

1975

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Naomi S. Schwartz

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A SUGGESTED SPEECHREADING
PROGRAM FOR THE EDERLY
ADULT.

Naomi S. Schwartz

Independent Study CID
May 9, 1975

For Reference

Not to be taken from this room

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In our culture, as man ages he suffers from hearing loss. The decline in hearing ability with age has been documented many times in both the clinic and the laboratory. (Betwink, 1973 p. 123; Davis and Silverman, 1970 p. 110; Gaitz and Waters, 1944.) Hearing impairment is defined by the degree of hearing disability sufficient to make communication more or less difficult. Because of the variety of terms that have evolved to describe a significant hearing loss and because of the ambiguity of these descriptions, it is extremely difficult to attach an exact number to this population. However, if hearing impairment is viewed at a hearing threshold level (HTL) continuum ranging from 25dB to 110dB ISO, 1964, some estimates can be made based on published surveys as to the number of hearing impaired elderly adults in this country.

The total population of the United States is more than 200 million. Current National Health Survey findings indicate that 5,800,000 people in the United States have some degree of hearing loss. In the age range 25 to 44, the incidence of hearing impairment is 20.6 per 1000 persons; in the 45-54 age group it is 52.2 per 1000; in the 65 to 74 age group it is 256.2 per 1000; and in the 75 and over age group it is 256.2 per 1000 persons. (Ledger, 1961; Metropolitan Life Insurance Co., 1959)

Any definition for "old" is arbitrary, for some persons past 65 may not possess characteristics of aging while others may

exhibit characteristics of aging prior to this age. Nevertheless, the 1970 Census disclosed that elder Americans, the over-65 group, constitute approximately 10% of the total population. Twenty-one percent of the population are between 45 and 64 years of age. If the middle years begin at 45, aging from this time involves over 30% of the nation. It is expected that by the year 2000, the over-65 group will constitute well over 10% of the population.

Presbycusis is the term applied to hearing impairment associated with the aging process. It generally occurs in most adults in civilized countries, but its extent varies considerably. In our culture presbycusis rarely is severe enough to warrant concern until the sixth or seventh decade in the population, but may be demonstrated audiometrically in the fourth decade. For purposes of this paper the term presbycusis will be used to designate the deterioration in hearing commonly seen in elder age groups.

Fowler defines presbycusis as a diminished hearing acuity incident to advancing years, due to a progressive loss of function mainly in the neural apparatus of hearing (peripheral, central, cortical, singly or combined, continuing or intermittent). (Fowler, 1959) During the past several years presbycusis has taken on a much broader definition than hearing per se. Included in the definition are the sites of pathological lesion, the loss in threshold sensitivity, the decrease in discrimination function, or the ability to understand speech clearly, and the numerous social and pathological factors manifested by the hearing impairment. (Alpinar, 1963; Alpinar, 1973; Davis and Silverman, 1970)

Research has investigated where degeneration occurs in the auditory system, but there is no universal agreement. Schuknecht has shown that aging can affect all structures of the cochlear duct individually or in combination, including the cochlear fluids. (Schuknecht, 1964). The chief area involved is the cochlea, but there is evidence a conductive component may also be present though previously overlooked. (Davis and Silverman, 1970; Schuknecht, 1964). Degeneration appears to occur at all levels of the auditory system. (Alpinder, 1963; Pestalozza and Shore, 1955; Schuknecht, 1964).

The characteristic pattern of loss seems to be a progressive high frequency loss of sensitivity, while low frequencies tend to remain relatively normal but depressed in sensitivity. (Davis and Silverman, 1964 p. 111; fig. 4-7). Little or no recruitment is present unless there is a noise induced etiology factor. The inability to understand speech clearly, even when it is loud enough, is attributed to an abnormally functioning auditory mechanism. A typical comment is, "I hear you but I can't understand". (Davis and Silverman, 1964; Pestalozza and Shore, 1955).

Society relies heavily upon free and easy exchange of ideas among its members, and for some reason, man has found speech to be the most convenient form of communication. The development and use of speech is primarily dependent upon possession of normal hearing by the individual. When communication is impaired there is a need for rehabilitation. (Lederer, 1961; Sanders, 1971). Hearing loss primarily results in a breakdown of the communicative process, but, the effect of the impairment is not limited to hearing alone and multiple impli-

cations may result: social, economic, educational, psychological, vocational, medical and legal effects. (Davis and Silverman, 1970 p. 435; Lederer, 1961; Sanders, 1971). Deafened individuals feel out off from others and tend to withdraw from social interaction. (Denes and Pinson, 1963 p. 2).

The purpose of this paper is to 1) examine how existing speechreading programs teach the aged client to cope with his hearing impairment and 2) suggest an alternate approach.

Speechreading and lipreading are usually considered synonymous terms, with some preference for the former by the professional individuals involved in auditory rehabilitation, although the public uses the latter term with greater frequency. Historically, lipreading has been primarily concerned with the development of visual skill in discerning the lip positions and movements of a speaker. The newer term, speechreading, suggests that other visual and linguistic clues are valuable in understanding the spoken signal. Both terms will be used interchangeably in this paper when research of various investigators is presented, but the author will use the preferred term, 'speechreading', when describing her own work.

There exists no universally accepted definition of speechreading. Edward B. Nitchie defined lipreading as "the art of understanding a speaker's thoughts by watching the movements of his mouth." (Nitchie, 1930). Later his beliefs were modified to train the mind as well as the eye. Irene Ewing explains speechreading as "a mental activity by which the speech of other people can be understood when words can be seen but not heard." (Ewing, 1941). Anna Bünker described lip-

reading as "the understanding of spoken language while attentively watching the speaker." (Bunger, 1961). This definition is closer to the present day concept, broadening the definition to include all visual clues available to the speechreader.

"Speechreading is the correct identification of thought transmission via the visual components of oral discourse: visual thought comprehension." (J. J. O'Neil, H. J. Oyer, 1961 p. 2).

"Training in lipreading consists in reading speech by watching the facial movements and filling in the blanks by using one's intelligence. Both the eyes and mind must be trained, the latter the more important." (Burchett, 1944, p. 180).

"Speechreading denotes skill to understand discourse by watching movements of the lips, jaw, teeth, and tongue gestures and facial expressions. It implies that when none of the words are heard the 30% of the speech sounds which are visible, plus the situational, facial and bodily cues, enable the brain to fill in the invisible parts of the speech to render discourse intelligible." (Saltzman, 1957 p. 425).

The common concept of lipreading among laymen is still similar to the seventeenth century description of Dr. John Bulwar: "That subtle art which may enable one with an Observant Eye to Hear what an man Speaks by the moving of his lips." (Doland, 1931 p.39).

The goal of training in speechreading is to permit the hearing impaired person to carry on conversations with a degree of comprehension approaching ever closer to what would be obtained if he had

normal hearing. One of the initial purposes of instruction is to develop perception of the visible aspects of speech, a partial compensation for hearing impairment. But because the visual signal is incomplete and often ambiguous, he must also learn to control the primary factors which influence his reception of the articulatory movements, including the environment, rapidity of speech, and psychological variables within himself.

For an individual to speechread he must have some mastery of the basic elements and structure of the speech signal he is to understand. A speech sound or phoneme, is the basic linguistic unit upon which words are built. There are two groups of phonemes: vowels and consonants. These sounds are produced by modification of air flow from the lungs brought about by changes in shape and size of the supralarygeal resonators. Such changes involve movement and positioning of the jaw, lips, tongue, and soft palate. Each speech sound involves a distinctive articulatory movement which may be considered to have a formative aspect and a revealing aspect. (Sanders, 1971). A speechreading movement is defined by Jeffers and Barley as "a recognizable visual motor pattern." (Jeffers and Barley, 1971 p. 42). The term coined to describe visually contrastive speech sounds is visual phoneme, or viseme. (Fisher, 1968). The speechreader reads visual motor movements, not speech sounds.

Spoken language consists of a rapid succession of sounds varying in degree of audibility and visibility. In speechreading, one does not rely on the acoustic code for understanding, but must depend on the visually contrastive part of the code. Since some of

the difference in the acoustic code depends on the voicing and nasality which cannot be seen (Erber, 1969), it is evident there are far fewer visually distinctive sounds than those which are acoustically distinctive. Fewer than 36 sounds are visually distinctive. (Fisher, 1968). This discrepancy between an acoustically distinctive sound and a visually distinctive sound is a major problem to achieving speechreading accuracy. (No relationship exists between auditory intelligibility and the visual identification of the same stimuli.) (Hutten, 1959; Reams, 1950).

A major problem confronting the speechreader is that a speech movement is usually common to two or more speech sounds. Consequently, many words may look alike because they contain the same visemes. Without the aid of context, it is impossible to distinguish which word was actually spoken. Words which are visually identical are called homopheneous words. A special class of homopheneous words also sound alike, i. e., ate and eight; yile and you'll. These are called homophoneous words and are differentiated also on the basis of context of message or other linguistic clues. All homophoneous words are homopheneous, but the reverse is not necessarily true.

Several studies have been done to investigate the visual information available on the speaker's lips. Woodward and Needward and Barber investigated the concept of homopheneity by asking listeners to judge pairs of CV syllables as same or different. They arrived at four categories of visually-perceived consonants: bilabials, labiodentals, round labials and nasalals. They are

cluded that these four categories were visually contrastive between groups, but that the members of each group were visually indistinguishable. That is, some consonants i. e. /p/ /b/ /m/ should not be expected to be differentiated through visual information alone, without supplementary phonetic, lexical or contextual clues. (Woodward, 1957; Woodward and Barber, 1960). Franks and Kimble (Franks and Kimble, 1972), investigated visual confusions of initial consonant clusters. They found seven visually contrastive groups could be discerned by subjects. Fisher (Fisher, 1968) reported that five visemes similar to those proposed by Woodward and Barber emerged from his data. Relative visibility of different phonemes was investigated by the American Society for the Hard of Hearing. (American Society for the Hard of Hearing, 1943). Sounds were classified into four categories ranging from complete visibility to zero visibility. It was concluded that the range of visibility for normal conversational sentences varied from a minimum of 47% to a maximum of 83%, with the average values falling between 65-70%.

Several authors cite percentages for homophenous words in the English language, but figures are seldom based on experimental data. Nitchie stated more than 40% of the sounds used in speech have other sounds homophenous to them, (Nitchie, 1913), while Bruhn claimed 50%. (Bruhn, 1949). Saltzman (Saltzman, 1957 p. 425) cites one-third of the sounds as being visible, and Pauls claims 30%. (Pauls, 1960). Kinzie and Kinzie stated 50% of all the speech elements are indistinguishable. (Kinzie and Kinzie, 1931)

Whatever the precise proportion of homophones words to non-homophones words, it is evident that homophones words are a major detriment to speechreading accuracy. Vision alone eludes the correct recognition of the speech movement(s).

~~For each phoneme there exists a fundamental movement pat-~~
tern which essentially remains stereotyped from speaker to speaker. All people do not talk alike. Some exhibit greater lip mobility than others; some mumble, some exaggerate. Not all persons speak alike and variations in speech movements occur both between speakers and within the same speaker. This also contributes to the difficulty of the lipreading task.

The rapidity of articulatory movements will also be influenced by inter-intra subject variation. Different people talk at different rates. A speaker's rate of speech may vary considerably depending on the topic, circumstances, and emotional state. The faster a speaker talks the more articulatory movements are produced and the more information the eye has to contend with. Normal speech is rapid. Nitchie estimated that an average speaker produces approximately 13 articulatory movements per second and noted that the eye is only capable of consciously recording 8-9 movements per second. According to these figures the eye misses approximately a quarter of all sounds. But not all sound movements produced are visibly distinctive. Miller places the number of articulatory movements in ordinary average conversational speech at 12.5 speech sounds per second. (Miller, 1960). It is apparent that total reliance upon the visual movement itself

will not insure that the speechreader accurately receives the message.

From a series of fragments, the speechreader must mentally reconstruct the complete speech pattern. The primary categories involved in message reconstruction which are directly affected by the abilities of the speechreader are visual perceptual proficiency, synthetic ability, and flexibility. Some of the factors assumed to influence proficiency in each category have been explored by researchers and trends have emerged with reasonable certainty.

Visual proficiency has been subdivided into visual perception, speed of perception and peripheral perception. Presently there is no research with peripheral perception. (Jeffers and Barlogy, 1971 p. 42). Visual perception is the ability to associate motor movements with speech sounds. It includes the noting of transitional (blending) movements. There is some degree of association between speechreading and visual perception. Research indicates this skill may comprise from 14-16% of the total skill in lipreading. (Evans, 1965; Heider and Heider, 1940; Reid, 1947). Better speechreaders were these subjects with greater skill in identifying speech sounds. The importance of recognition to speechreading is unquestionably established. The role of rapidity of articulatory movements in learning and maintenance of visual communication requires further research, as contradictory evidence is present. Generally, the discrepancy of results can be attributed to the

populations studied. Weng and Taffe's data collected on a population of college students indicates no association exists between speed of focusing and speechreading ability. (Weng and Taffe, 1958). Using experienced lipreaders from a school for the deaf another set of investigators report that better speechreading scores occurred at slower articulatory rates although the general impression of these investigators was that in lipreading, skill is adaptable to an extensive range of articulatory rates. (Byers and Lieberman, 1959). The hypothesis here is that since speech is rapid a person capable of focusing rapidly would be at an advantage.

Visual acuity, attention, attitude, and motivation are factors ancillary to visual proficiency. Visual acuity refers to the ability of the eyes to distinguish fine detail. Anyone with vision sufficient to see the articulators should be able to speechread. Goetzinger found no significant relationship between speechreading performance and visual acuity, nor did he find any differences in speechreading scores between binocular, monocular eye dominant, and monocular non-dominant eye vision. He, like other investigators who have measured visual acuity with the Snellen chart, have found statistically nonsignificant correlations between visual acuity and speechreading performance. (Goetzinger, ¹⁹⁶¹~~1960~~). But it is important to remember that the Snellen chart simply requires reading small print, while speechreading requires quick differentiation of rapid articulatory movements along with use of other linguistic clues. It is important not to over-generalize this finding to all potential

speechreaders. Psychological factors such as attention, motivation, and attitude are important to any communication task, especially speechreading. Good speechreaders tend to have a more positive attitude toward others and toward themselves than do poor speechreaders. (Berger, 1972, p. 72). Whether this positive attitude is a result of speechreading success or is instrumental in achieving it remains to be determined. (Berger, 1971). Motivation is difficult to define, much less measure. Nitchie refers to it as a "spiritual" factor. (Nitchie, 1930). Kinzie and Kinzie called it drive, and stated that though it could not be directly tested, it was probably one of the most important factors in lip-reading ability. (Kinzie and Kinzie, 1931). Speechreading requires concentration, and motivation is important to progress. Generally, the fact of a hearing impairment itself provides adequate motivation. If motivation is lacking, it is usually due to feelings of inadequacy and discouragement.

Due to the limited sensory information available to the speechreader, he cannot simply combine the elements or parts of the received message, but rather he must learn to make perceptual and conceptual closures when a good part of the sensory information is either missing or not perceived. First, the speechreader must make a tentative identification of the parts and patterns (words and sentences). He must mentally fill in sounds or elements which he did not see and make an educated guess as to the whole; this is called synthesis. Some people are more proficient at synthesizing than others. It has been suggested that synthetic ability may be necessary for success in speechreading.

but a satisfactory means of measuring it has not yet been found. (Simmons, 1959).

Another factor in speechreading is the necessity for flexibility. In this context it is defined as the ability to revise tentative closures if the first decisions do not result in a message which is both meaningful and appropriate. Both perceptual and conceptual closures must be revised. The order of revision probably varies from moment to moment depending upon the task at hand.

Visual memory is thought to be intimately related to the ability to revise perceptual closures. It refers to the ability to retain, at least briefly, the sensory information on which visual percepts are based. Visual imagery needs to be retained by the individual for a period of time sufficient to enable him to decide what he has seen,--to arrive at perceptual closures and interpret them meaningfully, revising initial interpretations when subsequent messages require this. Several researchers cite a positive relationship between visual memory span and speechreading achievement. (Costello, 1957; O'Neill, 1951; Simmons, 1959).

Use of environmental clues can serve to enhance the meaningfulness of visible signals. Gestures, facial expression, body language, and situational clues provide information about people that is transmitted in a nonverbal form. Learning to recognize and use these clues as adjuncts to the visible message can assist the hearing impaired individual by increasing the probability of correct interpretation of spoken messages.

Gestures are stylized movements, primarily of the hands and arms, but may involve the head, torso or other body parts. Gestures are common to all cultures and vary somewhat in type and degree from culture to culture. (Ruesch and Kees, 1956). Some gestures are universal, and most symbolize a general expression rather than specific or structured information. Examples of common and arbitrary gestures are a head nod for 'yes', 'I agree'; a head shake for 'no', 'I disagree'; two raised fingers for 'V for victory'; and a circle formed with the index finger and thumb for 'OK'. Gestures can function to supplement the speaker's words, adding emphasis or clarity, or they may function as the total message of the speaker. Little research has been done to evaluate the value of gestures to supplement speechreading. In general, it has been shown that when sentences are supplemented by appropriate gestures, speechreading is enhanced. This is true whether they were presented discretely or during the entire sentence. (Berger, Martin, and Sakoff, 1970). Inappropriate gestures, however, will significantly lower speechreading scores. (Pepeka and Berger, 1971). Natural gestures occur frequently in human communication. The hearing impaired should be instructed to observe gestures closely, but only as supplements to other incoming information.

Facial expression and body language can also supplement information received. They offer clues to the speaker's psychological state, and to his opinions on subject matter under discussion. The facial expressions are limited compared to the variety of gestures; and seem to furnish less specific linguistic

information than do gestures. But facial expressions accompanied by gestures assist understanding significantly. Some universal expressions include happiness, sorrow, surprise, sleepiness, bitter taste, pleasant taste, and so forth.

Body language is the study of body movement, from the deliberate to the unconscious. No body position or movement in and of itself has precise meaning, but each derives meaning from the context in which it is used. Body language transmits information to the sensitive observer. In a survey conducted at Michigan State University among deaf people by Dr. Norman Kagan, films were shown depicting men and women in various situations. The experimental subjects were unable to use lipreading and were asked to guess the emotional state of the people and describe what body language clues they used to convey this state. It was found that all parts of the body to some extent reflected a person's feeling state. (East, 1970). Some of the states interpreted by the deaf were nervousness, embarrassment and anxiety, reflected by talking and moving one's hands, or playing with a ring; guilt, when a person seemed to 'swallow back' his expression or when his features 'collapsed'; frustration, expressed by excessive jerky movements; and depression, acted out with a shrinking body movement as if 'hiding oneself'. All observations were accurate.

Situational clues are nonverbal clues which include the physical location of a conversation as well as the participants in that conversation, and objects in the environment.

munication one continually assesses his environment in attempting to identify others around himself, their roles, status, and group membership. From this assessment features are combined and utilized to determine the social situation which forms the context of any communicative exchange. Various investigators have demonstrated the value of situational clues as a supplement to speechreading proficiency. (Arthur, 1962; Smith and Kitchen, 1964).

Distance and angle from the speaker to the speechreader, and the level of illumination in the room and on the speaker's face, are environmental factors which can facilitate or detract the reception of the visual signal by the speechreader. Erber reports higher speechreading scores with smaller distances separating the observer, and with direct illumination of the mouth and surrounding facial area. The effect of distance on word intelligibility was significant: lipreading scores diminished 0.8% per foot with increasing distance within the range of 5-70 feet and about 0.5% per foot between 70-100 feet. (Erber, 1971). When lipreading performance was measured under several conditions of speaker angle, light incidence angle, illumination, and distance, Erber reported the best recognition scores were obtained for 0° or 45° horizontal observation angles. (Erber, 1974). For viewing angles within the range of 0° to 45° the smaller the distance between speaker and lipreader the greater was the visual intelligibility. Minor variations in viewing angle (-30° to +30°) had little effect on lipreading perform-

ance. Illumination which shadowed the oral cavity within the 0-45 range of horizontal viewing angles was detrimental to speechreading performance, while with frontal illumination a wide variety in facial luminance had only a negligible effect on visual intelligibility. Erber stresses that it is the ratio between facial and background brightness which is critical. Lipreading is extremely difficult when low facial luminance is accompanied by high background luminance.

Some speechreading references mention environmental clues, but seldom are they discussed by the teacher or clinician working with the hearing impaired individual. (Berger, 1972 p. 60). The speechreader must learn to effectively organize his environment so that it is possible to receive the best visual signal available. He must learn how various environmental variables interrelate and learn to manipulate them to his advantage.

During the past 25 years the federal government has shown continuing interest on the hearing status of United States citizens. (Health Aspects of Hearing Conservation, 1959). As a result, programs of hearing conservation have been undertaken in many localities throughout the United States. (O'Neill, 1956; Steinberg, 1940; Webster, Himes and Lichtenstein, 1950). There has been a phenomenal growth

of hearing conservation programs on the state level, initiated and administered by units within the department of health, or by those in the department of education. Speechreading is a service offered in Deaf Centers throughout the United States. (Downs, 1961). The results of the Downs survey show it to be offered in: 1) Private agencies 100% of the time 2) public agencies 88.9% of the time 3) medical schools, hospitals 89.6% of the time and 4) universities 18% of the time. The value of speechreading to the Hearing impaired can no longer be questioned as is evident from reports of almost any person who has received any reasonable amount of training and practice in this skill. (Biller, 1940; Vernon and Mindel, 1971). While it must be acknowledged that speechreading is an incomplete modality for language reception, its benefits and importance cannot be denied. Hearing impairment is one of the most prevalent problems of the aged, and aural rehabilitation is necessary and reasonable. (Alpiner, 1973; Davis and Silverman, 1970; Grossman, 1955; Lederer, 1961; Metropolitan Life Insurance Co., 1959). It appears, however, that if deafness occurs over a period of years or is of moderate severity, the hearing impaired person tends to rely on hearing what he can rather than seeking professional help. In difficult listening situations such people need to make use of complementary visual signal, but without specific training most will not become skilled in doing so.

A survey follows of the original methods for teaching speechreading to adults in this country. Few speech and hearing centers still use them in a 'pure' form; most therapists now favor an eclectic approach.

Mueller-Walle Method: The Mueller-Walle method stresses rapid syllable drill rather than drills on sounds, and this emphasis is one of its unique features. The use of rapid syllable drill is carefully graded in difficulty to enhance student recognition of asserted visible movements of speech. Gradually, more meaningful and interesting material is presented, but syllable drill continues. Although syllable drill is criticized as being artificial, it has been found that the more a syllable is encountered, the smaller the fragment needed for identification of the total item. (Postman and Rosenawig, 1958). Lesson materials are analytic in orientation, stilted, and nonfunctional.

Nitchie Method: Nitchie's major contribution to speech-reading instruction was his stress on the psychological process of the technique, the idea that speechreading success depends on the mind as well as the eye. He did not believe in syllable drill or memorization of vocabulary. The student is encouraged to grasp any part of the statement spoken and to make a judgement about the entire idea from the context of what was understood. Word lists are used only to give the speech-reader clues. The lessons cover all sounds of speech in an orderly manner. Homophenous words are practiced, requiring the student to determine meaning from context. Most criticism of the approach is based on the failure of lesson materials to implement Nitchie's philosophy. There is no resolution of the contradictory effort to base lessons on a single movement (eye training) while purporting to develop the associations.

to synthesis of overall messages (mind training). The practice sentences offered are often studied rather than conversational, and practice words often fail to provide useful clues to the meaning of the sentence. (Nitchie, 1913; 1930; 1950).

Kinzie Method: This method combines certain principles from both Mueller-Waller and Nitchie. (Kinzie, 1942; Kinzie and Kinzie, 1931). From the Mueller-Waller method they took the classification of introductory speech sounds, and from the Nitchie method, the basic principles of psychology (synthesis, intuition, and attention) as applied to speechreading. The Kinzies' contribution to speechreading was that lessons were thorough, graded, and designed to meet the requirements and progress of pupils of various ages. The Kinzies' book of graded lessons in speechreading for adults was published in 1931 and then their lessons for children in 1936. This approach advocated following a specific technique to raise instruction in subject matter to more of a science than it had previously been. Kinzie books and methods are among the first published efforts toward an eclectic approach in speechreading methodology.

Jena Method: Dissatisfied with current methods in 1900, Karl Brauckman began to experiment with new and different techniques, saying that all other approaches to date were similar: all included detailed analysis of speech positions, followed with practice in observing these positions in syllables, words, and finally sentences even though only one-half of the positions of the speech sounds were considered

visible and the student had to supply missing movements and combine them with the visual positions in order to obtain meaning from what was spoken. Braukman proposed to treat speech as having five forms: audible, visible, tactual, kinesthetic, and mimetic. The unique approach by Braukman was his stress on the mimetic and kinesthetic forms. The method uses drills of assorted material which the student repeats with the teacher, at the same time watching the teacher and paying attention to their own speech movements by kinesthesia. The hypothesis of the approach is that through imitation, man can be conscious of all speech movements. Once a person has had ample practice in talking with the speaker while focusing attention on his kinesthetic and tactile sensations, it is assumed that when the individual watches without talking he will make subliminal movements and these accompanying sensations will aid him in knowing what the speaker says. The approach is more closely allied with speech production than others discussed. Also, considerable emphasis is placed on rhythmic drills and use of stress patterns in phrases commonly found in speech. The method was first used in the United States at the University of Michigan in 1927. (Bunger, 1961).

Merkevin-Moore: Since the 1930's no distinctive methods have evolved but procedures have been based on one or more of the earlier methods. In this method, filmed conversations depicting life situations are the unit of instruction. Each script emphasizes certain speech sounds and the student must

focus his attention on the whole situation the first time, on the detailed parts of incidents the second time, and on lip movement the third time. (Merkevin and Moore, 1948 p. 8). Questions are asked about motivation, situation, setting, but not script. The premise is, to learn to follow conversation, a number of senses must be utilized and simultaneous progress must be made in a number of directions. (Merkevin and Moore, 1948 p. 4). They seek to develop situation insight, language proficiency, ability to piece together fragments of words, ability to substitute visual for auditory cues, and ability to gain information from kinesthetic and rhythmic cues. The authors express this "cooperation of the senses" essential to speechreading by the letters AVKR, which stand for auditory, visual, kinesthetic, rhythmic sensory integration. The major criticism of the approach concerns materials, not philosophy. The speechreader speechreads conversations and therefore, conversations derived from every day situations appear appropriate. However, materials do not provide a graded approach from easy to more difficult associations and topics used are too general to permit anticipating the dialogue. Other criticisms concern the clues available in the films, which are minimal.

Having discussed processes involved in speechreading and having examined present speechreading methods it is now important to look into what is known about speechreading ability and aging. Then the effects of aging in light of cognition and sensory function in the elderly will be considered.

It appears that after the age of 11 years there is a leveling off of increased improvement in speechreading performance, regardless of the intensity or number of years of training in speechreading. Heider was the first to report an age plateau but more recently Evans reported that speechreading scores increase rapidly between the ages of 8 and 11 years and then, begin to plateau. (Evans, 1965; Heider, 1943). The population of each study consisted of children in schools for the deaf. Using normal hearing elementary students, Utley found a relationship between speechreading and experiences in life rather than age. (Utley, 1946). Keil compared hearing impaired and normal hearing subjects ranging in age from 10-78 years. (Keil, 1972). She found a significant negative correlation between age and speechreading for both males and females. Using a filmed speechreading test of single words, Farrimond observed that speechreading skill in male adults declined after reaching a maximum level by age 30, and that speechreading scores declined about 8% per decade thereafter. Scores of subjects over 60 years of age were about one-half those made by the thirty-nine year old group, and differences were significant even when average hearing loss was held constant. (Farrimond, 1959). Ewerstein and Neilson reported an investigation in which they compared speechreading performance of persons with normal hearing in the 20-29, 50-59, 70-79 year age range. (Ewerstein^{and Neilson}, 1971). Findings demonstrated a decrease in speechreading skill with age, with a greater difference in performance occurring between the 20-29,

50-59 year group than between the 50-59 and 70-79 year group.

In the most comprehensive study done thus far, Pelson, Redney and Prather investigated the effects of visual message-related clues, age and hearing impairment on speechreading performance. (Pelson, Redney and Prather, 1974). Three groups of adults differing in age and auditory status were required to perform two speechreading tasks. First, to speechread sentences with only clues provided by the speaker's face and lips, and secondly, to speechread sentences with a related picture presented prior to the sentence. They found that regardless of age, message-related pictures markedly enhanced speechreading for all groups. The older hearing impaired subjects (mean age 55.6 years) improved more than the two groups of normal hearing subjects (mean ages 21.2 and 56.1). Regarding the absolute performance of speechreading, attending to facial and lip clues only, the younger normal hearing individuals speechread better than either of the two older groups, while the older adults with hearing impairment speechread better than older individuals with normal hearing. Greatest improvement for the older hearing impaired individuals occurred from visual only to visual with constraints, with individual differences in improvement ranging from high to low. The interaction among the variables of age, hearing impairment, and message related clues was not found to be statistically significant.

Collectively, the data obtained from studies of aging and speechreading performance indicates that lower speechreading performance is to be expected in elderly people. Skill in lipreading remains with an individual as he ages, but the facility for transforming visual speech patterns into their auditory equivalent diminishes. It may be that the elderly do pay more attention to lip movement and facial expression when listening to speech, but the decline in ability as indicated by the speechreading tests is due to aging of the central processes involved in this activity.

Learning and memory and problem solving are aspects of cognition which are important to speechreading success. Cognition is viewed as effectiveness in dealing with information. The interaction of these processes and aging will be briefly examined. For a more extensive analysis of the literature the reader is encouraged to consult the reviews by Conso (Conso, 1971), Birren (Birren, 1964), and Weiss (Weiss, 1959).

Learning and Memory: An innate tie exists between learning and memory. Learning sets the limits of memory. If an individual does not learn he has little to recall, but, if memory is poor, there is little evidence he has learned very much. Learning and memory involve a modification of behavior as a function of experience. Conventionally, learning is measured in relation to a change from one experience or trial to another, while memory is measured in terms of the temporal interval between experience or trials. Changes in behavior are thought to reflect a neural event called an engram, or a

memory trace. Three properties of the memory trace are its formation, its storage and its retrieval. (Melton, 1963).

The more primary problem late in life is the acquisition of new information, rather than the remembering of it.

(Meenster, 1972). Zaretsky and Halberstan found older subjects to perform best on a paired associate learning task for material which utilized prior learning experience and less well on material which required learning new associations. Paired associate learning is related to the level of associative strength. There was an age-related learning deficiency for the older subjects such that age differences were marked at low levels of associative strength. (Zaretsky and Halberstan, 1968).

Young and old have usually been found to perform similarly in delayed recall tasks once learning is equated. But with longer periods of delay (29-30 days), memory decline in the elderly was seen, irrespective of experimental adjustment for original learning levels. (Rees and Betwinick, 1971 p. 251-273).

In short term memory, retention covering a period of one second to minutes, people do not seem to decline in ability as they grow older. But in long term memory, covering a period of several minutes, i. e. 10-20, a decline does seem evident. (Rees and Betwinick, 1971 p. 254-273).

Once a memory is stored and formed, its utilization depends on recall, which involves the search and retrieval of information in the memory store. (Rees and Betwinick, 1971 p. 209). Rees-

dition memory, on the other hand, is thought not to involve retrieval, but only requires a matching of information in storage with the information on the environment. It is generally accepted that there is no decline with age in recognition ability. But recall of new memories is impaired while those of old memories either are not impaired or impaired to a much lesser extent. (Grain, 1968; Schenfield and Robertson, 1966).

Botwinick has summarized research findings in various fields of memory and learning loss with age and the theories advanced for this loss. ((Botwinick, 1973). Although results are somewhat conflicting, the conclusion must be reached that memory functions of most persons measured by test, tend to decline with advancing age, but the rate of decline will vary with the test. (type of material used, kind of learning or memory involved). Regardless of whether the cause is physiological, biochemical, or motivational, the older people require increased time to integrate new data, and most scores on tests of memory and learning are not as good for the old as they are for the young. The very brightest older persons may show less loss, but in time even these individuals will perform less well than they once did.

Problem Solving: Problem solving depends on a variety of cognitive processes: the forming of ideas, the testing of them for adequacy, the accepting and rejecting of them. The few problem-solving experiments cited in Welford display age deficits in performance. (Welford, 1958). The elderly have greater difficulty than younger people in solving laboratory problems largely

because these problems require abstract thought, and elderly adults prefer the more concrete tasks and working in a more concrete fashion. (Bremley, 1957). Education appears important in preference of concretism such that the greater the education of the elder person, the less the tendency to prefer to think in concrete terms. (Welford, 1958 p. 497).

With rigidity or inflexibility of thought problem solving can be impaired. To solve problems it is necessary to be flexible to progress from one type of thought to another. Current literature is conflicting as to whether rigidity underlies the difficulty older people have in problem solving. Research indicates that when older adults are compared to young adults, the older people are more rigid. (Botwinick, 1973 p. 70-88). Rigidity is determined in part or in whole by cultural and experiential factors quite independent of age itself. Chown's study demonstrates aging to be associated with simultaneous changes in three variables: a slowing of response patterns, a decrease in problem-solving intelligence, and an increase in rigidity. Which of the triad is primary is unknown. (Chown, 1961).

For successful solution of many tasks it is also necessary to gain explicit knowledge of the goal and to elicit information piece by piece for successful integration. Studies that provided opportunities for the subjects to elicit information showed that the aged make more inquiries, especially noninformative ones. Their search for information tends to be characterized by a lack of order, with considerable fluctuation and haphazard questioning-possibly because they have difficulty focusing upon the goal. In

addition, the old make less effective use of information that they have requested or that has been presented by the examiner. (Sorenberg, 1968, p. 202-209; Young, 1966). Both analysis, obtaining information, and synthesis, processing information to arrive at a solution, seem to be impaired with advancing age.

The existing literature on sensory and perceptual decline in relation to age is extensive and technical, as well as being very traditional and reliable. "Probably in no other area of psychological investigation are the findings so clear-cut and consistent: old people simply do not see or hear or otherwise perceive as acutely . . . as do younger people." (Helsen, 1968 p. 53.)

Vision: Experimental data on aging and visual acuity is meager, but trends have emerged. Up to ages 40-50, little change in acuity is usually noted but after this time there is marked decline. (Chapanis, 1950; Hirsch cited in Hirsch and Wicks (eds) 1960). By age 70, without correction, poor vision is the rule rather than the exception. In addition to the decline in visual acuity at far distances, there is a loss in focusing on near objects thought to result due to the loss of elasticity of the lenses of the eyes. (Duane, 1931). People become farsighted. They do not see things well close up. The loss of accommodation may begin in early childhood, but is widespreadly recognized later in life. If too little light reaches the eyes, it is hard to see. Elderly people need greater levels of illumination than do younger persons and although the elderly are helped more than the young by raising

the level of ambient light, vision never reaches the same level of acuity commonly found in the young. (Weston cited in J. Betwiniak (ed) 1973). One reason for this might be that the elderly have smaller eye pupils than the young, and it is through the pupil that light reaches the retina. (Barea, 1950). From the age 20 to the age 60, there is an approximate linear decrease in the amount of light reaching the retina. Other visual processes affected by aging are the ability to differentiate colors, the ability to see in the dark, and the time it takes to adapt to the dark.

Hearing ability also declines with age, but the pattern of loss is not equal across all frequencies. High pitched tones typically are less audible than low pitched tones. The decline with age is slight before the age of 50, or with tones less than 1000 Hz. Precise etiology is still speculative.

One dimension of hearing is attention. The ability to concentrate and focus on sound plays an important role in hearing. Elderly persons are more likely than younger persons to be inattentive and concentrate poorly. Furthermore, the older person is more cautious, inclined to report hearing sound only when he is reasonably sure he has definitely heard something. (Rees and Betwiniak, 1971). Elderly persons also have difficulty discriminating among pitches, especially the higher ones. Obviously these changes affect speech comprehension and communication.

Although it would appear that aural rehabilitation is necessary and reasonable for the aged client, this population has

and typically been resistant toward hearing rehabilitation, and the general feeling of success with this population has been poor. (Alpiner, 1963; Alpiner, 1973; Gaitz and Watschew, 1944). Earlier it was noted that all of the usual methods rely heavily upon visual perception. It is this author's opinion that existing speechreading programs neither accommodate nor are sensitive to the needs of the older hearing impaired adult.

Recall also declines when practice is spaced at intervals. Elderly persons consistently score poorly on speechreading tests, especially when the only clues available are those on the face and lips. This does not mean that training to improve this aspect of speechreading should be eliminated, but does support the need for teacher and geriatric client alike to be aware of its limitations. Speechreading success depends to some extent on setting realistic goals. Practice in identification of the movement and practice in syllable/word/sentence drill may be beneficial initially to the individual but should not be singled out as the most relevant tool available to achieve understanding. The elderly would probably learn more effectively when taught to use other visual clues in adjunct to the visual message. For example, knowledge of how to manipulate the environment to enhance reception of the visual signal should be immediately useful. This factor and others previously discussed represent high strength associations of experiences common to his everyday life. The instructor must capitalize on such clues.

To establish optimal communication skills in the older hearing impaired person more efficiently than in the speech-reading programs discussed thus far, the following program is suggested.

The rationale of the program is based upon the criteria of factors important to the process of speechreading which were reviewed earlier in this paper. The program consists of ten lessons approximately one hour in length. Three sample lesson plans are included.

Goals of Aural Rehabilitation Therapy

1. To have client attain self-acceptance and acceptance of his hearing impairment with all of its ramifications.
2. To instill in the client self-confidence and insight.
3. To have the client achieve a reasonable degree of independence and exhibit appropriate coping behavior.
4. To have the client understand the speechreading process and appreciate ancillary factors influential in speechreading success.
5. To develop to the fullest possible extent visual skills involved in the lipreading process.
6. To motivate or to stimulate in the client a desire to communicate to the best of his ability.
7. To develop insight by the client into his needs and provide for these needs in the lessons.
8. To have the client assess his rate of progress in relation to other group members and pace himself accordingly.

Curriculum Summary for the Ten Lessons

Lesson I. Introduction

The goal of the introductory lesson is to acquaint the

clients with the content of the program which will be expanded later. Content is as follows. The rationale of the speechreading program is presented to develop a sense of direction and purpose. The process of hearing will be discussed in order to understand the causes of hearing impairment. Factors important in the speechreading process are explained. The visual signal is discussed, as is the influence of ancillary factors: visual perception, flexibility, and synthetic ability. The role of environmental clues to supplement or to complement the visual signal will be explained and frequently practiced in this lesson as well as in all those following it. These include visual clues from people: posture, facial expression, body language, etc., and physical clues available to enhance reception of the signal which arises from appropriate organization of the environment: distance, angle, and illumination. Feedback, involving synthesis of important information to formulate an appropriate question in order to obtain additional information to reconstruct the message, is to be presented and explained to the clients. In all subsequent lessons, feedback techniques will be practiced. All clients are instructed to bring a notebook to each lesson and to take notes when indicated.

Lesson II. Keeping Up With The News

This lesson serves a dual purpose. First, it provides a means for the clients to become involved in what is happening in the world around them. Second, it affords the therapist the opportunity to check up on the clients' lipreading skills while focusing on the various feedback techniques they are learning to use.

The therapist can directly assess each client's effectiveness in employing these skills. The therapist will require that clients synthesize information into appropriate forms of feedback and be flexible in re-organizing information when necessary. The therapist gives news at the first lesson. Each client is to give news in subsequent lessons. It is the therapist's responsibility to make certain that all clients remain involved in the discussion by asking questions and encouraging feedback.

Lesson III. Hearing and the Effect of Hearing Impairment

The goal of the lesson is to acquaint the client with the process of how we hear and then discuss the effect of a hearing impairment. To illustrate points and aid in the discussion the therapist can use a variety of visual aids. General information to be presented is as follows. The clients should receive a concise but accurate description of hearing. For instance: Hearing is the reception of sound. The ears are energy converters. They receive mechanical energy of sound waves, or vibrations, in the air, and then change them into electrical signals for the brain to receive. When the ear is defective it sends weak and/or distorted signals to the brain. The ear has three parts. The outer part consists of the pinna and external auditory canal which serve to carry sound inward towards the eardrum. The eardrum marks the border between the outer and middle ear. The middle ear is a small cavity which contains three bones: hammer, anvil and stirrup. These bones are connected to each other, and transmit the mechanical vibrations from the eardrum to the fluid of the inner ear (cochlea). This fluid carries the vibrations throughout the spiral-shaped length of the inner ear, which is lined

with microscopic hair cells. The fluid vibrations causes the hair cells to bend, which in turn creates electrical signals. These electrical signals set off a chain of nerve impulses leading out of the inner ear to the fibers of the auditory nerve and ultimately to the brain, where hearing is perceived.

At this point the therapist can discuss the effects of impairment in this process. For example: Each part of the ear is subject to damage that can destroy, distort, or weaken hearing. The outer ear can be obstructed by wax or some foreign object, or infection can result in swelling and pus formation. Birth defects, infection, or bony overgrowth can reduce middle ear efficiency to transmit the vibrations to the inner ear. This type of defect which blocks sound transmission before it is delivered to the inner ear is a conductive loss. When sound is conducted to the inner ear but something is wrong in the inner ear, the nerve leading to the brain, or even in the brain itself, proper electrical signals do not get sent, have trouble getting to the brain, or are not received correctly. This is known as a sensory neural loss, or nerve deafness. With a conductive loss the sound is muffled at all frequencies but perceived clearly when made loud enough. In a sensory neural loss, however, certain frequencies are affected more than others; often high pitched sounds are harder to hear, and this alters the ability to understand certain speech sounds. If an individual has a combination of conductive and sensory neural loss, this defect is known as a mixed loss.

Discussion of the clients' impairment and related areas of concern may follow.

Lesson IV. Amplification

The goal of the lesson is to acquaint the clients with types of hearing aids, the function, operation, and care of the aid; and common problems that can easily be remedied when the aid does not work or sound like it should. To illustrate points and to assist in trouble-shooting the therapist should display a variety of hearing aids to the clients. General information to be transmitted should be as follows. The hearing aid functions as an aid to hearing. It makes sound louder, not clearer. There are four important parts to an aid: the microphone, the amplifier, the receiver and the battery. The microphone collects the sound, converts it to electrical energy, and delivers it to the amplifier. The amplifier makes the electrical stimulus louder. The power is provided by the battery. Amplified electrical energy is delivered to the receiver, or earphone, which transforms the amplified electrical signal back into sound waves which are delivered to the ear. The electronic hearing aid functions to change sound into a weak electrical stimulus, makes this electrical stimulus stronger, and then reconverts it to sound somewhat louder than the original stimulus. Controls are provided for turning the instrument on and off, adjusting the volume, and in some models, varying the tone.

Different types of hearing aids may now be presented. The therapist will differentiate among them with regard to power and microphone placement. Appropriateness of each aid will be discussed re: etiology of the loss, age of the client, educational

and communicative needs, and so forth. The clients will be told that it is their responsibility to care for the aid, and all clients are strongly advised to read the instruction booklet thoroughly which accompanies the aid. All clients should gain experience with manipulation of the controls to adequately learn to operate the aid. When the hearing aid does not appear to be functioning as it should, the following areas should be checked: the battery, the cord, the tel-mic switch, and the ear-lead. The therapist will specify how to check each of these areas and each client will have the opportunity to trouble-shoot an aid which the therapist has 'broken'. It will be stressed that under no circumstances should the clients attempt an internal investigation of the instrument because once seals are broken or screws are removed, the instrument may not only be damaged, but the manufacturer's guarantee may be void. Clients will be encouraged to discuss any recurring problems encountered or any questions concerning the operation and use of his aid.

Lesson V. Orientation to Speechreading

The purpose of the lesson is to orient the clients to factors important in the process of speechreading: the visual signal, flexibility, synthesis, and feedback. General information to be transmitted is as follows: Speechreading is both a visual and thinking process. It involves the eyes and the mind. Lip movements convey bits of information, but it is necessary to use additional information derived from linguistic and contextual clues to help reconstruct the message. The therapist will stress this point. She will emphasize the need to gather information from all sources, to sort it out, and to

formulate appropriate feedback to elicit additional facts. Speech movements will be discussed. Difficulties encountered in differentiating individual vowels or consonants will be explained and illustrated. Exercises involving homopheneous words will be presented to force the clients to use contextual and linguistic clues in sentences and employ various forms of feedback.

Lesson VI. Presentation: Environmental Factors Influential

To The Utility Of The Visual Signal

The purpose of the presentation is to acquaint the clients with the abundance of environmental clues available to aid his understanding of the visual message. Information given is as follows. The therapist explains that gestures are stylized movements, primarily of the arms and hands, but may involve any body part. They are natural to language, and function to either add emphasis to a speaker's words or to constitute the total but brief message. Facial expression can also supplement information received. Examples are given to illustrate this point; i. e. therapist says, "Okay", with accompanying facial expression of reluctance versus therapist says, "Okay", with accompanying facial expression of eagerness. Clues about the psychological state of a speaker, and his opinions of the subject under discussion are present in body language, conveyed by a person's posture, position of arms, legs, hands, etc. The therapist illustrates this to the clients and discussion follows about their significance. Nonverbal clues like these can provide the lipreader with valuable information about a conversation and insights about individuals who are participants in the conversation.

There are also certain factors in the environment which, if adequately manipulated, can function to enhance likelihood that the visual signal received will be the best within the given constraints of the situation. The distance and angle from the speaker to lipreader are important, as is also the level of illumination in the room and on the speaker's face. The clients are encouraged to lipread at a comfortable conversational distance and to position themselves so light does not glare into their eyes. The therapist may suggest helpful ways to ask people to reposition themselves or ways in which the clients could indirectly maneuver other persons by manipulating their own positions. Although the practicum for this aspect of environmental clues is to follow in two weeks, the therapist will expose the clients to this and have them think about how it can help them in lipreading.

Lesson VII. Practicum

The purpose of the lesson is to give clients the opportunity to recognize and effectively use various nonverbal clues presented in contrived situations to supplement and/or complement the visual message. The therapist will draw the clients' attention to the relationship frequently existing between what a person is doing and what he is saying. Lesson activities require the clients to predict which comments might be associated with certain roles, facial expressions, or actions. Illustrations which the therapist can use are numerous. For example, therapist is writing on pad of paper when her pencil point breaks; she

look up to say something. Or, therapist holds a watch to her ear and shakes it. Again there is emphasis on various feedback techniques and the client must be flexible as well as synthetic. The therapist will encourage clients to act out various roles, facial expressions or body stances while other group members are called upon to guess what is being communicated.

Lesson VIII, Practicum

The purpose of the lesson is to give clients opportunity to successfully organize and manipulate their immediate environment to attain the best visual signal possible. In addition the clients are requested to effectively use other environmental clues as practiced the lesson before. A conscious effort must be made by the clients to be cognizant of their relationship to the speaker. When lipreading, it is advantageous to directly face the speaker at a distance comfortable for them. Social situations such as parties, coffee breaks, or entertainment such as the theater or movies can be contrived during the lesson to allow clients to practice useful strategies to achieve maximal reception of the visual signal. The therapist will suggest strategies to help clients directly or indirectly manipulate themselves and these persons in the environment. However, the therapist will also point out that many times lipreading is inept, like in a dimly lit room, and it is best to focus upon other environmental clues to get the gist of the conversation.

II. Practicum: Feedback As Your Most Important Tool

The focus of the lesson is on feedback techniques which clients will use to aid communication, in a variety of social situations. In addition the clients will be expected to use all available verbal and nonverbal clues to formulate appropriate feedback. Almost any social situation can be contrived, i. e. at the post office, in a restaurant, at the bank, and so on. The entire group will participate, and the therapist will indicate which forms of feedback are acceptable. Later, the therapist might allow individual clients the opportunity to accept or reject responses from others in the group. A rationale for the client's decision will be given.

X. Group Evaluations and Discussions

The therapist discusses the progress of the group and encourages clients to express their opinions regarding strengths, areas of difficulty, what they have learned, how they feel, etc. She encourages group members to continue to develop their abilities to their maximum potential. Essentially, the therapist presents a pep talk to encourage clients to seek out communicative experiences and enjoy social interaction by continually using the skills which they have acquired to aid them.

Lesson Plan: Current Events

I. Teacher News

A. Behavioral Objective: The teacher will discuss her news article in short, simple sentences, without voice ; the clients

will give feedback about the sentences and answer the questions presented at the end. Clients will recognize specific question forms.

B. Procedure:

1. The teacher will tell her news without voice, one sentence at a time.
2. The clients will give feedback and get the main idea of what the teacher says.
3. The teacher will ask questions at the end without voice and the clients will answer with full voice.

C. Article: news article is from Parade magazine, title: "Fair Break for the Consumer."

1. Ralph Nader is the champion of consumer justice.
2. He advocates a fair break for the average citizen.
3. Nader advocates consumer reform.
4. He encourages students to pay for research on university campuses.
5. Nader receives money by mail totaling one million dollars.
6. These contributions are given to different research groups.
7. Ralph Nader claims that he enjoys talking with people, so he spends a lot of time hitchhiking.
8. Hitchhiking is a great way to meet large numbers of people.
9. Nader graduated with honors from Princeton. Then he attended law school at Harvard University.

D. Questions

1. Who is the article about?
2. What is the article about?
3. Why is Ralph Nader called a champion of justice?
4. What does he want for the average citizen?
5. How much money does he receive through the mail?
6. Where does this money come from-who sends it to Ralph Nader?
7. What happens to the money?
8. Why does Ralph Nader hitchhike?
9. What is hitchhiking?
10. Where is Harvard Law School?
11. What do you think of Ralph Nader's work?

II. Client News

A. Behavioral Objective: The clients will lipread the news given by one client, giving feedback or responding appropriately to a statement made. The clients will lipread to get the main idea of the sentences.

B. Procedure:

1. The teacher will ask a client to volunteer to tell his news without voice.
2. The client will tell his news in short, simple sentences.
3. The teacher will make sure the other clients are observant.
4. The other clients will be encouraged to give feedback about what is being said to insure they are following.
5. Periodically, the teacher will ask a client "What did he say?"
6. The teacher will make sure that all clients remain involved, by asking questions and by encouraging feedback.

Lesson Plan: Recognition and Use of Environmental Clues: Gesture, Facial Expression and Body Language.

I. Client News

A. Behavioral Objective: The clients will lipread the news given by one client, giving feedback or responding appropriately to a statement made. The clients will lipread to get the main idea of the sentences.

B. Procedure:

1. The teacher will ask a client to volunteer to tell his news without voice.
2. The client will tell his news in short, simple sentences.
3. The teacher will make sure the other clients are observant.
4. The other clients will be encouraged to give feedback about what is being said to insure they are following what the client says.
5. Periodically the teacher will ask a client, "What did he say?"
6. The teacher will make sure that all clients remain involved in the discussion by asking questions and by encouraging feedback.

II. Gesture

A. Behavioral Objective: The clients will associate meaning with the gestures the teacher performs and state comments which could appropriately be linked with the gestures.

B. Procedures:

1. The teacher will perform the following actions one at a time.
2. The clients will observe the actions.
3. The clients will guess the meaning of the action.
4. The clients will state comments which could be associated with each action.
5. The teacher will choose a client to perform a gesture and other clients will be called upon to guess what is being communicated.
6. The teacher will guide the discussion making sure each client is a participant and encouraging feedback.

C. Actions:

1. Teacher shakes her head.
2. Teacher nods her head.
3. Teacher extends arm and beckens to the client.
4. Teacher extends outstretched palm.
5. Teacher bends elbow and holds palm up facing client.
6. Teacher rubs hands together.
7. Teacher holds index finger to her lips.
8. Teacher scratches her head with perplexed look.
9. Teacher yawns and stretches arms to the ceiling.
10. Teacher raises the index finger and her second finger and smiles.
11. Teacher shrugs shoulders and bends elbows with palms upward with blank stare.

III. Facial Clues

A. Behavioral Objective: The clients will identify the emotion expressed by the facial expression and predict statements that might be made in situations where such expressions occur.

B. Procedure:

1. The teacher will make the following facial expressions, to express specific emotions, one at a time.

2. The clients will observe the teacher's facial expression.
3. The clients will identify the emotion.
4. The clients will state comments which could be associated with the facial expression in hypothetical situations.
5. The teacher will choose a client to perform a facial expression and other clients will be called upon to guess what is being communicated.
6. The teacher will guide the discussion making sure each client is a participant and encouraging feedback.

C. Facial Expressions and Associative Emotions:

1. Smile: happiness, contentment
2. Frown: unhappiness, discontentment
3. Eyebrows drawn: worry
4. Eyebrows raised: doubt, puzzlement
5. Expressions to convey shyness, embarrassment, anger, fear, surprise, anguish (or sorrow), coyness, sleepiness, frustration.

IV. Body Language

A. Behavioral Objective: The client will identify the body movement with a psychological state and make comments concerning how the person might feel.

B. Procedure:

1. The teacher will assume the following body stances or perform the following body movements one at a time.
2. The clients will observe the teacher's action.
3. The clients will associate the action with a psychological state and predict how the person might feel.
4. The teacher will choose a client to perform a body movement and other clients will be called upon to guess what is being communicated.
5. The teacher will guide the discussion making sure each client is a participant and encouraging feedback.

C. Body Movement:

1. Teacher crosses legs and arms.
2. Teacher straddles legs and places hands on hips.
3. Teacher plays (nervously) with pencil.
4. Teacher sits in chair, places head in chin with eyes drawn downward, gazing blankly out.
5. Teacher taps fingers on desk.
6. Teacher walks definitely; then nonchalantly.

- then perkily.
7. Teacher looks at clients, throws head back, and looks angrily at them.
 8. Teacher places chin in hands and elbows are propped against desk. She stares blankly.
 9. Teacher bangs fist against desk and stands up.
 10. Teacher walks to door and slams it shut.

Lesson Plan: Feedback As Your Most Valuable Tool

I. Client News

A. Behavioral Objective: The clients will lipread the news given by one client, giving feedback or responding appropriately to a statement made. The clients will lipread to get the main idea of the sentences.

B. Procedures:

1. The teacher will ask a client to volunteer to tell his news without voice.
2. The client will tell his news in short, simple sentences.
3. The teacher will make sure the other clients are observant.
4. The other clients will be encouraged to give feedback about what is being said to insure they are following what the client says.
5. Periodically, the teacher will ask a client, "What did he say?"
6. The teacher will make sure that all clients remain involved in the discussion by asking questions and by encouraging feedback.

II. Feedback

A. Behavioral Objective: The clients will synthesize information from verbal and nonverbal clues to give appropriate feedback in contrived situations.

B. Procedures:

1. The teacher will write the cue words on the board.
2. The teacher will point to the appropriate cue word.
3. The teacher will say a sentence or group of sentences without voice and use accompanying nonverbal cues: facial expression, gesture, body language.
4. The client will give appropriate feedback to indicate he has understood what the teacher has said.
5. The client will respond to, comment about, or answer the teacher's statement or query with full voice.
6. The teacher will seek to involve all clients in the discussion by asking questions and encouraging feedback.

C. Materials:

Set 1.

1. clue word-hungry I'm so hungry.
I missed my breakfast.
What time is dinner?
I could eat a horse.
2. clue word-sleep Last night I couldn't sleep.
Are you sleepy?
I went to bed too late last night.
3. clue word-belief I don't believe you.
disbelief Who said so? Really? When? How?
It can't be true!
Things like that just don't happen.
Like it or not, it's true.
Don't give me that line.
4. clue word-health What's wrong with you?
You don't look well at all.
I think I might be catching a cold.
Call a doctor and go to bed.
5. clue word-weather It looks like rain.
It's raining cats and dogs.
Yesterday it was too hot.
There was a frost last night.
Have you ever seen such weather?
6. clue word-relatives My brother-in-law is a wonderful
person,
I'm so fond of my grandchildren.
My wife/husband is a wonderful cook.

I took my grandson to the baseball game yesterday.

7. clue word-dinner Please pass the salt and pepper.
Have another roll: they're homemade.
Will you have some more dessert?
This coffee is excellent.
Let's go into the living room and chat.

Set 2.

1. clue word-telephone Call me when you get here.
2. clue word-gift What would you like for your birthday?
3. clue word-trouble What is the matter?
4. clue word-visit My grandchildren are coming this weekend.
5. clue word-accident The glass slipped from my hands.
6. clue word-mail Don't forget to send me a postcard.
7. clue word-icy Be careful not to slip on the wet floor.
8. clue word-baseball They did it again; the Cardinals lost.
9. clue word-luck I found a nickel on the sidewalk.
10. clue word-politics Who do you think will run on the Democratic ticket in '76?

III. Feedback-Conversational Skit

A. Behavioral Objective: The clients will interact in a contrived situation using verbal and nonverbal clues and feedback to follow the conversation and to meaningfully contribute to it.

B. Procedure:

1. The teacher will choose two clients to volunteer.
2. The clients are given copies of a skit 'Let's Go Swinging'. Each client has only one copy.
3. The clients will recite their parts without voice using natural gesture, facial expression, etc.
4. The clients will act out the conversational skit and the teacher will make certain that the other clients watch and give feedback.

C. 'Let's Go Swimming.'

1. It's beautiful today, so warm and sunny.
2. Let's go swimming!
1. Did you bring a bathing suit?
2. Darn it! I don't have one.
1. That's O.K. I'll give you one of mine.
2. Great. I won't have to go home and get mine.
- We can save time.
1. I just ate lunch.
2. We'll have to wait awhile before we go in the water.
1. Yes, it's dangerous to swim right after eating.
2. I knew. I once got a cramp in my stomach.
1. What did you do?
2. I was in the swimming pool in the shallow water.
1. Did you make it out of the water in time?
2. Yes, just in the nick of time.
1. I bet it hurt.
2. You're not kidding. Now I always wait an hour after eating.
1. I think I will, tee,
2. It's going to take an half hour to get there, so we won't have to wait too long.
1. O.K. Let's go swimming!

To summarize, existing speechreading programs have been examined, and their strengths and weaknesses have been presented with regard to how they propose to teach older hearing impaired individuals to cope with their hearing handicap. Due to their inadequacies for elderly people, an alternate speechreading program has been suggested, based upon presented research concerning the speechreading process and the characteristics of aging. Speechreading is a complex process, and these variables teased out of the process for development should depend upon the characteristics, aptitudes, and immediate needs of each client.

BIBLIOGRAPHY

- Alpiner, J. G. : "Audiologic Problems of the Aged", Geriatrics, 18, 19-26 (1963).
- Alpiner, J. G. : "Aural Rehabilitation and the Aged Client", Audocibel, 102-104 (spring, 1973).
- Arenberg, D. : "Concept Problem Solving in Young and Old Adults", 23, 279-282 (1968).
J. of Geront.
- Arthur, R. H. : The Effect of Continual and Noncontinual Motion Pictures on the Speechreading Proficiency of Comparable Adult Males. PhD dissertation. University of Florida (1962).
Cited by K. W. Berger (Ed) Speechreading, National Educational Press, Baltimore, Maryland, 62 (1972).
- Berger, K. W. : Motivation in Speechreading, Teacher of the Deaf 29, 30-32 (1971).
- Berger, Kenneth W. Speechreading. National Educational Press, Baltimore, Maryland (1972).
- Berger, K. W. J: Martin, and R. Takeff; "The Effect of Visual Distractions on Speechreading Performance", Teacher of the Deaf, 68, pp 384-387 (1970).
- Biller, M. E. : "Lipreading as a Means of Social and Occupational Adjustment", Volta Review 42, 614-619 (1940).
- Bierman, J. E. : The Psychology of Aging. Prentice Hall, Englewood Cliffs, New Jersey, (1964).
- Bierman, J. E., Caspersen, R. C. and Betwinick, J. "Age Changes in Pupil Size", J. of Geront. 5, 216-221 (1950).
- Betwinick, Jack : Aging and Behavior. Springer Publishing Co., Inc., New York, New York (1973).
- Bremley, D. B. : "Some Effects of Age on the Quality of Intellectual Output". J. of Geront. 12, 318-323 (1957).
- Bruhn, M. E. : Mueller-Walle Method of Lipreading for the Hard of Hearing. The Volta Bureau. Washington, D. C. 114 (1949).

- Bunger, A. M.: Speech Reading-Jona Method. Interstate Press, Danville, Illinois (1952).
- Burchett, H. J.: Lip Reading: A Handbook of Visible Speech. National Institute for the Deaf, 180 (1944) (1950).
- Byers, V. W. and Lieberman, L.: Lipreading Performance and the Rate of the Speaker. J. Speech Hearing Res. 2, 271-276 (1959).
- Chapanis, A.: "Relationships Between Age, Visual Acuity, and Color Vision", Human Biology, 22, 1-33 (1950).
- Chown, S. M.: "Age and the Rigidities", J. of Geron. 16, 353-362 (1961).
- Corse, J. F.: "Sensory Processes and Age Effects in Normal Adults", J. of Geront., 26, 90-105 (1971).
- Costello, M. R.: "A Study of Speech Reading as a Developing Language Process in Deaf and Hard of Hearing Children", Unpublished PhD Thesis, Northwestern University (1957), cited by J. Jeffers and M. Bailey (Eds) Speechreading. Charles C. Thomas, Springfield, Illinois, 160 (1971).
- Craie, F. I. M.: "Short-term Memory and the Aging Process." In G. A. Talland (Ed) Human Aging and Behavior, New York, Academic Press (1968).
- Davis, Hallowell and S. Richard Silverman: Hearing and Deafness, (third edition) New York: Holt, Rinehart and Winston Co. (1960).
- Deland, F.: The Story of Lip Reading, Washington D. C., The Volta Bureau (1931).
- Deland, F.: "Pence de Leon and Benet". Volta Review 22. 391-421 (1920).
- Denes, Peter B. and Elliot N. Penson, The Speech Chain. Bell Telephone Laboratories (1963).
- Downs, M. P.: Hearing Rehabilitation Centers in the United States. Arch. of Ota. 73, 65-89 (1961).
- Duane, A.: Accommodation. Arch. of Ophthalmology, 5, 1-4 (1931).
- East, Julius: Body Language, M. Evans and Company, N. Y. J. B. Lippincott Co., Philadelphia and New York (1970).

- Erber, N. P.: Interaction on Audition and Vision in the Recognition of Oral Speech Stimuli. J. Speech Hearing Res. 12, 423-425 (1969).
- Erber, N. P.: Effects of Distance on the Visual Receptions of Speech. J. Speech Hearing Res. 14, 848-857 (1971).
- Erber, N. P.: Effects of Angle, Distance, and Illumination on Visual Reception of Speech by Profoundly Deaf Children. J. Speech Hearing Res. 17, 99-112 (1974).
- Evertson, H. W. and H. B. Nielson: A Comparative Analysis of the Audiovisual, Auditive, and Visual Perception of Speech. Acta Oto 72, 201-205 (1971).
- Ewing, I. R.: "Lip Reading for Adults", Teacher of the Deaf 39, 3-6 (1941).
- Evans, L.: "Psychological Factors Related to Lipreading", Teacher of the Deaf 63, 131-136 (1965).
- Fowler, E. P.: Presbycusis (The Aging Ear). Trans. Am. Oto. Sec. 47, 44 (1959).
- Fisher, C. G.: Confusions Among Visually Perceived Consonants. J. Speech Hearing Res 11, 796-804 (1968).
- Farrimond, T.: "Age Differences and the Ability to Use Visual Cues in Auditory Communication". Speech and Language 2, 179-192 (1959).
- Franks, J. R. and J. Kimble: The Confusion of English Consonant Clusters in Lipreading. J. Speech Hearing Res. 15, 474-482 (1972).
- Gaitz, C. and M. F. Watshew: Obstacles Encountered in Correcting Hearing Loss in the Elderly. Geriatrics 19, 83-86 (1944).
- Gaitzinger, C. P.: A Study of Monocular Versus Binocular Vision in Lipreading. Proceedings of the International Congress on Education of Deaf and 41st Meeting of the Convention of American Instructors of the Deaf, Washington, D. C. United States Government Printing Office, Document No. 106 pp. 326-333.
- Grossman, B.: Hard of Hearing Persons in the House for the Aged. Hearing News 23;11 (1955).
- Health Aspects of Hearing Conservation; Supplement to the Transactions of the American Academy of Ophthalmology and Otolaryngology, Washington, D.C. (November-December, 1959).

Heider, F.: Acoustic Training Helps Lipreading, Volta Review, 45, 135 (1943).

Heider, F. and G. Heider: An Experimental Investigation of Lipreading. Psychol. Monogr., No. 232, 1-153 (1940).

Helson, H.: Comments on McFarland's paper. In K. W. Schaie (Ed) Theory and Methods of Research on Aging. Morgantown, W. Va., West Virginia University, 53-55 (1968).

Hirsch, M. J.: Data cited by Weymouth, F. W. Effect of age on Visual Acuity. In M. J. Hirsch and R. F. Wicks (Eds) Vision of the Aging Patient. Philadelphia: Chilton (1960).

Hutton, C.: Combining Auditory and Visual Stimuli in Aural Rehabilitation. Volta Review 61, 316-319 (1959).

Jeffers, Janet and Margret Barley: Speechreading, Charles C. Thomas, Springfield, Illinois (1971).

Keil, J. M.: The Effects of Pheripheral Visual Stimuli on Lipreading Performance. Cited by K. W. Berger (Ed), Speechreading. National Educational Press, Baltimore, Maryland, 118 (1972).

Kinzie, C. E.: Methods of Teaching Lipreading to Adults: A Symposium. The Kinzie method of graded instruction. Volta Review 44, 701-703 (1942).

Kinzie, C. E. and R. Kinzie: Lip Reading for the Deafened Adult. John C. Winston Co., Philadelphia 363 (1931).

Lederer, F. L.: Hearing Loss From the Womb to the Tomb, Arch. Oto. 74, 391 (1961).

Melton, A. W.: Implications of Short-term Memory for a General Theory of Memory. J. Verb. Learning Verb. Behav. 2, 1-21 (1963).

Metropolitan Life Insurance Co: Statistical Bulletin, 40:1 (1959).

Miller, G. A.: Speech and Language. In S. S. Stevens (Ed.) Experimental Psychology. New York. Wiley. 793 (1960).

Moenster, P. A.: Learning and Memory in Isolation to Age. J. of Geront. 27, 361-363 (1972).

Merkevin, B. V. and L. M. Moore: Life Situations: Speech-Reading through the Cooperation of the Senses, A.V.K.R. Method. University of Southern California, Los Angeles (1948).

Nitchie, E. B.: Lipreading, an art. Volta Review 15, 276-278 (1913).

Nitchie, E. B.: The Use of Homophenous Words. Volta Review 18, 3 (1913).

Nitchie, E. B.: Lipreading: Principles and Practices. Revised by E. H. Nitchie, F. Stokes and Co., New York, 372 (1930).

Nitchie, E. H.: New Lessons in Lip Reading. Lippincott, Philadelphia and New York (1950).

O'Neill, J. J.: An Exploratory Investigation of Lipreading Ability Among Normal Hearing Students. Speech Monog. 18, 309-311 (1951).

O'Neill, J. J.: Ohio County Fair Hearing Survey. J. Speech Hearing Dis. 21, 188-197 (1956).

O'Neill, J. J. and H. J. Oyer: Visual Communication for the Hard of Hearing. Prentice Hall Inc., Eaglewood Cliffs, New Jersey (1961).

Pauls, M. D.: Speechreading. In H. Davis and S. Richard Silverman (Ed) Hearing and Deafness (third edition) New York: Holt Rhinehart, and Winston Co., 352-367 (1960).

Pelsen, R. O. and Wm. F. Prather: Effects of Visual Message Related Cues, Age, and Hearing Impairment on Speechreading Performance. J. Speech Hearing Res. 17, 518-525 (1974).

Pestalezza, J. and I. Shere: Clinical Evaluation of Presbycusis on the Basis of Differential Auditory Function. Otolaryng 65, 1136-1163 (1955).

Popeka, J. R. and K. W. Berger: Gestures and Speech Reception. Amer. Ann. Deaf. 116, 434-436 (1971).

Postman, L. and M. R. Rosensweig: Practice and Transfer in the Visual and Auditory Recognition of Verbal Stimuli. Amer. J. Psych. 61, 376-379 (1958).

Reams, M. H.: An Experimental Study comparing the visual accompaniments of word identification and the auditory experience of word intelligibility. M. A. Thesis Ohio State University (1950). Cited by K. W. Berger (Ed). Speechreading. National Educational Press, Baltimore, Maryland (1972).

Rees, J. and J. Botwinick: Detection and Decision Factors in Auditory Behavior of the Elderly. J. of Geront. 26, 133-136 (1971).

- Reid, G.: A Preliminary Investigation in the Test of Lipreading Retainment. J. Speech Hearing Dis., 12, 77-82 (1947).
- Rosch, J. and W. Kees: Nonverbal Communication. Los Angeles: University of California Press, 205 (1956).
- Saltzman, M.: Factors in Learning Speechreading. A. M. A. Arch. Oto. 65, 425-427 (1957).
- Sanders, Derek A.: Aural Rehabilitation. Prentice Hall, Englewood Cliffs, New Jersey. (1971).
- Schenfield, D. and B. A. Robertson: Memory Storage and Aging. Canadian J. Psychol. 20, 228-236 (1966).
- Sehuknecht, H.: Further Observations on the Pathology of Presbycusis. Arch. Oto. 80, 369-382 (1964).
- Simons, A. A.: Factors Related to Lipreading. J. Speech Hearing Res. 2, 340-352 (1959).
- Smith, R. C. and D. W. Kitchen: Lipreading performance and contextual clues. Unpublished research. Michigan State University (1964). Cited by K. W. Berger (Ed) Speechreading, National Educational Press, Baltimore, Maryland (1972).
- Society for the Hard of Hearing: New Aids and Materials for Teaching Lip Reading. Washington, 169 (1943).
- Steinberg, J. C., N. C. Montgomery, and M. B. Gardner: Results of World's Fair Hearing Tests. J. Acoust. Soc. Amer., 12, 291 (1940).
- Utley, J.: A Test of Lipreading Ability. J. Speech Hearing Dis. 11, 109-116 (1946).
- Vernon, M. and E. D. Mindel: Psychological and psychiatric aspects of profound hearing loss. In D. E. Rose (Ed) Audiological Assessment. Prentice Hall, Englewood Cliffs, New Jersey (1971).
- Webster, J. C., H. W. Hines and M. Lichtenstein: San Diego County Fair Hearing Survey. J. Acoust. Soc. Amer., 32, 473-483 (1950).
- Weiss, A. D.: Sensory Functions. In J. E. Boren (Ed) Handbook of Aging and the Individual. Chicago: Univ. of Chicago Press, 503-512 (1959).
- Welford, A. T.: Aging and Human Skill. London: Oxford Press (1958).
- Weston, H. C.: On age and illumination in relation to visual

performance. Trans. Illus. Engineering Soc. London, 14,

291-297 (1949). Cited by J. Rotnick (Ed) Ageing and Behavior.

Springer Publishing Co.
Inc. New York,
New York (1973).

M. F.: Linguistic Methodology in Lipreading. In Hew-
ell, E. L. (Ed) John Tracy Research Papers.
Los Angeles no. 4, 1-32 (1957).

rd, M. F.: and C. G. Barber: Phoneme Perception in Lip-
reading. J. Speech Hearing Res. 3, 212-222
(1960).

W. and G. Taiff: Relationship between selected aptitude
and personality tests and lipreading ability.
John Tracy Clinic Research Papers VII., Los
Angeles, John Tracy Clinic (1958).

M. L.: Problem-solving Performance in Two Age Groups.
J. of Geront., 21, 505-509 (1966).

ky, H. H. and J. L. Halberstam: Age Difference in Paired
Associative Learning. J. of Geront. 23, 165-168
(1968).

I. S. Schwartz

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9, 1975