

A STUDY OF FACTORS INFLUENCING IMPROVEMENT  
IN SPEECH READING ABILITY

by  
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## CHAPTER I

### INTRODUCTION

Speech reading, commonly called lip reading, was practiced as early as the Sixteenth Century (9). In the past, speech reading was regarded most exclusively as the way of communicative rehabilitation for the hard of hearing after medical treatment had failed to restore adequate auditory function. Regardless of the improvement in hearing aids, speech reading is still considered a necessity for every person with any degree of hearing loss (7, 12, 17, 18, 22, 24, 27, 31, 32, 33, 34, 43, 47, 50). Speech reading and the use of a hearing aid when justified, are invaluable at early stages before deafness has become severe, and before social isolation and speech defects complicate the adjustment problem.

If an immediate means of compensating for the hearing deficit is provided, some of the inevitable withdrawal symptoms can be avoided. At the Audiology and Speech Correction Center, Walter Reed Army Medical Center, Washington, D.C., speech reading therapy is instituted as a means of compensation as soon as the diagnosis of deafness is established.

It is a recognized fact that when speech reading therapy is started immediately after establishment of diagnosis, regardless of the duration of deafness, it will prove beneficial to the patient's psychological status as well as to the progress of medical therapy (7, 24). Because of this recognized necessity, speech reading has become an integral part of the Audiology and Speech Correction Center of the Walter Reed

Army Medical Center.

The factors which influence improvement in speech reading skills are unknown. Until recently little research has been done to find out why speech reading was easy for some people and difficult for others. The psychology of learning is the same in any situation. A colored boy once remarked, "Working on the railroad is like anything else; it is not hard if you know how". There should be a "know how" in speech reading. Anyone with the ability to learn to talk, to read and write, and to understand other people should be able to learn another communication skill.

The specific factors which make for potentially superior speech readers are stated to be many and complex, and the majority of these are the result of "arm chair" speculations. It seems, therefore, that a thorough investigation of factors influencing improvement in speech reading is needed. This study is directed toward investigation of some of these factors.

## STATEMENT OF THE PROBLEM

The purposes of this study are (1) to determine the degree of improvement in speech reading ability, (2) to relate this improvement to such characteristics as,

- A. Intellectual Factors
- B. Personality Factors
- C. Other Selected Factors
  - a. Marital status
  - b. Chronological age
  - c. Education
  - d. Duration of hearing loss
  - e. Hearing gain (through electrical amplification)
  - f. Length of army service
  - g. Rank

and (3) to determine from the statistical findings the therapeutic implications of the study.

The following assumptions are made:

1. Intelligence plays a role in the individual's ability to speech read. It is supposed that the more intelligent patient learns to speech read with greater facility than the patient with lesser intellectual endowment.
2. Personality factors affect the individual's ability to speech read. It has been said that the hard of hearing patient with the greatest number of psychological problems will show the least improvement in speech reading.
3. It is assumed that such factors as marital status, age, education,

duration of hearing loss, hearing gain, length of army service and rank affect the speech reader's potential ability to speech read.

- a. Marital status is a factor which affects the ability to speech read. It is supposed that the married patient is better adjusted, and, therefore, he should make more improvement in speech reading.
- b. Age is a factor which affects the ability to speech read. The younger the adult patient, the easier it will be for him to acquire the techniques of speech reading.
- c. Education is a factor which affects the ability to speech read. The more years of education the person has, the more improvement he should make in his ability to speech read.
- d. The duration of the hearing loss causes the individual, out of necessity, to improve in speech reading ability.
- e. The hearing gained, through the use of a hearing aid and auditory training, is likely to reinforce speech reading.
- f. Length of army service and rank are factors which affect the ability to speech read because of their interrelationship with age. The longer the army service, the higher the rank, and the older the patient, the more incapable he will be in learning new skills in speech reading.



## DEFINITION OF TERMS

There exists wide variation in the usage of the terms (1) speech reading, (2) lip reading, (3) deaf, (4) hard of hearing, and (5) the hearing aid.

- (1) Speech reading is the coordination of visual and acoustic perception clues, which includes lip movements and the ability to interpret these in the light of the total situation. Speech reading, the preferred term, will be used in this study interchangeably with the commonly accepted term (2) lip reading.
- (3) Deaf will refer to those who had a total hearing loss before the acquisition of speech and language.
- (4) Hard of hearing, "deafened", and "hearing loss" will refer to those who once had sufficient hearing for the acquisition of speech and language through hearing it spoken, and later acquired a hearing loss warranting the use of hearing aids.
- (5) A hearing aid: could be described as an amplifying system which picks up sound waves, and transmits them, suitably amplified to the impaired ear mechanism of the hard of hearing person.

## DELIMITATIONS

This study of factors influencing speech reading ability is limited to the measurable selected factors as given at the time of testing by the staff members to the hard of hearing patients at the Audiology and Speech Correction Center of the Walter Reed Army Hospital.

### Subjective Factors

There may be subjective factors more significantly related to the improvement in speech reading than the measurable factors per se, but the selected factors were measured scientifically, while standardized tests for other aspects, such as feelings and attitudes, are not known.

### Measuring Devices

The motion picture offers certain operational advantages for measurements in speech reading, first, by providing control and rate of speech and the visibility of presentation; and, second, a silent picture gives the speech reader more opportunity to concentrate on visual speech patterns. There are disadvantages, however, concerning the use of motion pictures as a standardized test of speech reading ability. First, the degree of likeness to a real life situation is not fully known. Second, it is not considered as good as a real life face to face situation.

### Material and Methods

It should be noted that speech reading materials and methods are not a part of this study. To judge the relative efficacy of these, it would be necessary to have the subjects taught entirely by alternative methods of instruction in speech reading by the same therapists for the four-week period. Then comparison of the improvement of the different groups would reflect differences of therapeutic value.

### Control Groups

For a similar reason it was impossible to have a control group to substantiate further the results of this research. A control group of hard of hearing subjects, from twenty to forty years of age, who had served in Korea, without the Audiology training program, should be tested upon initial fitting of a hearing aid, and again after four weeks of hearing aid experience. The results of such testing would be valuable in determining to what extent the experience of aided hearing may stimulate speech reading. While such grouping could not be done at this time and place, such a study utilizing a desirable control group, should be worthwhile.

## CHAPTER II

### REVIEW OF THE LITERATURE

Speech reading has long been used in the education of the deaf and the hard of hearing. Speech reading for the hard of hearing adult springs from six principal methods in a pure or a modified form: Bruhn (9, 17,32), Nitchie (9, 17, 32), Kinzie (9, 17, 32), Jena (9, 17, 32), Mason (9, 32) and Morkovin and Moore (32), whose differences depend on whether their approach is more by analysis (parts) or by synthesis (meaningful wholes) of the lesson. Nitchie appears to have made the greatest contribution. Having a progressive and experimental mind, he gradually discarded the symbols and concentrated on the psychological aspects of speech reading. His improved method was based on: "Thought is quicker than speech....thought looks ahead and anticipates....The method of mind training should aim to develop the power of grasping the thought as wholes". His approach stimulated further study of the relationship of the various psychological factors to speech reading (9, 32).

Similarly Miss Bruhn stated, "The student who becomes confused because he doesn't 'see' every movement will require a much longer time to master the art than one who, as we say, 'can put two and two together' and let his mind supply what his eye has missed" (9, 17).

Pintner (39) reported laboratory research by Kitson, Gopfert, and Goldmann on types of minds; they concluded that for lip reading the synthetic type of attention should predominate. Goldmann found that the more highly developed the understanding of language and abstract

thinking the better the speech reading ability.

Kinkade's (24) summary of "Natural lipreading", as it has been variously called, is the outcome of increased coordination of the perceptive processes in hard of hearing persons. He disagrees with the proficiency of lip reading depending on a high degree of intelligence, because it had been reported that even persons of apparently slow intellect were able to become accomplished lip readers. He reported that an individual's vocabulary and the extent of his general knowledge appear to be more important than his intellectual ability.

Ramsdell (7) says, "The degree of hearing loss and the time of its onset are important in determining the effect of the impairment upon the personality". Kinkade (24) reported that

Such psychologic peculiarities, as the patient being reluctant to admit his deafness, can sometimes induce an inhibition against the study of lipreading, strong enough to require the assistance of a medical-social worker.

In speaking of selected characteristics as generally recorded on any patient, no mention has been made in the literature of the relationship of marital status to the improvement in speech reading ability.

Pintner (39) stated, "We need studies on the influence on hearing aids and lip reading at various age levels on all kinds of abilities and personality characteristics". Kinkade (24) discusses the age factor:

As a rule, the older an individual the more difficult will it prove for him to acquire the skill of lip reading. The immediate conclusion is, of course, that training in this art -- whenever it is indicated -- should be instituted at the earliest possible moment.

Kinkade (24) also explains the advantages and the disadvantages of the hard of hearing adults as compared with the born deaf individuals:

They may be able to fall back upon residual hearing, and doubtless have a far greater understanding of language, and

in some instance the faculty of abstract thinking has been developed. In actual fact, however, such patients are often at a great disadvantage: the incomparably much wider basis on which they are able to approach the problem of deafness in general, and that of lipreading in particular, counts little if the person cannot adjust in a productive manner to the newly created situation.

The development of the motion picture presented an entirely new medium for facilitating the study of speech reading. Mason (29) was the first to develop motion pictures for the basis of her teaching and testing, and called the system "Visual Hearing". In 1940, Morkovin and Moore (33) developed the Aural Visual Kinaesthetic Method with life situation motion pictures which gave a new impetus to the field of speech reading. About the same time Heider and Heider (17) who are best known for their research with the deaf, reported studies in speech reading, using words, sentences and stories by motion pictures. Their investigations revealed that existing motion picture tests of speech reading were highly reliable and that great individual differences existed among the deaf children examined. It was also stated that these individual differences were not due to training; that a coefficient of correlation of .54 was found between lip reading ability and educational achievement; that there was a correlation between ability to follow rhythm in dancing or gymnastics and lip reading; and that rank and order of children in lip reading performances remain constant to a high degree over a period of years. These findings with deaf children should have some comparative value with hard of hearing adults.

Measures for lip reading for the hard of hearing adult were still practically non-existent until 1945 when Utley (46) produced a motion picture test of lip reading ability for children and adults. Heider (19) reported this test to be unnecessarily long and difficult, more

suitable for adults who were superior lip readers rather than for deaf children. For this reason Utley's findings are quoted in this study. Her test consisted of a sentence test, a word test, and a story test which was administered to 761 deaf and hard of hearing persons enrolled in schools or societies for the acoustically handicapped of four large cities. An effort was made to include subjects from as many different types of educational set-ups as possible. This resulted in a population which includes more individuals of the higher age levels than does a school for the deaf. For the entire group of 761 cases, the chronological age range was from eight to twenty-one years; the grade placement range, from first through the twelfth; the age of onset of deafness range, from birth to fifteen years; and the school achievement range, from 2.0 to 10.9. The pertinent conclusions reported were (1) that ability to lip read sentences can be predicted more reliably from ability to lip read stories than from ability to lip read words; (2) lip reading ability cannot be predicted from reading level or school achievement, chronological age, duration of deafness or grade placement.

There was little information in the literature regarding the duration of hearing loss and its influence upon improvement in speech reading ability. Kinkade (24) says:

It is true that isolated instances have been reported in which oncoming deafness acted as a mental stimulus and the threat of loneliness and unemployment motivated the individual to summon all his remaining powers; but as a rule, and especially in the adult, nervous tension seems to accompany the total or partial loss of sound perception.

Knapp (26) states:

The duration of the loss appears to be as important as the extent of the loss in that it seems to reinforce neurotic patterns already present in the instances of a sudden hearing loss, and that the progressive type of loss causes more

severe warping of the personality.

Silverman and Taylor (7) state, in regard to gain in hearing,

There is no truth in the rather prevalent notion that the use of a hearing aid will diminish one's skill in speech reading. On the contrary, the hearing of speech is likely to reinforce speech reading because auditory clues assist in the discrimination of words that look alike on the lips. For example, in the sentence, "the package is heavy", the word "baggage" might be substituted for "package". The context which the speech reader ordinarily uses to distinguish words that look alike on the lips, is no help here, since both words fit the context. But the hearing might enable the speech reader to discriminate between the initial "p" and "b" and between the "ck" and "g" in the two words.

Educators and hearing aid users generally agree that the continuous association of hearing and seeing speech is mutually advantageous (4, 7, 18, 22, 24, 27, 31, 33, 50). Heider (18) says, "It is clear that time spent on the one benefits the other and that training of residual hearing is one of the best ways of improving lip reading". There are many questions asked regarding the relationship between hearing and speech reading as to how it is known actually to happen. Heider (18) clarifies that question in this way:

The answer is that when the child with considerable hearing understands easily it is naturally assumed that he is using his hearing and not depending on lip reading as much as the other children do. Only if one uses motion pictures and thus gives the visual cues without accompanying auditory cues does one find out how much the child with residual hearing is actually able to read lips.

Length of army service and rank in relationship to improvement in speech reading ability is yet to be known. The literature provides no information regarding the length of army service or rank to improvement in speech reading ability. Many studies on these relationships probably will be made in the future as there rightfully is a great deal of interest in the integration of the various specializations within the



field of audiology. World War II brought about for the first time comprehensive facilities for medical examination and treatment, diagnosis of impaired hearing, selection of hearing aids, instruction in speech reading, auditory training and speech and other aspects of aural rehabilitation combined in a single organization (7, 23, 24). Kinkade states,

Acquisition of lip reading cannot be considered as an isolated problem, but is rather an integral part of the rehabilitation and readjustment of a total personality. Only when an individual can develop the compensatory faculties necessary to balance the physiological damage can the best results from the use of lipreading be expected.

In conclusion, it could be said that the literature reveals the following:

1. Ability to grasp thought wholes as they appear in speech facilitates the improvement in speech reading ability.
2. An individual's vocabulary and the extent of his general knowledge appear to be more important than his intelligence level.
3. No known positive relationship of speech reading ability to intelligence exists.
4. Psychological peculiarities can sometimes induce an inhibition against the study of lipreading.
5. The older the individual, the more difficult will it be for him to acquire the skill of lipreading.
6. Extent of education, after the establishment of language, shows no relationship to the improvement in speech reading ability.
7. The duration of the hearing loss seems to reinforce neurotic patterns already present.
8. The hearing of speech reinforces speech reading.

9. Length of army service to improvement in speech reading ability is yet to be known.
10. There is rightfully a great deal of interest in the integration of the various specializations within the field of audiology.

In the light of the limited information uncovered after an extensive search through the available literature, it seems indicated that a systematic study such as the one proposed is needed.

## CHAPTER III

### PROCEDURE AND ORGANIZATION OF DATA

#### Selection of the Fifty Cases

The selection of the fifty cases was made on the following bases:

1. Every subject must have taken the initial and final Deshon test for showing improvement in speech reading ability.
2. Each subject must have a hearing loss which is functional with a hearing aid. (Each case was diagnosed to have had at least a speech reception (spondee) score of twenty-four decibels or more).
3. Each subject must have passed the Army Medical Visual test.
4. Each subject must have received the full program at the Audiology and Speech Correction Center which consisted of the army medical and psychological battery test, audiometric tests and fitting of a hearing aid, the speech reading course (twenty formal and forty informal lessons), the auditory training course (twenty lessons), and the speech conservation course (ten sessions).
5. Each subject must have been hospitalized at the Audiology and Speech Correction Center at some time between the years of 1949 through 1952.
6. The fifty subjects were selected on the above criteria from a file of patients who had served in Korea, in order to eliminate the variable of service overseas. No discrimination as to age, rank, color, army experience, nor the like was made.

In the group selected according to the above mentioned criteria, there were forty-nine enlisted men and one warrant officer. The age

range was from nineteen to thirty-nine; rank was from Private through Warrant Officer; education was from six to fifteen years of formal schooling; length of service was from less than one year to twenty-one years; the probable length of the hearing loss was from birth to thirty-three years; the average speech reception loss was from twenty-four decibels to fifty-six. All the men had Korean service experience.

## DESCRIPTION OF THE DESHON TEST

The Deshon test film was planned and developed by staff members of the Army Aural Rehabilitation in the Deshon General Hospital, Butler, Pennsylvania, during the year 1945. Shortly after World War II, the three army aural rehabilitation centers (Deshon, Hoff, and Borden) were consolidated into one large aural rehabilitation center which was later reorganized and renamed the Audiology and Speech Correction Center, Walter Reed Army Medical Center. A test for speech reading was needed. After trying out and finding another test film unsuitable (10, 19, 46), the Deshon test film was put to use in the fall of 1948, and is still the guide for determining individual needs for classifying and reporting the speech reading numerical gain obtained on completion of the program at the Audiology and Speech Correction Center.

The Deshon test<sup>1</sup> film is a speech reading examination utilized (1) to achieve through the use of twenty sentences (see Appendix A, page 56) a standardized written test for numerically determining a person's speech reading ability for proper assignment to fast, medium, or slow classes; and (2) to determine the patient's progress by repeating the test at the completion of the program.

The twenty sentences were selected in such a way that the vocabulary and grammatical structure were well within the grasp of any

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<sup>1</sup>The test retest method was used to test the reliability (consistency of the test) of the Deshon speech reading film. The correlation between scores on two tests of the test given fifty-eight hard of hearing army male patients at eight o'clock of a morning and four o'clock in the evening of the same day of test, at the Audiology Center, showed a reliability coefficient or self-r of .88. This is considered a very reliable test, as the best standardized tests have coefficients of .90 or more.

soldier who was able to write. The sentences were given by a young woman, who was a speech reading therapist at the Deshon Hospital. The choice of the speaker was determined by such characteristics as suitable facial appearance and "normal" speech, free from peculiarities. The subject was photographed on 16 mm black and white film. The photography was done at close range. The sentences were given one at a time with blank film of fifteen seconds between sentences for writing the sentence.

## ADMINISTRATION OF THE DESHON SPEECH READING TEST

The Deshon Test, as it is called at the Audiology and Speech Correction Center, has been administered there since 1948 to every patient entering the speech reading department after he has had qualifying hearing examinations. The test was administered by speech reading therapists to one or more persons at a time designated for the purpose. As soon as the patient entered the projection room he was presented with a sheet of paper and a pencil. Subjects who could not write were excluded from the test.

Instructions regarding the test were given immediately after the patient appeared ready to write. He was asked to write his name and the date of the test in the upper right hand corner of his paper. The patient was told that he was about to see a black and white film, with the close-up of a woman speaker, who would speak twenty sentences, one by one. He was told that the sentence, regardless of whether it was a question or a statement, should be written in full or in part as every word scored a point.

He was informed that he had probably been reading speech before arriving at the hospital, that what he wrote on the initial test showed what he could do without training, and what he did on his final test showed his improvement. It was also pointed out that his improvement score was more important than his initial or final score. Sufficient time was allowed for writing each sentence. Room lights were turned on as needed. Every effort was made to create a pleasant atmosphere, to stimulate interest, and to encourage him to do his best in writing the sentences.

Shortly after the test, the patient's paper was graded on the basis

of the number of words produced correctly and the score was recorded in a record book for the purpose, in order that the patient might know his progress and the research worker might use it for study.



## SELECTION OF FACTORS FOR STUDY

The data on intellectual and personality factors were obtained from the army psychologist while the other data were taken from army files having the necessary history and progress reports of the patient during his stay at the Audiology and Speech Correction Center. The administration of all of the selected tests was made by a regular staff member in charge of the particular test at the time of such test.

A. The intellectual factors used in this study were based upon the test results from the following:

1. The McCall Multi-Mental Scale (30), a multiple-choice group test of mental ability.
2. The nationally known Wechsler-Bellevue Intelligence Scale (48).
3. The Shipley-Hartford Retreat Scale (44) for measuring intellectual impairment (herein called the Shipley-Hartford Scale).
4. The Minnesota Clerical Test (1), which is used here as a test of visual perceptual discrimination.

B. The personality factors as used in this study are based upon the results of the following:

1. The Cornell Index Form N2 (49).
2. The Minnesota Multiphasic Personality Inventory (16) which is a structured test of personality.

C. The other selected factors, such as marital status, age, education, duration of hearing loss, length of army service and rank, and hearing gain were taken from the regular folders where the history of the patient is filed by the various staff members for purpose approved by the Army.

The hearing gain was calculated by the difference in the initial speech reception score given unaided and the final speech reception score given aided (that is, by patient using his hearing aid). The speech reception score correlates closely with the pure tone test and indicates the extent of the hearing loss, which is used in determining the man's need of the Audiology and Speech Correction program. The speech reception score is measured in decibels and shows the attenuated level at the point an individual can understand and repeat fifty per cent of the two-syllable (spondaic) words presented with equal stress, unaided and aided in a soundproof room under superior acoustic conditions (6, 7, 20).

## ORGANIZATION OF DATA

The selected factors to be measured by the degree of improvement in speech reading ability were distributed in single headings on columnar statistical sheets, and arranged for study in this order:

- A. Intellectual Factors
  - (McCall Multi-Mental Scale
  - (
  - (Minnesota Clerical Test
  - ( a. Numbers
  - ( b. Names
  - (
  - (Wechsler-Bellevue Scale
  - ( a. Verbal I.Q.
  - ( b. Performance I.Q.
  - ( c. Full Scale I.Q.
  - (
  - (Shipley-Hartford Scale
  - ( a. Vocabulary
  - ( b. Abstraction
  - ( c. Mental Age
  - ( d. Conceptual Quotient
- B. Personality Factors
  - (Cornell Index Form N2
  - (
  - (Minnesota Multiphasic Personality Inventory
  - ( a. Hypochondriasis
  - ( b. Depression
  - ( c. Hysteria
  - ( d. Psychopathic Deviate
  - ( e. Masculine-feminine
  - ( f. Paranoia
  - ( g. Psychasthenia
  - ( h. Schizophrenia
  - ( i. Hypomania
- C. Other Selected Factors
  - ( a. Education
  - ( b. Chronological Age
  - ( c. Duration of Hearing Loss
  - ( d. Hearing Gain
  - ( e. Length of Army Service
  - ( f. Rank

## CHAPTER IV

### RESULTS OF STATISTICAL ANALYSIS

This chapter presents a statistical analysis of the factors influencing improvement in speech reading ability, as measured by the results of speech reading tests administered before and after a four-week program of Audiology training, and the significance of the differences in group relationship to the measurable selected factors involved.

The measure of improvement, used as the criterion of the increase in ability and to classify the patients, was the ratio of the actual improvement in test scores to the potential improvement possible. Although this distribution slightly favored those patients with a high initial score, the ratio was felt to differentiate adequately those cases that improved a great deal from those that benefited very little from the training.

The potential improvement is the difference between the total score (114) on the Deshon speech reading test (i.e., all answered correctly), and the actual score obtained on the first testing. Thus the actual gain is the ratio between the potential improvement over the actual gain and is obtained by dividing the actual improvement by the potential improvement possible.

Three groups were formed: Group A, those cases whose actual gain was more than one-half their potential improvement; Group B, those cases that improved one-quarter to one-half of their possible gain; and finally those patients who improved less than this formed a third class,

Group C. It may be noted, for the entire group of fifty, in Table I, that the average actual improvement was less than half (.45) of the potential that was possible.

The t-test was used as a measure of the significance of the differences between the respective total scores made by the groups of subjects on each of the measurable factors. If the t-value equalled or was greater than 2.44, the two compared scores were considered to be significantly different at the five per cent level. If the t-value equalled or was greater than 2.72, the two compared scores were considered to be significantly different at the one per cent level. Each group was compared with each of the other two groups, i.e., Group A scores were compared with the respective scores made by Groups B and C, and Group B scores were compared with Group C. Critical ratios obtained from the inter-comparisons are found in Tables II b, III b, IV b, and V b. In this manner an evaluation was made of the importance of the measurable factors as measured by the improvement in speech reading ability for the three groups formed. Groups A, B, and C were maintained throughout the study.

(The critical ratios would suggest that the improvement in speech reading ability was beneficial for all three groups. See Table V b).

Further investigation was directed to determine the influence of the intellectual factors, personality factors, and the other selected factors to the scores of improvement in speech reading. The amount of improvement realized was principally a result of the potential improvement possible. For each factor the mean or average score was studied.

The test performance on the intellectual factors of the fifty

hard of hearing patients studied is shown in Table II a. The relationship between the improvement in speech reading scores and the intellectual factors of the fifty patients studied was analyzed as shown in Table II b. Some evidence indicated a systematic relationship between certain of the mean scores but no reliable significance could be shown. Increasing means were noted for the McCall Multi-Mental Scale, for the Minnesota Clerical Test on Numbers and Names, for the Wechsler-Bellevue Performance Scale I.Q., and for the Shipley-Hartford Scale in Vocabulary, Abstraction, and Mental Age. This was in line with clinical expectations as these factors have been considered helpful in classifying patients for speech reading classes at the Audiology Center. However, the Wechsler-Bellevue Verbal score increased steadily with the decline in speech reading ability, which was surprising, as speech readers are thought to have this word power. This may be caused, however, by the small population sampled. While a contradictory pattern on the Wechsler-Bellevue Full Scale was shown in Group B, the middle group, the differences in performances were not significant. The Shipley-Hartford Conceptual Quotient scores would indicate that each group was functioning mentally within reasonable expectations.

The relationship of the improvement in speech reading ability to the Minnesota Multiphasic Inventory Scale scores and the Cornell Index (Form N2) questionnaire score was analyzed as shown in Table III a. There were only slight indications in the mean score of any relationship in the personality factors to the degree of improvement in speech reading ability. Depression, Hysteria, Psychopathic Deviate, Masculinity-Femininity, Psychasthenia, and Schizophrenia scale scores are linked to decreasing improvement but this trend cannot be shown to

be mathematically significant. The findings on the Paranoia and Hypomania scores are linked to increasing improvement but are not pertinent to the degree of improvement. The results are not surprising for had there been serious maladjustment, the patient would have been referred to the Neuropsychiatric Service for evaluation and disposition.

Selected factors considered generally descriptive of the patients are shown in Table IV a. The results are contradictory and show little variation between groups. The similarity between the groups with regard to education and chronological age is best demonstrated by the small differences in the mean scores between groups and the lack of statistical significance of the differences. The age differences of these patients showed but little significance on the improvement of speech reading ability. The lack of relationship between age and improvement shown by this study may be due more to a lack of variation in age than for any other reason. In this connection, it should be noted that of the nine cases included that were over thirty years, only two were found in that group showing greatest improvement although it contains nearly one-half of the cases. It appears that the younger the adult patient, the more improvement in speech reading ability; while the older the adult patient, the longer the army service, the longer or higher the rank, and the longer the hearing loss, the lower the improvement in speech reading ability. Education and hearing gain have an indirect (or reinforcing) relationship to the improvement in speech reading ability. Both factors were sufficiently present for all three groups (see Table IV a).

In conclusion of this statistical analysis, according to the measuring instruments employed, the data suggested:

- A. Intellectual factors have a positive relationship to high scores on the improvement in speech reading ability.
- B. Personality factors have no definite relationship to improvement in speech reading ability.
- C. Other selected factors demonstrate a relationship to the improvement in speech reading ability, e.g., the younger the adult patient, the more improvement in speech reading ability; while the older the adult patient, the longer or the higher the rank, the longer the hearing loss, the lower the improvement in speech reading ability. Education and hearing gain appeared to have an indirect (reinforcing) relationship to the improvement in speech reading ability.

However, the individual differences within each group were of sufficient magnitude to mask any possible statistical differences between group means on all measurable factors which were used as a consequence.



TABLE I

The Performance of Fifty Hard of Hearing Army Male Patients  
According to the Increase in Speech Reading Ability

Group	No. in Group	Potential Gain	Improvement Average	Actual Gain	Improvement Average *	Ratio: Actual to Potential Improvement
A	23	1136	49.39	761	33.09	0.67
B	17	962	56.58	348	20.47	0.36
C	10	552	55.20	76	7.6	0.14
TOTAL	50	2650	53.00	1185	23.70	0.45

\* Total divided by number in each group.

TABLE II a

Performance Scores on Selected Intellectual Factors  
 by Fifty Hard of Hearing Army Male Patients  
 Grouped According to Improvement in Speech Reading Ability

FACTORS	Group A		Group B		Group C	
	Mn	SD	Mn	SD	Mn	SD
<u>McCall Multi-Mental</u>	240.13	21.84	216.47	18.29	197.10	35.78 *
<u>Minnesota Clerical Test</u>						
Numbers	95.78	20.76	86.59	19.91	84.80	19.77
Names	82.48	24.38	75.53	23.75	72.90	25.80
<u>Wechsler-Bellevue Scale</u>						
Verbal I.Q.	102.65	10.14	101.42	10.10	105.80	13.32
Performance I.Q.	111.00	11.57	112.9	7.23	104.90	8.10
Full Scale I.Q.	107.26	9.39	110.82	9.24	106.00	3.69
<u>Shipley-Hartford Scale</u>						
Vocabulary	24.86	6.09	24.24	5.54	21.70	3.95
Abstraction	25.13	7.13	22.23	8.57	21.80	8.51
Mental Age	15.18	1.94	14.41	2.54	13.90	2.22
Conceptual Quotient	99.30	16.30	92.88	13.59	98.80	14.48

\* In terms of small population sampled.

TABLE II b

Group Differences and Their Significance  
On Selected Intellectual Factors

FACTORS	GROUP A vs. GROUP B		GROUP A vs. GROUP C		GROUP B vs. GROUP C	
	Mn Diff.- CR		Mn Diff.- CR		Mn Diff.- CR	
<u>McCall Multi-Mental Scale</u>	23.66	1.58	43.03	3.37*	19.37	1.04
<u>Minnesota Clerical Test</u>						
Numbers	9.19	1.40	10.98	1.40	1.79	.22
Names	6.95	.89	9.58	.96	2.63	.25
<u>Wechsler-Bellevue Scale</u>						
Verbal I.Q.	1.23	.25	3.15	.64	4.38	.70
Performance I.Q.	1.90	.39	6.10	1.69	8.00	1.60
Full Scale I.Q.	3.56	.98	1.26	.55	4.82	1.45
<u>Shipley-Hartford Scale</u>						
Vocabulary	.62	.34	3.16	1.73	2.54	1.34
Abstraction	2.90	.35	3.33	.61	.43	.06
Mental Age	.77	1.01	1.28	1.47	.51	.52
Conceptual Quotient	6.42	1.34	.50	.08	5.92	1.00

\* In terms of small population sampled

TABLE III a

Performance Scores on Selected Personality Factors  
 By Fifty Hard of Hearing Army Male Patients  
 Grouped According to Improvement in Speech Reading Ability

FACTORS	Group A		Group B		Group C	
	Mn	SD	Mn	SD	Mn	SD
<u>Cornell Index Form N2</u>	13.04	14.50	9.41	9.40	16.70	10.95
<u>MMPI/SCALES *</u>						
Hypochondriasis	14.35	4.40	15.06	5.35	15.00	5.92
Depression	19.04	3.68	21.35	6.33	23.30	4.17
Hysteria	19.87	4.21	18.65	4.13	22.60	4.25
Psychopathic Deviate	20.52	5.25	18.82	4.92	23.50	2.58
Masculine-Feminine	21.48	4.93	20.82	5.62	22.30	5.69
Paranoia	9.22	3.71	9.00	2.89	8.4	2.42
Psychasthenia	26.30	4.86	26.59	5.30	26.60	4.39
Schizophrenia	27.30	6.24	25.64	6.74	27.80	4.34
Hypomania	20.13	5.26	20.00	4.08	19.10	4.85

\* Minnesota Multiphasic Personality Inventory

TABLE III b

Group Differences and Their Significance  
On Selected Personality Factors

PERSONALITY FACTORS	GROUP A vs. GROUP B		GROUP A vs. GROUP C		GROUP B vs. GROUP C	
	Mn Diff.	-CR	Mn Diff.	-CR	Mn Diff.	-CR
<u>Cornell Index Form N2</u>	3.63	.45	3.66	.76	7.29	.88
<u>MMPI/SCALES</u>						
Hypochondriasis	.71	.44	.65	.29	.06	.02
Depression	2.31	1.31	4.26	2.60*	1.95	.93
Hysteria	1.22	.46	2.73	1.58	3.95	2.27
Psychopathic Deviate	1.70	1.03	2.98	2.16	4.68	3.12*
Masculine-Feminine	.66	.38	.82	.38	1.48	.63
Paranoia	.22	.21	.82	.10	.60	.41
Psychasthenia	.29	.17	.30	.17	.01	.005
Schizophrenia	1.66	.78	.50	.25	2.16	.90
Hypomania	.13	.09	1.03	.53	.90	.55

\* May be in terms of small population sampled.

TABLE IV a

Performance Scores on Selected Factors  
 by Fifty Hard of Hearing Army Male Patients  
 Grouped According to Improvement in Speech Reading Ability

FACTORS	Group A		Group B		Group C	
	Mn	SD	Mn	SD	Mn	SD
Chronological Age	23.78	5.14	26.47	5.63	25.80	5.78
Education (years)	9.86	3.33	10.29	2.66	10.30	1.97
Duration of Hearing Loss (by years)	9.83	8.43	8.65	9.16	11.60	7.92
Hearing Gain	37.56	7.71	32.71	7.62	39.60	7.32
Length of Army Service (by years)	3.72	2.87	4.67	1.99	5.27	1.73

TABLE IV b

Group Differences and Their Significance  
On Selected Factors

FACTORS	GROUP A vs. GROUP B		GROUP A vs. GROUP C		GROUP B vs. GROUP C	
	Mn Diff.	CR	Mn Diff.	CR	Mn Diff.	CR
	Chronological Age	2.69	1.52	2.02	.92	.67
Education (years)	.43	.18	.44	.32	.01	.004
Duration of Hearing Loss (by years)	1.18	.46	1.77	.56	2.95	.91
Hearing Gain	4.85	1.96	2.04	.70	6.89	2.23
Length of Army Service (by years)	.95	.12	1.55	1.87	.60	.79

TABLE V a

Performance Scores on Deshon Speech Reading Tests  
 by Fifty Hard of Hearing Army Male Patients  
 Grouped According to Improvement in Speech Reading Ability

DESHON SPEECH READING SCORES	Group A		Group B		Group C	
	Mn	SD	Mn	SD	Mn	SD
Initial Test	64.17	27.02	58.00	21.53	53.80	26.88
Final Test	92.36	12.58	78.47	14.86	66.50	26.12
Potential Ability	49.39	26.12	56.59	23.56	55.20	27.99
Actual Gain	33.09	17.49	20.47	9.59	7.60	6.05
% Gain on Speech Reading Test	69.13	14.10	35.47	7.84	15.30	12.29



TABLE V b

## Group Differences and Their Significance

## On Deshon Test Scores

DESHON SPEECH READING SCORES	GROUP A vs. GROUP B		GROUP A vs. GROUP C		GROUP B vs. GROUP C	
	Mn Diff.	GR	Mn Diff.	GR	Mn Diff.	GR
	Initial Test	6.17	.80	.37	.35	4.20
Final Test	18.79	4.15*	30.76	3.38*	11.97	1.26
Potential Ability	7.20	.90	5.81	.54	1.39	.13
Actual Gain	12.26	2.91*	25.49	6.16*	12.87	4.10*
% Gain on Speech Reading Test	33.66	9.60*	53.83	10.17*	20.17	4.43*

\* t-value significance at .01% level  
is 2.72 to 2.79 for all groups.

## DISCUSSION OF STATISTICAL ANALYSIS

The general statement may be made that the analysis showed no significance of differences between any of the groups of factors studied to the improvement in speech reading ability, as measured by the results of speech reading tests administered before and after a four-week program of Audiology training.

These significant findings may be supported by Edward's (11) statement, "It is very seldom, if at all, that perfect relationships are found in the behavioral sciences, in part because of the difficulties of controlling all possible factors which may influence the two variables being studied".

It should be noted that fifty hard of hearing army males, divided into three groups on the basis of their speech reading ability, were all enlisted men except for one Warrant Officer; all were within a similar age range, education, length of army service and rank. Hence, the similarity of the groups limited the variation or range of factors selected for this study.

Most of the intellectual factors tended to show a mean increase in scores in favor of Group A, Group B, and Group C, in that order. The Wechsler-Bellevue Full Scale I.Q. showed that Group C had the lowest I.Q. of the three groups, which was a score of 106. This I.Q. score of 106 for Group C, while insignificant in differences, could possibly indicate that Group C's lack of improvement in speech reading ability was not related entirely, if at all, to the intellectual factors. However, Groups A and B have higher mean scores on the Wechsler-Bellevue Performance I.Q. as well as the Full Scale I.Q. Again, Groups A and B had the highest mean scores on the McCall multi-mental scores, and the

Shipley-Hartford Scale on Vocabulary, Abstraction and Mental Age. These findings would suggest that the more intelligent patient learns to speech read with greater facility than the patient with a low intellectual endowment but further investigation will be necessary before such a statement may be made with any finality.

Personality factors, obtained from tests given before the Audiology training, showed Group C to have the greatest mean score on personality scores as shown by the Cornell Index Form N2 and the Minnesota Multi-phasic Personality Inventory regarding areas of Depression, Hysteria, Psychopathic Deviate, Masculine-Femininity, Psychasthenia, and schizophrenia. While these areas are labeled with imposing names, there was no real reason to believe that the problems encountered by these fifty hard of hearing army males were greater than problems of another sampling of a similar population. As Johnson (21) states, "they are marks of ordinary maladjustment, under certain circumstances, practically all of us behave in some measures like constitutionally psychopathic personalities. The symptoms are to be understood".

As to the selected factors generally descriptive of the patients, such as marital status, while no mean score was figured, it could be seen from the original statistical sheets, that there were nine married men in Group A, four in Group B, with only two in Group C, possibly indicating better adjustment and improvement in speech reading ability for Group A, Group B, and Group C, in that order.

The mean chronological age favored Group A, while there was not much difference between Groups B and C. This possibly indicated the younger the adult patient, the easier it is for him to acquire speech

reading techniques. The lack of significance in ages and improvement in speech reading in this analysis is due more to lack of variation in age (forty-one out of fifty cases were between the ages of nineteen and twenty), than for any other reason. In this connection it should be noted that of the nine cases included that were over thirty, only two cases were found in the group showing greatest improvement in speech reading ability, although it contained nearly one-half of the cases. Therefore, it could be said here, that the younger the adult patient, the easier it will be for him to acquire the speech reading techniques.

The similarity among the groups in regard to education is best demonstrated by the lack of significance in their mean scores. This may indicate the number of years of education to be unimportant.

The analysis on the duration of hearing loss shows a contradictory and overlapping picture, which could possibly indicate that some patients, out of necessity, did tend to improve in speech reading ability, but these findings are unpredictable. Several writers expressed a doubt in the ability of the adult patients to improve in speech reading skills because of the duration of the hearing loss.

These findings appear to be in accord with Utley's (46) findings that lip reading ability cannot be predicted from chronological age, duration of deafness or school grade.

The hearing gain showed an increasing mean score for Group C, Group A, and then Group B. This contradictory pattern possibly indicates that the hearing of speech did not delay or improve speech reading ability; yet there was no reason to believe that the hearing and seeing of speech were not mutually advantageous as this is one factor proven to be helpful in the field for the hard of hearing adults (7, 18, 22, 27, 50)

The length of army service, rank, and age could be interrelated on the basis of time, the mean length of army service being greatest in Group C. This may indicate the longer the service and the older the patient, the more difficult it would be to show improvement in speech reading ability.

The factors discussed in this study of factors influencing improvement in speech reading ability are highly significant in all areas. Because of the highly complex process required for speech reading, no one factor stands alone. The factors are definitely multiple, complex and interrelated. Furthermore, each factor carries a different value towards the improvement in speech reading ability. The speech reading therapists deal with a total organism of an ever-changing individual in an ever-changing world.

In summarizing this discussion, the following conclusions may be justified:

1. The increasing mean score on intellectual factors is related to the improvement in speech reading ability, although low intelligence may not always be the cause of lack of improvement in speech reading ability.
2. Personality factors may or may not influence improvement in speech reading ability.
3. The selected factors, such as marital status, chronological age, education, duration of hearing loss, hearing gain, length of army service and rank in this study showed that:
  - a. The married status indicated better adjustment and improvement in speech reading ability.
  - b. The younger the adult patient, the easier it was for him to

- improve in speech reading ability.
- c. The difference in years of education showed no statistical significance in this study.
  - d. The hearing gain undoubtedly reinforced improvement in speech reading ability.
  - e. The longer the army service, the greater the rank, and the older the patient, the more the difficulty in improvement in speech reading ability was evidenced.
  - f. These factors are multiple, complex and interrelated and carry a different weight toward improvement in speech reading ability.

## CHAPTER V

### THERAPY IMPLICATIONS

#### Therapy Discussions

Since no significant differences were found among the measurable factors, there were individual possibilities for consideration and further study in relationship to improvement in speech reading. The speech reading therapists will not find resolution for speech reading problems in a few measurable factors. Recognition of the individual differences should be of help in consideration of the many possible factors in relating them to the unique individual. Speech reading therapists should be able to deal with the individual, or know how to work with or call in other specialists as necessary for the improvement of the whole person who does the speech reading.

There were individual differences among the intellectual factors for consideration and further study. Reports from the clinical psychologist pointed up the fact that many of the slow speech readers have low scores in visual discrimination, a low vocabulary score, and a low ability for abstract thinking. When therapists confer with psychologists these deficit areas should be discussed so that therapy will be facilitated and the development of more exact methods of therapy may result. Straight thinking and reasoning are necessary for improvement in speech reading and total adjustment of the hard of hearing individual to his environment. If mental functioning can be facilitated relatively better with concrete materials than with abstract materials,

or vice versa, such should be provided. The intellectual factors to be considered in relationship to the use of concrete and abstract materials seem to warrant further study.

There were individual differences in the personality factors analyzed. The fast group of speech readers appeared to have almost as many problems on the personality tests given at the beginning of the Audiology program as the slowest group. The fast group showed greatest speech reading ability and total adjustment at the end of the Audiology program. Perhaps the best adjusted person is not the one with the least problems but the one with the greatest number of ways of solving his problems (See Appendix B, p. 57). That could be true of the fast group of speech readers in this study. Various writers on the subject predicted personality or psychological improvement would result if speech reading instruction was started immediately after establishment of diagnosis. Also, Miss Betty Wright of the American Hearing Society has often said that regardless of whether one becomes a good lip reader or not, the by-products often brought self-confidence, self-reliance, independence; a quickening of the mental faculties, and the loss of a feeling of inferiority. The whole Audiology and Speech Correction staff could say the patients show good improvement in the way of personality factors, but that does not report the cause of improvement; there are no tests designed to show improvement in personality factors. It is suggested that further research along these lines could be of value to the therapists in recognizing good techniques and improving upon those techniques which are not so good.

The other selected factors showed individual differences in regard to chronological age, education, duration of hearing loss, hearing gain,



length of army service and rank, and personality factors. These factors are interrelated and could be studied on the basis of time. The younger patients may require a different kind of therapy in contrast to the older patients. Perhaps the older patients would feel more motivated on subjects suitable for the mature adults. Some of the older patients may need help in recognizing their personal worth or, in other words, a recognition and reward for what they have done for the good of the country, in order to see how speech reading, auditory training, good speech and the wearing of the hearing aid would add to making the future more worthwhile for them. The duration of the hearing loss may have reinforced neurotic patterns already present in the instances of a sudden hearing loss, and the progressive type of loss may have caused severe warping of the personality as predicted by Knapp (26). Further investigation of personality factors to improvement in speech reading should be valuable.

It has been thought that patients who had suffered unusual blows and concussions to their heads had difficulty in learning speech reading. Also, those who worked in noisy or damp places or at too strenuous jobs might have found improvement in speech reading difficult. The mode of onset of hearing loss and occupation are areas for further investigation, as good health should be an important part of any therapy.

If feelings and attitudes are as significant determinants of human behavior as set forth in the principles of human development, it is important that therapists learn to understand and cope with them. The problem would be that of creating a good psychological climate in the classroom. As used here, good climate means the friendly, informal atmosphere of the hospital which is characterized by acceptant and

permissive attitudes of the therapists toward the patients. Carl Rogers (8, 40) helps to clarify the concept of acceptance when he stated, "The teacher's attitude needs to be one of genuine willingness to understand. It means a deep and tolerant acceptance of his right to be different". Permissiveness as used here may be defined as a relationship in which every expression of attitude or feeling is permitted. The climate exists when the patients feel free to be themselves; to admit to themselves, and to one or more persons, how they actually feel about themselves or about their experiences with people or their various situations in life. These feelings often are loaded with emotional charges, positive and negative. The feelings of confusion, doubt, inadequacy, and hostility should be allowed to be expressed in a therapeutic classroom. Therapists are concerned with a person, an individual who has social and economic responsibilities and great aspirations for the future. He has a family and friends, likes and dislikes which influence his whole behavior, learning and development. Every therapist should be interested in what the patient thinks and feels about his life and his ability to speech read among his associates in whatever situation he chooses. If a therapist plans to give the patient a sense of direction and ways and means of maintaining it, it appears important that there be further research along these lines.

When the many factors relating to a permanent hearing loss are considered, one can only conclude that the afflicted individual's behavior is being caused by communication difficulties. Language habits are so basic to one's existence as a human being that they have great influence upon behavior. Therefore, any hearing and communication program (as the Audiology program) is essentially a matter of guiding

the afflicted person in learning new attitudes that will enable him to use his compensatory communicative skills with personal satisfaction. The doctors, technicians and therapists should work together for an integrated program to inspire the hard of hearing person to accept new attitudes toward solving his communication problem. It is only when the person understands himself that he will wear a hearing aid, use his speech, speech reading and auditory training to the best of his ability, and develop the feelings and attitudes of a well adjusted person.

## THERAPY IMPLICATIONS FOR FURTHER STUDY

1. The intellectual areas, such as to whom, when and how to present concrete and abstract materials seem to warrant further study.
2. This study was not designed to show improvement in personality factors. It is suggested that further research along these lines should be helpful.
3. Mode of onset of deafness and specific army occupation should be considered as factors influencing improvement in speech reading ability for further study.
4. A study of therapeutic speech reading methods differentiated in terms of the speech reader's feelings, attitudes, abilities, interests and needs should be considered for further study.
5. A comparative group of fifty hard of hearing army male patients fitted with hearing aids only, and tested before and after four weeks' time for any improvement in speech reading ability, should be valuable for further evaluation of the speech reading program as an integral part of the Audiology and Speech Correction Center.

## CHAPTER VI

### SUMMARY AND CONCLUSIONS

A study was made of measurable factors influencing improvement in speech reading ability of fifty hard of hearing army male patients at the Audiology and Speech Correction Center of the Walter Reed Army Medical Center. These patients had a hearing loss warranting the use of a hearing aid in each case. These cases were selected at random from a file of hard of hearing patients who had served time in Korea. This selection of men from a file of patients returning from Korea was to eliminate that variable of army service, and resulted in enlisted men and one Warrant Officer.

For the entire group of fifty men, the chronological age range was from nineteen to forty years; school grade range from sixth through the fifteenth; the age of onset of deafness ranged from birth to thirty-three years.

The Deshon speech reading test was used for determining the improvement in speech reading ability. This Deshon speech reading test was thought to be most satisfactory and the best measuring instrument at this time. It was given the test retest method for reliability and found to have a reliability coefficient or self-r of .88.

The measure of improvement in speech reading ability used to classify the patients was the ratio of the actual improvement in test scores given before and after training, to the potential improvement possible. This was used as the criterion of the increase in ability.

Three groups were formed: Group A, twenty-three cases whose actual gain was more than one-half (.67) of their potential improvement; Group B, seventeen cases that improved one-quarter to one-half (.36) of their possible gain; and finally, Group C, ten cases that improved less than one-fourth (.14) of their possible gain.

### Conclusions

The entire fifty hard of hearing army males' average actual improvement was less than half (.45) of the potential that was possible.

According to the measuring instruments employed the data suggested: (A) Intellectual factors have a positive relationship to high scores on the improvement in speech reading ability. (B) Personality factors have no definite relationship to improvement in speech reading ability. (C) Other selected factors, as age, have a relationship to the improvement in speech reading ability. For example, the younger the adult patient, the more improvement in speech reading ability; while the older the adult patient, the longer the army service, the longer or higher the rank, and the longer the hearing loss, the lower the improvement in speech reading ability. Education and hearing gain demonstrated an indirect (reinforcing) relationship to the improvement in speech reading ability.

However, the individual differences within each group were of sufficient magnitude to mask any possible statistical differences between group means on measurable factors which were used as a consequence.

The problem becomes one of continuous study of individual differences for optimum development of speech reading therapy.

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APPENDIX A, B

## DESHON TEST FILM

1. Good morning, how are you? .....	5
2. What is your name? .....	4
3. Where are you going? .....	4
4. Have you been overseas? .....	4
5. Where is the post office? .....	5
6. What time will you be back? .....	6
7. It is warm today. ....	4
8. How long have you been here? .....	6
9. I saw a ball game this afternoon. ....	7
10. Have you read the newspaper? .....	5
11. We are having fine weather. ....	5
12. Will you have a cigarette? .....	5
13. What time shall we go to the movies? .	8
14. Where did you take your basic training?	7
15. Have you got a match? .....	5
16. We had a fine time at the party. ....	8
17. Where did you go yesterday? .....	5
18. How long have you been in the Army? ..	8
19. Do you mind if I go with you? .....	8
20. Did you find it interesting? .....	5

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Total Points .... 114

A well-adjusted person is not the one with the least problems but the one who has the greatest number of ways of adjusting.

WAYS OF ADJUSTING TO A HEARING LOSS

1. "The first step toward surmounting the difficulty is to admit it frankly and realistically" (7).
2. SEE AND HEAR! It is known that the continuous association of hearing and seeing speech is mutually advantageous.
  - (a) Use your speech reading ability.
  - (b) If you need a hearing aid, by all means wear it at all times possible.
  - (c) Keep it going by having extra cords and batteries with you.
3. SPEAK CLEARLY, so others will obey the law of suggestion and speak clearly to you.
4. PLAN YOUR CONVERSATION IN ADVANCE!
  - (a) Have a good light on the speaker's face!
  - (b) Select your place in the room with your back to the window.
  - (c) When eating or working at a table, try to get an end position. Try to have your better ear to the speaker.
  - (d) Size up an approaching person. Does the person carry anything or have any obvious clue as to why he is calling or stopping to talk?
  - (e) Have your family and friends trained to give you proper names with descriptive phrases, as "Dr. \_\_\_\_\_, of the Walter Reed Army Medical Center will speak at your hearing society this afternoon".
  - (f) Read the headlines of newspapers to know names of people and places frequently used.
  - (g) In conversation and over the phone, proper names are difficult; ask for some information about the person.
  - (h) Take the initiative in opening conversations. Ask questions to which you already know the answers, to inspire the other person to talk and to prove to yourself and the other person that you can understand readily.
  - (i) In asking questions, use a simple phrase or sentence in place of a short word because of the greater eye span so others will obey the law of this suggestion. A HALF A DOLLAR is easier to see than FIFTY CENTS which is easily confused with FIFTY CENTS.
  - (j) In shopping, know what you want. Be definite to avoid questions. State your order, as, "I want black leather gloves, size  $7\frac{1}{2}$ . Do you have them?" Know the value of the article so you may have some idea of the price. Also watch for price tags, cash register and the newspaper for prices. Pay a little more than you think the article might be and watch for your change.
  - (k) Plan a "yes" or "no" answer, as, "Do I owe you any more?"