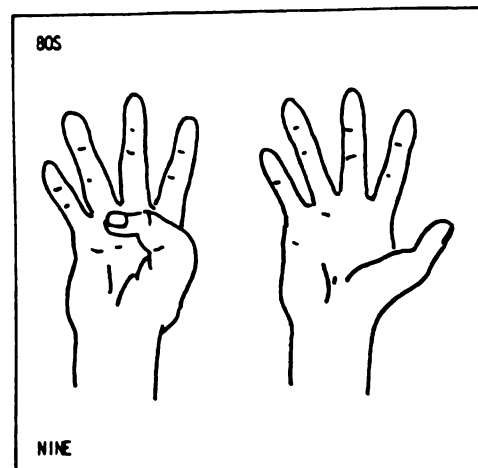
Older Subject's SignsConceptYounger Subject's Signs

NINE

**SIGN DESCRIPTION:** Hold up the right fingers (separated) with palm facing out and bend the thumb inward, and keep the remaining fingers as they are.

**ORIGIN:** Nine fingers represent the numeral NINE.

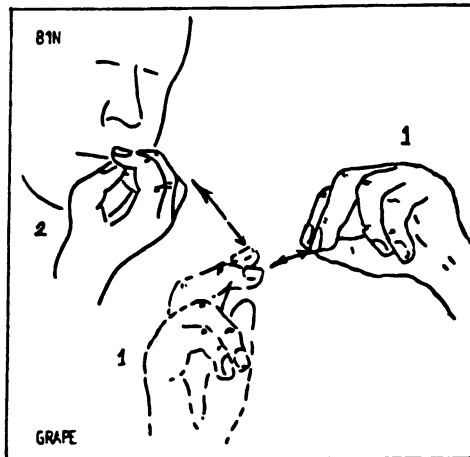
**EXAMPLE:** My sister has NINE shoes.



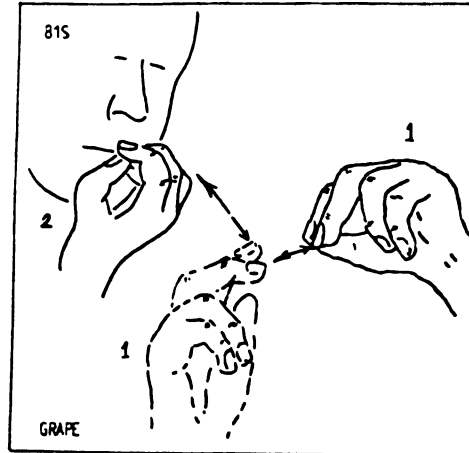
**SIGN DESCRIPTION:** Hold up all the fingers (separated) except the right thumb which is bent inward, palms facing outward.

**ORIGIN:** NINE fingers represent the numeral NINE.

**EXAMPLE:** We are NINE students in the classroom.

Older Subject's SignsConceptYounger Subject's Signs

GRAPE



**SIGN DESCRIPTION:** Press the tips of the left thumb, index and middle fingers together in front of the body, palm toward left. Move the right finger tips between the left hand and the mouth (as if picking off grapes and eating them).

**ORIGIN:** Motion of picking a grape and eating it.

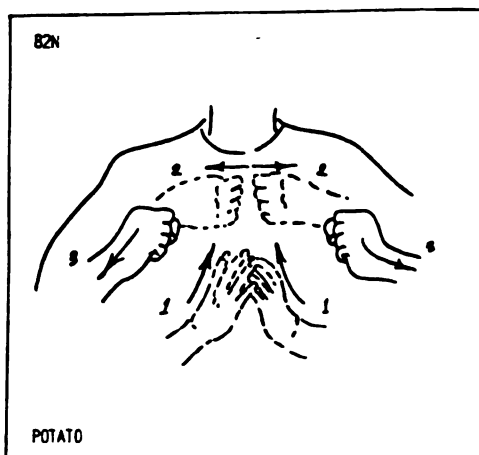
**EXAMPLE:** GRAPES are inexpensive.

**SIGN DESCRIPTION:** Same as 81N.

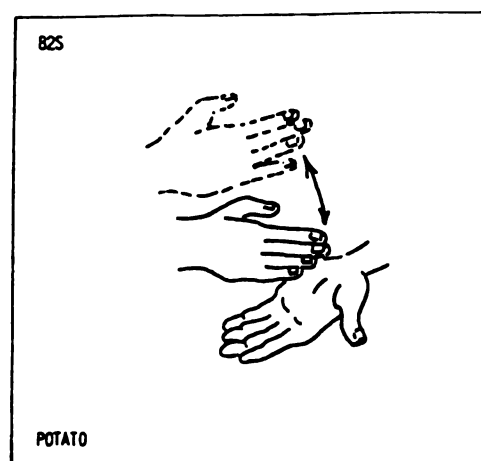
**ORIGIN:** Same as 81N.

**EXAMPLE:** There are many GRAPE trees around here.



Older Subject's SignsConceptYounger Subject's Signs

POTATO



**SIGN DESCRIPTION:** Draw up both hands to the front of the chest while clinching the fists with palms facing in. Then draw the hands to the sides.

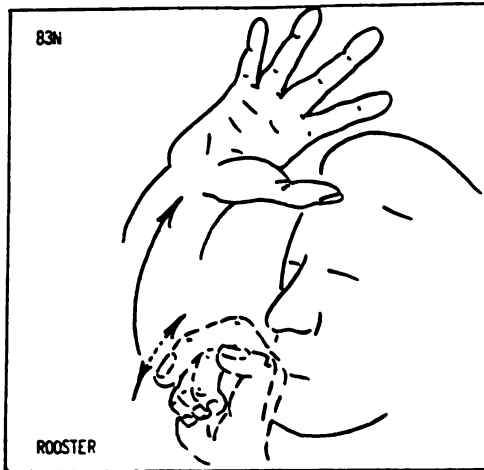
**ORIGIN:** POTATO causes fatness.

**EXAMPLE:** I like to eat boiled POTATO with boiled eggs.

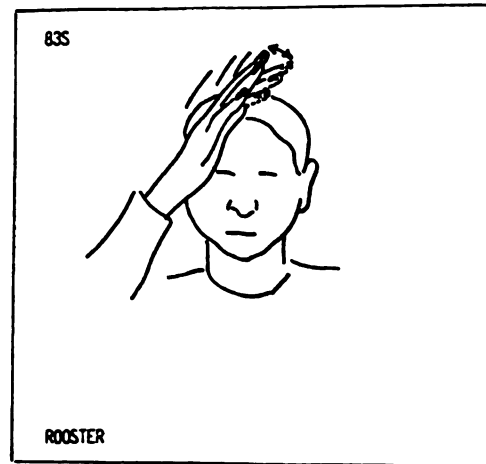
**SIGN DESCRIPTION:** Strike the right hand (little-finger side) over the left palm several times, right palm facing left.

**ORIGIN:** As if cutting a POTATO.

**EXAMPLE:** We eat POTATO often.

Older Subject's SignsConceptYounger Subject's Signs

ROOSTER



**SIGN DESCRIPTION:** Set the back of the right crooked index finger under the nose, palm facing out, other fingers bent. Bounce the hand up and down in a half circle motion. Then place the tip of the thumb on the forehead with palm facing left and fingers separated.

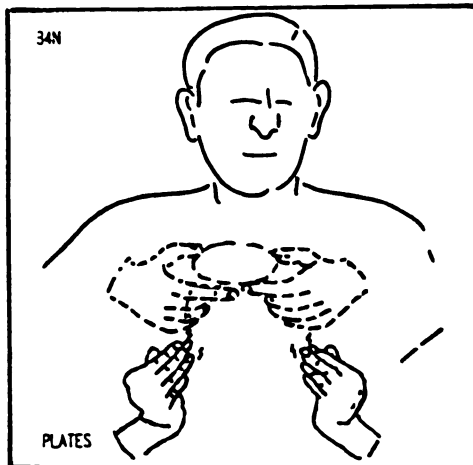
**ORIGIN:** The ROOSTER has a beak and a comb.

**EXAMPLE:** If you go to a farm you find many hens and a few ROOSTERS.

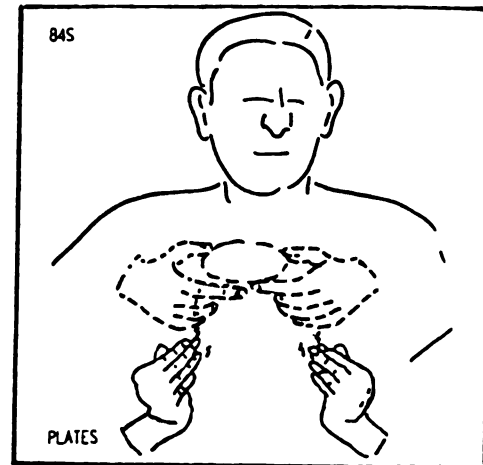
**SIGN DESCRIPTION:** Same as the last position of 83N sign and move the fingers slightly right and left several times.

**ORIGIN:** Showing the comb of the ROOSTER.

**EXAMPLE:** The ROOSTER is stronger than the hen.

Older Subject's SignsConceptYounger Subject's Signs

PLATES



**SIGN DESCRIPTION:** Form one circle with the thumbs and index fingers of both hands. Then add the "many" sign.

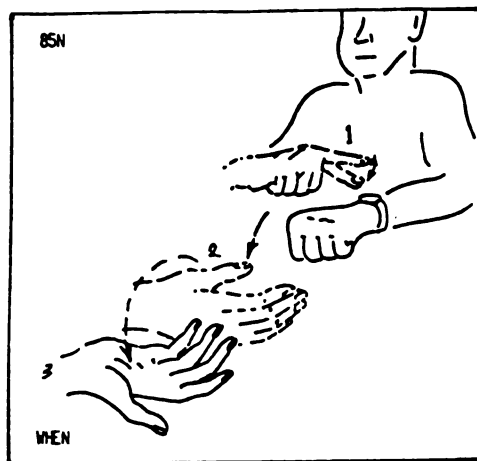
**ORIGIN:** PLATES are round.

**EXAMPLE:** We put the food in PLATES.

**SIGN DESCRIPTION:** Same as 84N.

**ORIGIN:** Same as 84N.

**EXAMPLE:** We eat from PLATES.

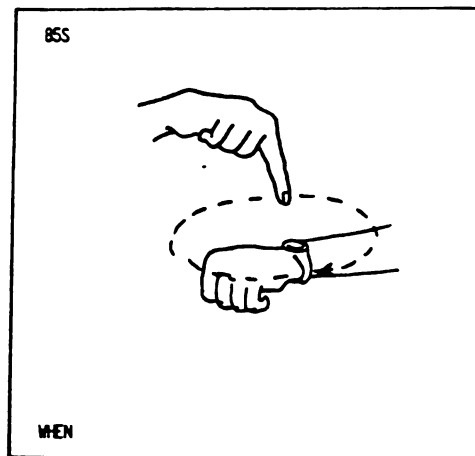
Older Subject's SignsConceptYounger Subject's Signs

WHEN

**SIGN DESCRIPTION:** Tap your watch with the tip of the right index finger several times. Then twist the hand in a half circle motion from palm in to palm up as if inquiring.

**ORIGIN:** Pointing to the watch and adding the natural motion of inquiring.

**EXAMPLE:** We are not supposed to ask the guests: "WHEN are you leaving".

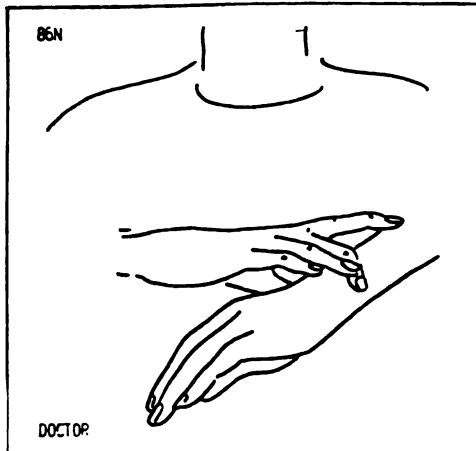


**SIGN DESCRIPTION:** Move the right index finger over the back of the left wrist in a clockwise motion.

**ORIGIN:** Showing the time as the hands of the watch are moving around.

**EXAMPLE:** See note below.

**NOTE:** The subject explained that we use WHEN if we want to know about the time of an event.

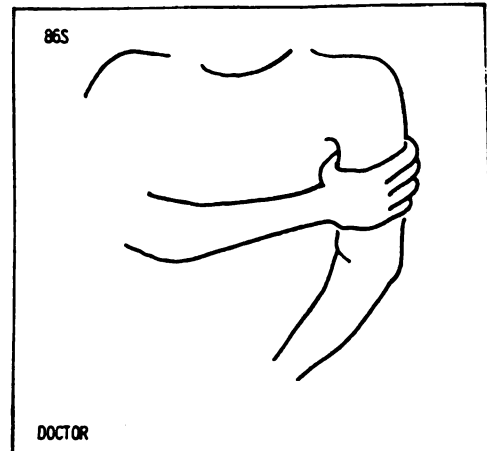
Older Subject's SignsConceptYounger Subject's Signs

DOCTOR

**SIGN DESCRIPTION:** Hold the left wrist with the right thumb and middle finger.

**ORIGIN:** Natural motion of examining the pulse.

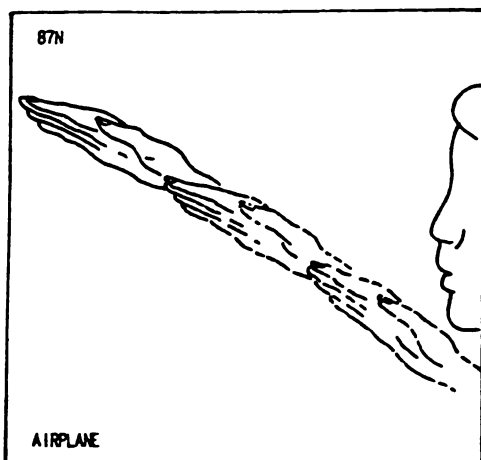
**EXAMPLE:** Whwn we feel sick we should go to the DOCTOR.



**SIGN DESCRIPTION:** Hold the left arm with the right hand.

**ORIGIN:** As if checking the blood pressure.

**EXAMPLE:** Every now and then a DOCTOR comes to examine us in school.

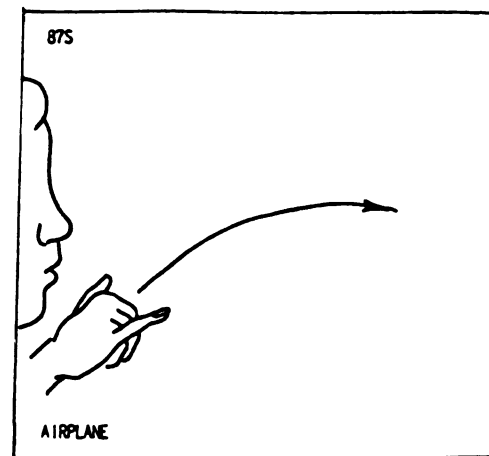


AIRPLANE

**SIGN DESCRIPTION:** Move the flat right hand forward in an ascending manner in front of the body, palm facing down.

**ORIGIN:** Motion of the AIRPLANE take-off.

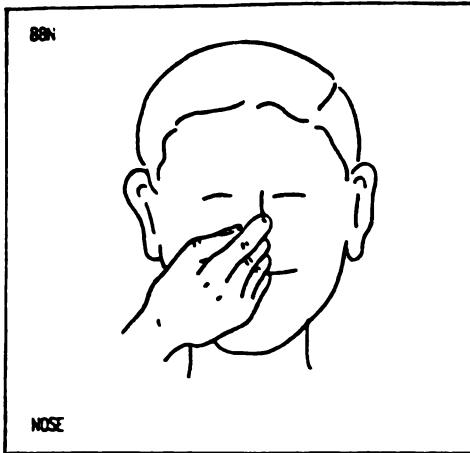
**EXAMPLE:** I see many AIRPLANES flying in the sky.



**SIGN DESCRIPTION:** Move the right hand forward in an ascending manner in front of the body, thumb and little finger are pointing out, other fingers bent, palm facing down.

**ORIGIN:** Same as 87N.

**EXAMPLE:** AIRPLANES make big noise.

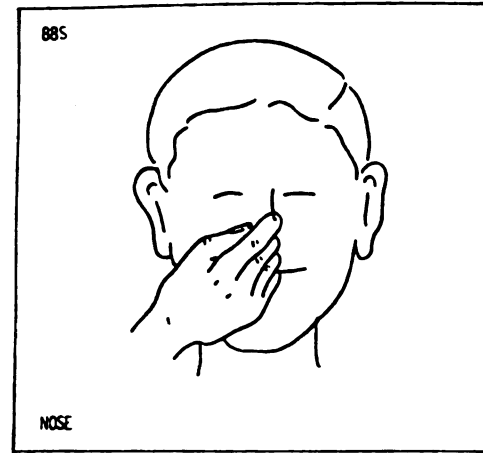
Older Subject's SignsConceptYounger Subject's Signs

NOSE

**SIGN DESCRIPTION:** Hold the nose with the right hand.

**ORIGIN:** Showing the NOSE.

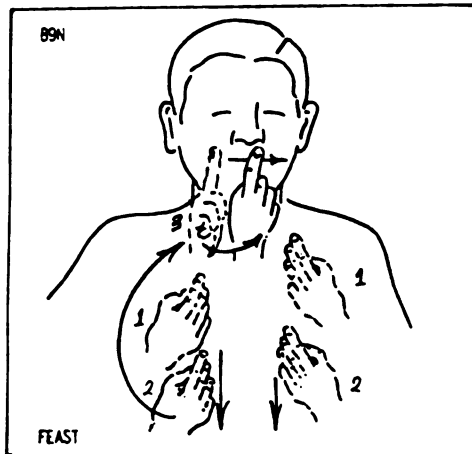
**EXAMPLE:** We breath through our NOSES.



**SIGN DESCRIPTION:** Same as 88N.

**ORIGIN:** Same as 88N.

**EXAMPLE:** Our NOSES should always be clean.

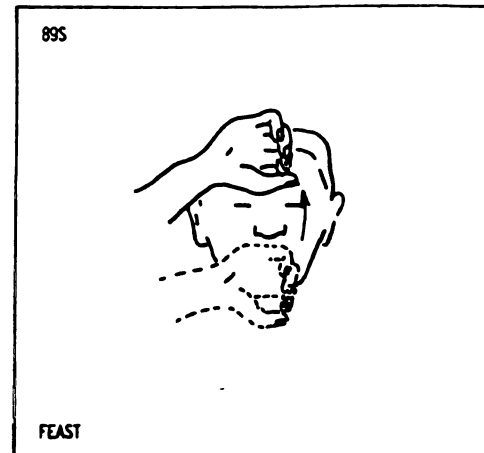


FEAST

**SIGN DESCRIPTION:** Draw down the chest the little finger edge of both hands, tips up with palms facing and back of both hands facing each other. Then move the right index finger from right to left across the lips.

**ORIGIN:** Wearing new clothes in the FEAST that comes after fast-ing.

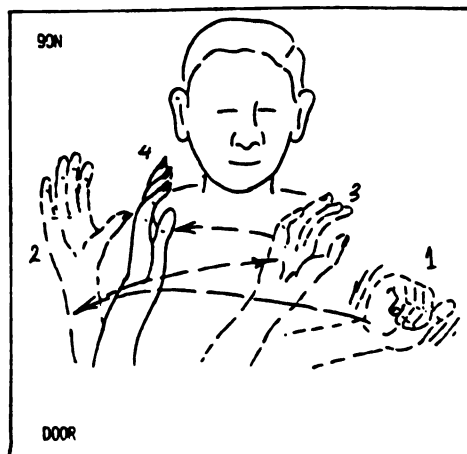
**EXAMPLE:** People visit each other in the FEAST.



**SIGN DESCRIPTION:** Hold the back of the cupped right hand on the mouth, then move it up and place it on the forehead, palm out.

**ORIGIN:** In the FEAST, the child kisses his parent's hand and puts it on his own forehead.

**EXAMPLE:** We wear new clothes in the FEAST.

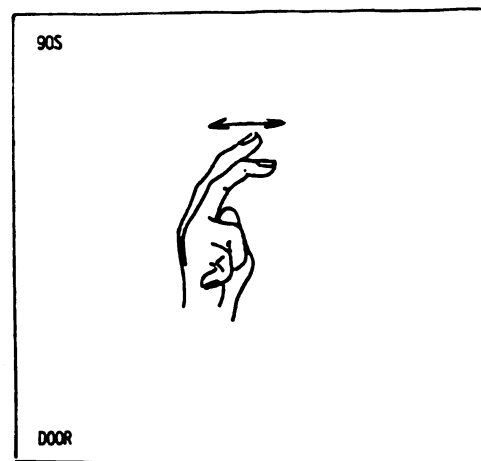
Older Subject's SignsConceptYounger Subject's Signs

DOOR

**SIGN DESCRIPTION:** Place the right fist in front of the left side of the body with palm facing down as if holding the door's handle. Then move the right flat hand right and left as if fanning the air, fingers' tips toward up.

**ORIGIN:** Natural motion of opening and closing the door.

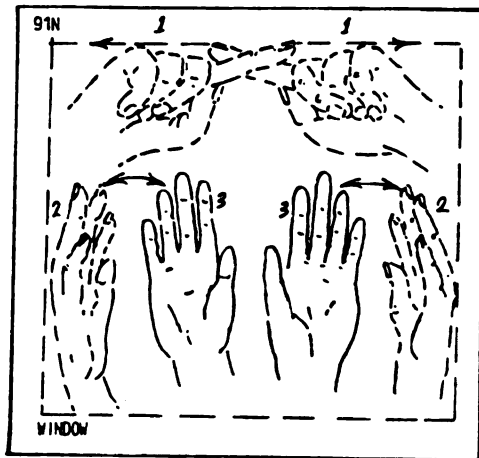
**EXAMPLE:** We lock the house DOOR before we go to bed.



**SIGN DESCRIPTION:** Hold up the right hand (index and middle fingers are slightly crooked, other fingers bent) with palm facing right. Move the hand very slightly left and right several times.

**ORIGIN:** Motion of knocking on the DOOR.

**EXAMPLE:** We should knock the DOOR before we enter the classroom.

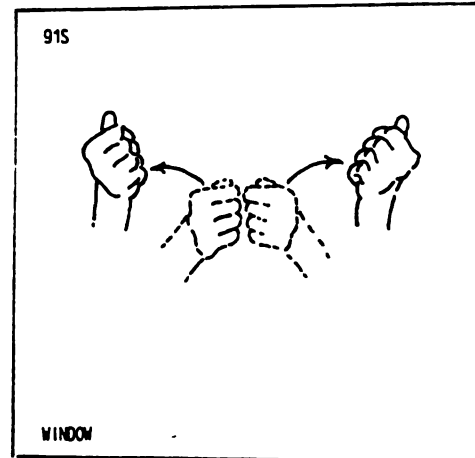
Older Subject's SignsConceptYounger Subject's Signs

WINDOW

**SIGN DESCRIPTION:** Indicate a square, using each index finger to shape half the square. Then move both palms in front of the body (finger tips up), palms alternating out and in.

**ORIGIN:** The motion represents opening and closing a square center latch WINDOW.

**EXAMPLE:** WINDOWS bring light to the house.

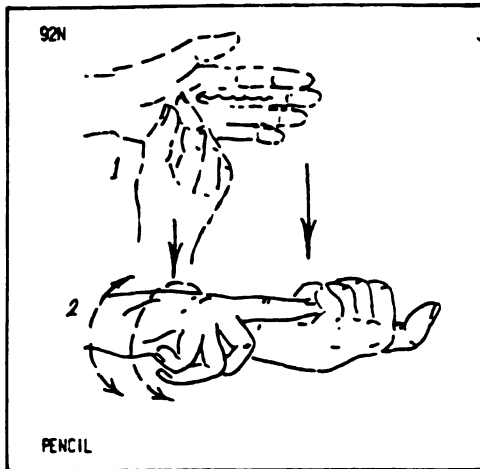


**SIGN DESCRIPTION:** Hold both fists beside each other in front of the body with palms facing each other. Move the fists away from each other as if opening a center latch WINDOW.

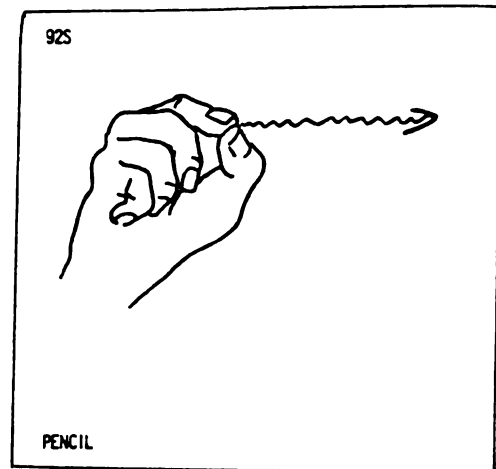
**ORIGIN:** Motion of opening a center latch WINDOW.

**EXAMPLE:** In summer we open the WINDOWS of the classroom.



Older Subject's SignsConceptYounger Subject's Signs

PENCIL



**SIGN DESCRIPTION:** Press the tips of the right thumb and index finger together (the other fingers bent) and move the right hand on the left palm as if writing.\* Then twist the right index finger inside the left fist back and forth in a circle motion as if sharpening.

**ORIGIN:** Natural motion of writing with a PENCIL and sharpening it.

**EXAMPLE:** Children use PENCILS in school.

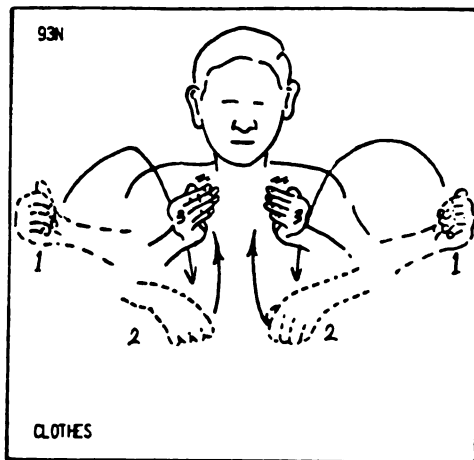
\*Arabic language is read and written from right to left.

**SIGN DESCRIPTION:** Tips of the right thumb and index finger are touching each other as if holding a pencil. Move the hand from right to left as if writing on an imaginary blackboard.

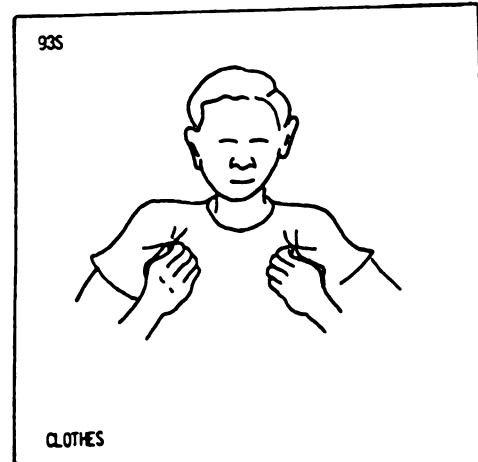
**ORIGIN:** Motion of writing with a piece of chalk (PENCIL).

**EXAMPLE:** We use PENCILS to write our homework.

## Older Subject's Signs

ConceptYounger Subject's Signs

CLOTHES



**SIGN DESCRIPTION:** Draw both curved hands from the sides of the shoulders to the front of the body as wearing a coat. Then add the "many" sign.

**ORIGIN:** Motion of wearing clothes.

**EXAMPLE:** My sister has many clothes.

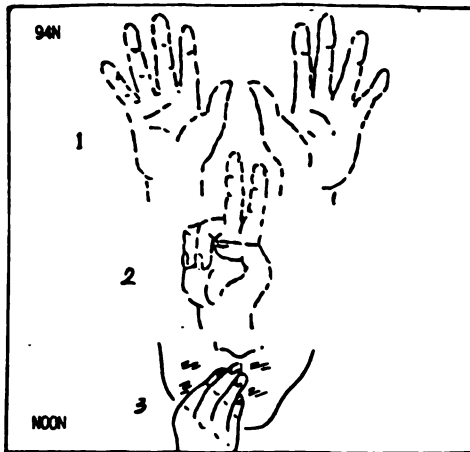
**SIGN DESCRIPTION:\*** Hold the clothes on the chest with both hands and shake them slightly up and down.

**ORIGIN:** Showing the CLOTHES.

**EXAMPLE:** These are CLOTHES.\*\*

\*The subject did not make the "many" sign, probably, because the word "clothes" doesn't have singular form.

\*\*The subject pointed to his clothes.

Older Subject's SignsConceptYounger Subject's Signs

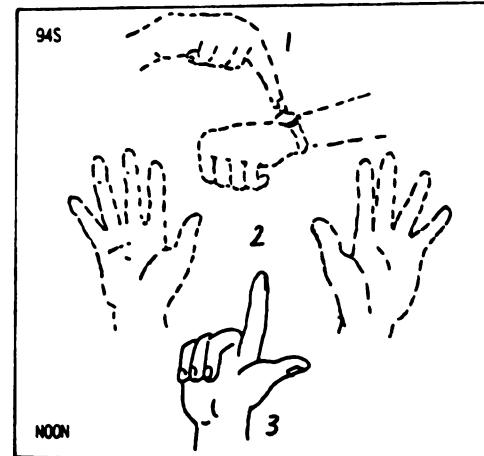
NOON

**SIGN DESCRIPTION:** Make the "TEN" sign and the "TWO" sign.\* Then move the hand in front of the mouth as if eating.

**ORIGIN:** NOON time when you eat at twelve o'clock.

**EXAMPLE:** People eat lunch at NOON time.

\*The difference between the "TWO" sign here and the "TWO" sign of 34N is that the palm here is facing out.

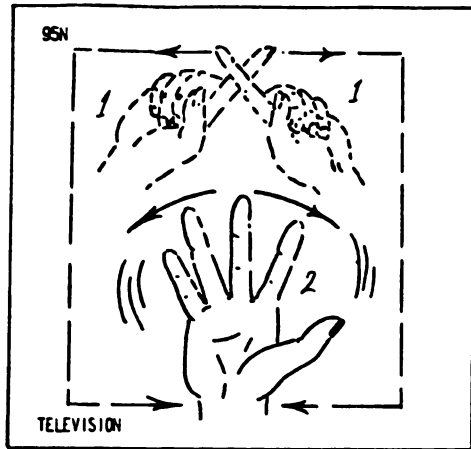


**SIGN DESCRIPTION:** Point to your watch with the right index finger, then make the "ten" sign followed by the "two" sign.\*

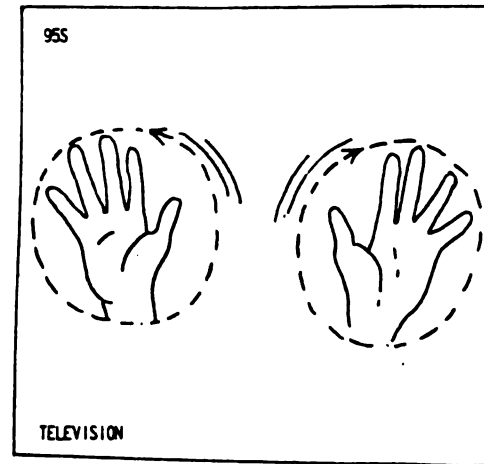
**ORIGIN:** Twelve o'clock is NOON time.

**EXAMPLE:** We eat lunch at NOON.

\*The difference between the "two" sign here and the "two" sign of 34S is that the sign here was made by the thumb and index finger with palm out.

Older Subject's SignsConceptYounger Subject's Signs

TELEVISION



**SIGN DESCRIPTION:** Indicate a square, using each index finger to shape half the square. Then move the right flat hand right and left in front of the body with palm facing out and fingers separated.

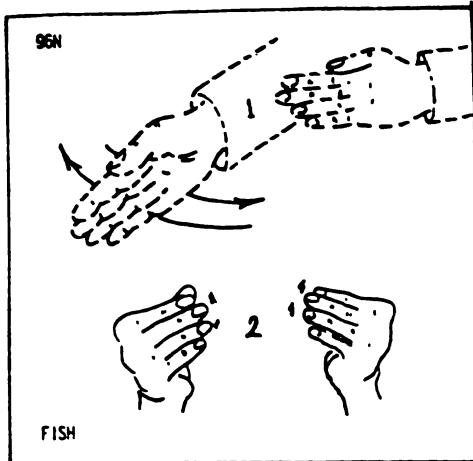
**ORIGIN:** You see pictures on the square screen of the T.V.

**EXAMPLE:** We watch T.V. every night.

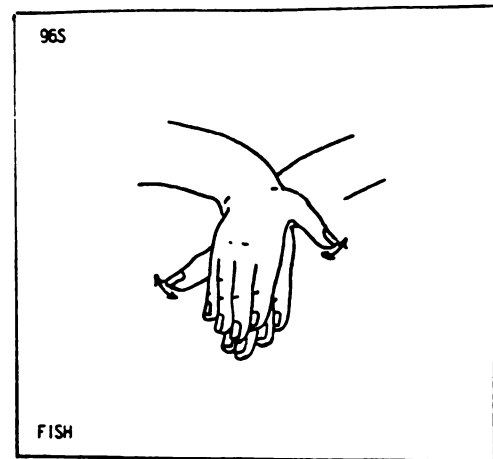
**SIGN DESCRIPTION:** Move both hands (fingers separated) in circle motions in front of the body with palms facing out.

**ORIGIN:** Motion of the T.V. pictures.

**EXAMPLE:** We don't have T.V. in the school.

Older Subject's SignsConceptYounger Subject's Signs

FISH



**SIGN DESCRIPTION:** Place the right open hand in front of the body with palm facing left. Set the tips of the left fingers on the inside of the right forearm. Move the right hand right and left (from the wrist) several times, then add the "many" sign.

**ORIGIN:** The movement of the FISH tail in the water.

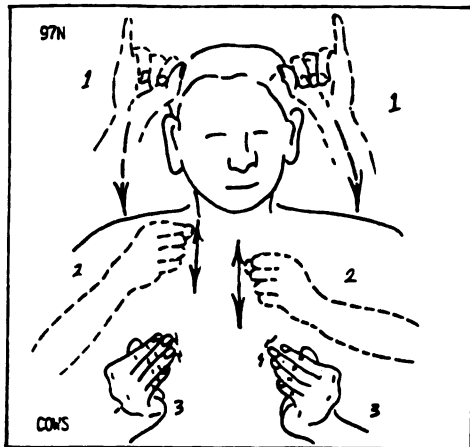
**EXAMPLE:** My mother fries FISH often.

**SIGN DESCRIPTION:**\* Put the right palm on the back of the left hand with right thumb pointing toward left and left thumb pointing toward right. Move the thumbs back and forth several times.

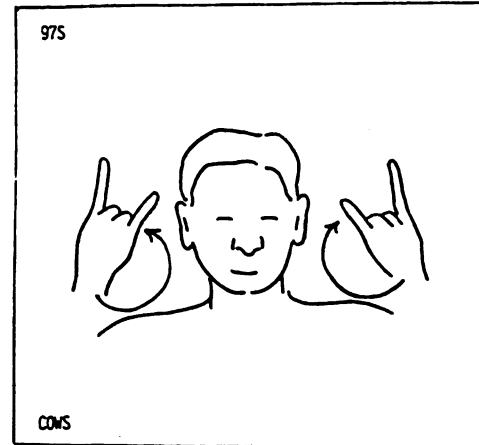
**ORIGIN:** Motion of a FISH swimming in the water.

**EXAMPLE:** FISH is delicious.

\*The subject did not add the "many" sign here, probably, because the word is commonly used to indicate plural and singular.

Older Subject's SignsConceptYounger Subject's Signs

COWS



**SIGN DESCRIPTION:** Place the back of both thumbs on the temples with palms facing out, little fingers toward up, and other fingers bent. Then move both fists up and down in front of the body (with palms facing in), alternately, as if milking a cow. Then add the "many" sign.

**ORIGIN:** Motions of the horns of the COW that we milk.

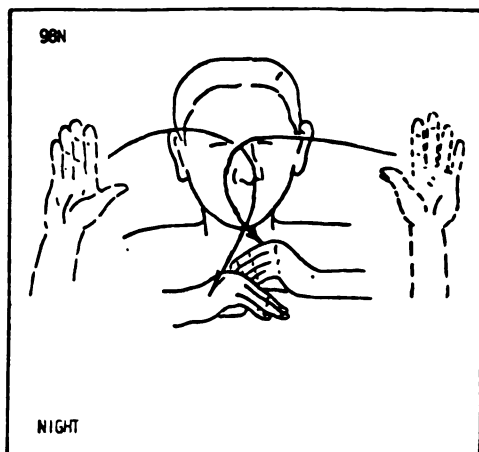
**EXAMPLE:** COWS are very fat.

**SIGN DESCRIPTION:** Point the thumbs and the little fingers of both hands over the upper part of the shoulders with other fingers bent. Twist each hand in one half circle motion, thumbs and little fingers will be pointing up.\*

**ORIGIN:** Showing the horns of the cow.

**EXAMPLE:** We get milk from the COWS.

\*The subject didn't add the "many" sign here.

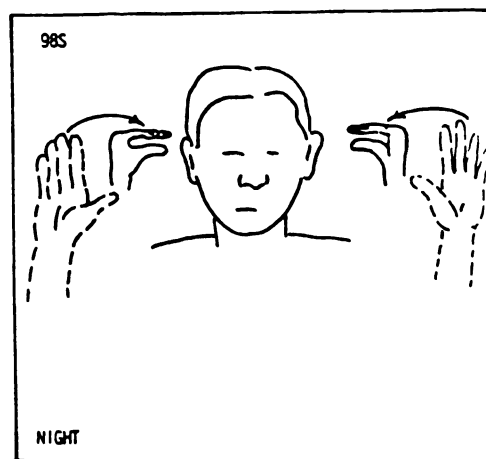
Older Subject's SignsConceptYounger Subject's Signs

NIGHT

**SIGN DESCRIPTION:** Hold both flat hands up over the shoulders with palms facing out and fingers up. Move both hands inward (crossing each other) and place them beside each other (the left little finger beside the right thumb), palms down in front of the chest.

**ORIGIN:** The motion represents changing the day light to darkness in the NIGHT.

**EXAMPLE:** People sleep at NIGHT.



**SIGN DESCRIPTION:** Bring both hands to the sides of the head with tips of right parallel thumb and remaining fingers facing right temple and tips of left parallel thumb and remaining fingers facing left temple.

**ORIGIN:** Same as 98N.

**EXAMPLE:** We sleep at NIGHT.

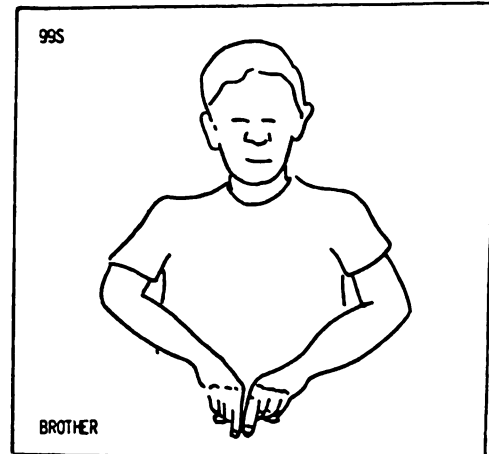
Older Subject's SignsConceptYounger Subject's Signs

BROTHER

**SIGN DESCRIPTION:** Move the right index and middle finger up and down, alternately, in front of the body, other fingers bent.

**ORIGIN:** Two fingers are alike like BROTHERS.

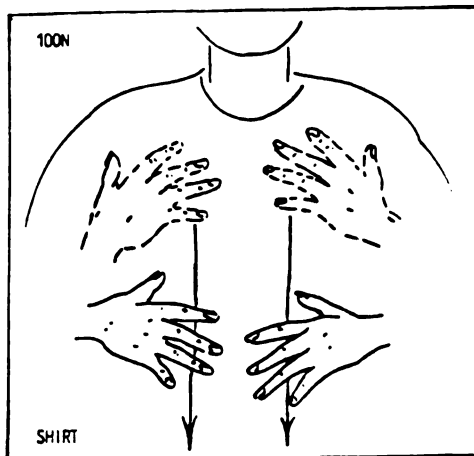
**EXAMPLE:** My BROTHER doesn't live with us.



**SIGN DESCRIPTION:** Bring both index fingers (touching each other) in front of the body.

**ORIGIN:** Same as 99N.

**EXAMPLE:** My BROTHER can hear.

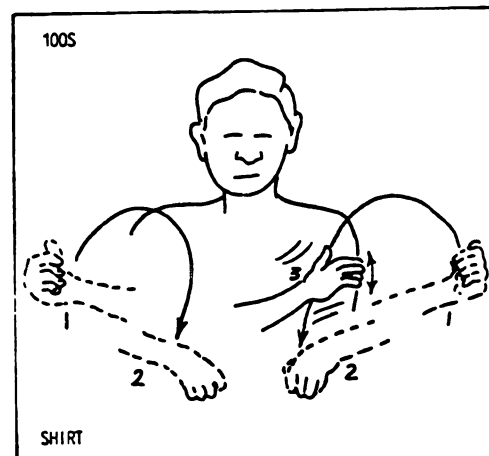


SHIRT

**SIGN DESCRIPTION:** Draw both palms (fingers separated) down on the chest to the waist level, finger tips toward each other.

**ORIGIN:** Showing the SHIRT.

**EXAMPLE:** I have many SHIRTS.



**SIGN DESCRIPTION:** Draw both curved hands from the sides of the shoulders to the front of the body as if wearing a SHIRT. Then hold the left upper arm with the right hand.

**ORIGIN:** As if putting on then showing a shirt.

**EXAMPLE:** We should keep our SHIRTS clean.



## LIST OF REFERENCES

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