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THE EFFECTS OF VISUAL DEPRIVATION ON
LIPREADING PERFORMANCE

Thesis for the Degree of M. A.
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Barbara E. Subar
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ABSTRACT

THE EFFECTS OF VISUAL DEPRIVATION ON
LIPREADING PERFORMANCE

by Barbara E. Subar

The purpose of this study is to analyze the effects of visual stimuli deprivation on the lipreading performance of trained subjects.

Subjects participating in this study were twelve females having at least a high school education, normal hearing and vision and no formal training in lipreading.

Silent motion-picture films were made of a speaker, saying the first twenty-five words of a list of most frequently spoken words determined by Voelker.¹ An eight second interval between each word allowed the subjects time to record each word on an answer sheet. Four different films were employed, each consisted of the same vocabulary but with the word order randomized. The visual clues given for each word were varied on the three test films. Subjects were trained on specially prepared films until they recognized a minimum of ninety per cent of the vocabulary.

¹C. H. Voelker, "The One Thousand Most Frequent Spoken-words," Quarterly Journal of Speech, 28 (1942), pp. 189-197.

The findings of this study indicate that the lip-reading performance of trained subjects does not differ significantly as they are deprived of fifteen, thirty and forty-five per cent of the visual stimuli.

THE EFFECTS OF VISUAL DEPRIVATION
ON LIPREADING PERFORMANCE

By

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A THESIS

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A handwritten signature in cursive script, appearing to read "H. J. Ayer", is written in the bottom right corner of the page.

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CHAPTER I

STATEMENT OF THE PROBLEM

Introduction

The human being spends much of his time in communication with others. When hearing loss occurs it interferes with communication.

"Man is normally endowed with five physical senses. They are sometimes likened to windows and doors through which he gains knowledge and experience. These senses have to be trained, and should one be lost, or disabled, those remaining must be trained to take its place."¹

Man inherently feels a bond between himself and others; a bond which he strengthens through communication. The person with a hearing problem depends a great deal on lipreading as his way to keep this bond of communication alive.

"Lipreading, however, is not hearing, but it is making use of our remembrance of speech together with our imagination in applying it to what we can see."²

¹Irene R. Ewing, Lipreading and Hearing Aids (Manchester: Manchester University Press, 1946), p. 4.

²M. Faircloth, Lipreading Study and Practice (Toronto: Ryerson Press, 1946), p. viii.

Studies in visual perceptibility of speech and its relationship to lipreading are needed to aid in solving the many exacting problems in the education of the hearing impaired person. It is true that numerous investigations have already been undertaken in the area of lipreading; but very few of these have concerned themselves with the relationship between lipreading and visual skills.

Statement of Problem and Purpose of Study

The area of investigation from which this study arose is that of visual perception. The purpose of this study was to investigate and analyze the effects, if any, of predetermined deprivation of visual stimuli on a group of trained lipreaders.

From the investigation and analysis it is hoped that the following general questions can be answered: Is the ability to recognize a word in a motion picture disturbed by depriving the viewer of a specific amount of the filmed visual stimulus? How much of the stimulus may be deprived from a word while still allowing the word to be recognized?

Specific Questions Posed

1. Is there a significant variation in the subject performance among the three levels of visual stimuli deprivation?

2. Is there a significant difference in lipreading performance between fifteen per cent and thirty per cent conditions of stimulus deprivation?
3. Is there a significant difference in lipreading performance between thirty per cent and forty-five per cent conditions of stimulus deprivation?
4. Is there a significant difference in lipreading performance between fifteen per cent and forty-five per cent conditions of stimulus deprivation?
5. Is there a difference between the error scores of subjects at the first deprivation level and the error score obtained at the second deprivation level for two syllable words?
6. Is there a difference between the error scores of subjects obtained at the first deprivation level and the error score obtained at the third deprivation level for two syllable words?
7. Is there a difference between the error scores of subjects obtained at the second deprivation level and the error score obtained at the third deprivation level for two syllable words?
8. Is there a difference between the error scores of subjects obtained at the first deprivation level and the error score obtained at the second deprivation level for three syllable words?

9. Is there a difference between the error scores of subjects obtained at the first deprivation level and the error score obtained at the third deprivation level for three syllable words?
10. Is there a difference between the error scores of subjects obtained at the second deprivation level and the error score obtained at the third deprivation level for three syllable words?

Importance of Study

Little is understood concerning perception of visual signals available on the faces of speakers. This writer knows of no research data that shows how much or how little of a visual signal is necessary for the trained viewer to make correct identification of a word. It is anticipated that this study will provide such basic data and will cause further interest in investigating the visual perception of speech and its relationship to the amount of visual information available.

Definition of Terms

For the purpose of this study, the terms used are defined in the following manner:

Lipreading.--The ability to recognize specific words as they are presented in a motion picture without sound reproduction.

Snellen Vision Test.--A chart consisting of alphabet symbols that are pictured in varying sizes. Visual acuity for distance is determined by the size of the letter a person is able to read at a specific distance from the chart.

Normal Vision.--The ability to pass the Snellen Vision test at a distance of 20 feet. Normal vision in this paper may also signify persons who have vision corrected to 20/20 with glasses.

Normal Hearing.--The ability to hear pure tones at 15 decibels at frequencies of 250, 500, 1000, 2000, 4000 and 8000 cycles per second.

Vocabulary.--The words used in this study were taken from "The One Thousand Most Frequently Spoken Words."³

³Charles H. Voelker, "The One Thousand Most Frequent Spoken-Words," Quarterly Journal of Speech, 28 (1942), pp. 189-197.

CHAPTER II

REVIEW OF THE LITERATURE

The Importance of Lipreading

Some have thought that lipreading was a skill belonging only to those people who had hearing impairments. O'Neill, in an investigation, found that all persons, those with or without hearing problems, unconsciously use lipreading as an aid to hearing.¹ Lowell agrees with this by saying, ". . . despite wide individual difference almost everyone can lipread to some extent and a good many people can get most of a simple conversation by lipreading alone."² From the literature it may be assumed that lipreading is of importance to almost every person who communicates with another.

Factors Influencing Lipreading

Many investigations in the area of lipreading have been conducted; however, it is apparent that no single

¹J. J. O'Neill, "Contributions of the Visual Components of Oral Symbols to Speech Comprehension," Journal of Speech and Hearing Disorders, 19 (1954), pp. 429-439.

²E. L. Lowell, "New In-sight into Lipreading," Rehabilitation Record, II (July-August, 1961), p. 4.

element is the lone determinant of lipreading skills. A wide range of factors must be considered in order to determine the proficiency of a lipreader.

Intelligence has been considered as a variable involved in lipreading ability. Simmons reported that she found no significant correlation between lipreading and intelligence.³ Visual memory span, another factor, was studied by O'Neill and Davidson. They found that when using a group of numbers as test materials there was no relationship between lipreading and visual memory span.⁴

Little relationship was found between lipreading and synthetic ability as tested by letter prediction.⁵ The early research done by Kitson sought to differentiate between synthetic and analytic types of perception. Kitson believed that the synthetic type would make lipreading easier.⁶

³Audrey Ann Simmons, "Factors Related to Lipreading," Journal of Speech and Hearing Research, 2 (1959), pp. 340-352.

⁴J. J. O'Neill and Joan Davidson, "Relationship Between Lipreading Ability and Five Psychological Factors," Journal of Speech and Hearing Disorders, 21 (1956), p. 480.

⁵Corrine Tatoul and G. Don Davidson, "Lipreading and Letter Prediction," Journal of Speech and Hearing Research, 4 (1961), p. 181.

⁶Ruldolf Pintner, Jon Eisenson and Mildred Stanton, The Psychology of Physically Handicapped (New York: Appleton-Century-Crofts, 1941), pp. 114-145.

Rate was studied as a variable in lipreading by Byers and Lieberman. These investigators found that a rate variable is not significant in lipreading performance, neither in terms of the number of correct responses nor the number of words produced.⁷

Mulligan studied speed of projection and its effect on recognition of filmed material. She found that when the rate of projection was decreased by one-third the subjects were able to correctly identify more of the test material.⁸ It would appear that more research in this area is indicated due to discrepancies among the existing studies. It should be noted, however, that the Byers and Lieberman test was done with words per minute as their base whereas the Mulligan test was based in terms of frames per second.

Black,⁹ in a study that was concerned with the ease with which various words could be lipread, found that certain words were more easily lipread due to placement of the

⁷Vincent W. Byers and Lewis Lieberman, "Lipreading Performance and The Rate of The Speaker," Journal of Speech and Hearing Research, 2 (1959), pp. 271-276.

⁸M. Mulligan, "Variables in the Reception of Visual Speech from Motion Pictures" (unpublished Master's thesis, Ohio State University, Department of Speech, 1954), cited by O'Neill and Oyer, op. cit., pp. 43-44.

⁹John W. Black, "Accompaniments of Word Intelligibility," Journal of Speech and Hearing Disorders, 17 (1952), pp. 409-417.

accent in the word and also to the type of sounds which the word contained.

Lowell suggests that a main factor in lipreading is the reception of the words seen. He found that there was a definite improvement in lipreading scores as the reader was able to see the speakers face. Lowell also believed that a non smiling face was easier to lipread. The reason he offered for this is as follows: "the unsmiling face, with lips firmly closed between sentences, definitely indicates the start and duration of the message."¹⁰

Expectancy is another factor contributing to ability in lipreading. Lowell's study indicated that the parts of speech vary in their ability to be lipread, the order of difficulty from the most easy to the most difficult is as follows: pronoun, verb, noun, adverb, adjective, preposition and conjunction.¹¹

The Effect of Visual Perception on Lipreading

Vernon, while discussing visual perception, states that if the pre and post exposure fields are dark, it is easier to perceive the stimulus.¹² In speaking of perception

¹⁰Lowell, op. cit., p. 4.

¹¹Ibid., p. 4.

¹²M. D. Vernon, Visual Perception (London: Cambridge at the University Press, 1937), p. 12.

of written materials, he continues, ". . . we do not need to perceive clearly and in detail every letter, or even every word, but are able to pick up vague outlines or structures of words and phrases which are a sufficient clue for perceiving and apprehending of the meaning of the words."¹³

Fusfeld found that ". . . the most skillful deaf adults do not grasp every word spoken on the lips."¹⁴ He further states, they perceive ". . . and recognize only the key words and then 'fill in' the elliptical portions which represent the hidden throat and nasal speech elements."¹⁵

While studying the field of perception and its relationship with reading; Thurstone said, "reading evidently consists in filling in the words and their meaning from the bare fragments of the outlines."¹⁶ It is believed that the idea which is introduced here could also be applied to visual perception and lipreading.

Fusfeld reports, that ". . . every single picture in the moving panorama of a moving picture is actually forming

¹³Ibid., p. 50.

¹⁴Irving S. Fusfeld, "Factors in Lipreading as Determined by the Lipreader," American Annals of the Deaf, 103 (1958), p. 229.

¹⁵Ibid., p. 229.

¹⁶L. L. Thurstone, A Factorial Study of Perception (Chicago: University of Chicago Press, 1944), p. 12.

part of a visual screen even though it remains visible for only a very fleeting fraction of time."¹⁷

The Effect of Deprivation of Stimuli

Lipreading is not the only area of communication that is effected by deprivation of stimuli. The effects could also be studied, in the areas of reading and hearing. To illustrate this point the following examples may be cited:

A man joins a group of people discussing a particular topic. Although, the man may have missed as much as five minutes of the discussion, it is not likely that he will be greatly confused by having been absent for that length of time.

A word is printed on a chalkboard, then the portion of the letters which are above the midline in printing are erased. The reader is thereby deprived of certain visual stimuli, yet, in many instances he is still able to discern the correct word.

A sentence could be printed omitting all the letter e's and instead use the letter x. The sentence would still be intelligible to the reader. An example of this might be: Now is thx timx for all good mxn to comx to thx aid of thxir country.

Each of these illustrations has suggested a specific type of deprivation of stimuli. The examples also show that the effect on the final task was not sufficient to cause a habitual faulty response.

¹⁷Fusfeld, op. cit., p. 230.

¹⁸O'Neill and Oyer, op. cit., pp. 43-44.

CHAPTER III

SUBJECTS, EQUIPMENT, AND TESTING PROCEDURES

Subjects

The subject population consisted of twelve females with an age range of eighteen to fifty-two years. Each subject had at least a high school education but no formalized training in lipreading prior to this experiment.

Equipment

Vision Screening Device (Snellen E Chart-Green Test Cabinet Model 20).

Audiometer (Beltone-Model 10c, with Telephonics TDH-39 Earphones).

Sound Pressure Level Meter (MSA Soundscope, Model B).

Light Meter (Spectra Gold Seal Exposure Meter, Model S-500).

Movie Projector (Bell-Howell 16 mm. Model #173).

Lens (Incredilite 3 inch, f/2 16 mm. Bell-Howell).

Screen (Radiant Screen 4 feet by 4 feet).

Training film.--A silent, motion picture training film was constructed especially for this study. A female speaker was photographed saying twenty-five words. The

speaker was placed full face forward with only her head and part of her neck showing. Each word on the film was separated by an eight second interval. The experimenter used 16 mm. black and white film run at normal speed of 24 frames per second. The complete training film was 7 minutes and 18 seconds in length.

Procedures

I. Filming.--The vocabulary employed in this study was selected from the first fifty words in Voelker's study of most frequent-spoken words.¹ The first twenty-five non-homophenous words were chosen for the film.

One speaker was filmed saying the test materials. Care was taken so that the speaker would be seen in a closed mouth position briefly before and after the completion of each word. The words were said with voice to avoid exaggeration of the lips while speaking. No films used in this experiment had sound reproduction.

Four different films were constructed. Each film had the same vocabulary, although the word sequence was not the same in any two films. The order in which the words were presented was determined by the use of a table of random

¹Voelker, op. cit., pp. 189-197.

numbers.² The films varied in length from 7 minutes and 7 seconds to 7 minutes and 12 seconds.

II. Preparation of Test Films.--Films were prepared in such a manner so as to deprive the subjects of a specific amount of information. The first film in the test series was constructed so as to deprive the viewer of fifteen per cent of the visual clues. This was done in the following manner: (1) A count was made of the frames necessary to perceive the complete word. (2) Five frames showing the closed mouth position was added to the beginning and end of each word. (3) A new total of frames was computed. (4) A number representing fifteen per cent of the total amount of frames was determined. (5) A table of random numbers was used to record which frames would be eliminated from the film. (6) Black marking ink was used to block out the frames selected for elimination.

In the same way the second and third films were prepared so as to deprive the viewers of thirty per cent and forty-five per cent of the stimuli respectively.

III. Training of Subjects.--The subjects were trained in two groups of six persons each. The six chairs upon which they sat were placed in a row with each chair being

²E. F. Lindquist, Design and Analysis of Experiments in Psychology and Education (Boston: Houghton Mifflin Co., 1956), p. 385.

ten feet from the center of the motion picture screen. The chairs were separated by approximately two and one half feet as measured from the middle of one seat to the middle of the next seat.

The films were seen in a partially lighted double classroom which was partitioned so as to allow only a small amount of light into the front part of the room. This light was necessary to allow the subjects to record the test information on their answer sheets. The windows of the room were darkened by heavy shades.

The same classroom was used for the training and experimental portions of this study.

The projector was approximately eleven feet from the center of the screen. A three inch lens was employed that allowed the image on the screen to be life size.

The day before the training sessions began, each subject was presented with the twenty-five words which were to be used in the study. A copy of the word list may be found in the Appendix.

A different word order was used on the training film and the word list.

The instructions which follow were given before the showing of both the training and the test films.

After viewing each word on the film you are to write the word on your answer sheet. You will have an eight second interval between each word on the film in which to do this. If you have no idea what the

word is, be sure and draw a line through the space on the answer sheet. This is important so that the words are not misnumbered on your paper. If you do not know the word do not waste time thinking about it. The time wasted may cause you to miss the next word on the screen.

The training film was shown and the papers were scored after each viewing. During the third and fourth viewings of the film the procedure was changed slightly, after the word was seen and the subjects had recorded their answers, the correct word was called out by the experimenter. Each subsequent showing of the training film was handled in this manner; a word was viewed, the projector was stopped, the word was called out by the examiner, the word was then seen again on the screen.

In the second session the same training procedure was employed. A new word order was created by splicing the film. This, it was hoped, would inhibit any memorization of the word order which might enable a person to pass the criteria without really knowing the words by sight.

Six subjects were trained at a time. As a subject reached the criteria of ninety per cent of the vocabulary identified correctly, twice consecutively, he was able to proceed to the next part of the experiment.

The subjects were given the final tests the day after they had reached the criteria standard. The training film was run once more to recheck the criteria standard, that is, of at least ninety per cent correct response.

The conditions for the training and the experiment were the same with one exception. A factor of visual deprivation was introduced in the experimental films.

The subjects were trained at a specific time of day which would coincide with the time of the testing.

IV. Testing.--The experimental procedures were conducted after the following directions were given to the subjects:

Today the final tests will be given. The tests will be composed of the same word list. However, certain portions of the word will be blocked from view. This will appear as a black flash on the screen. You will be asked to identify as many of the words as possible. There are three test films. We will have a five minute break between each test film. It is essential that there be no talking or noise making during any of the viewing sessions. Do not look at your neighbor's paper.

The instructions read at the first training session were again read at this time.

The first test film deprived the viewer of fifteen per cent of the visual stimuli, the second and third films deprived the viewer of thirty and forty-five per cent of the visual stimuli respectively.

The word order for each film and the frames which were deleted from view may be found in the Appendix.

The subjects wrote down the words they thought they saw. The papers were not scored until all three tests were completed. In scoring, there was no attempt to assign different weights to each word. Each item correct received one point.

CHAPTER IV

RESULTS AND DISCUSSION

Results

The objective of this study was to investigate and analyze the effects, if any, of predetermined deprivation of visual stimuli on a group of trained lipreaders. The number of correct word identifications for each subject at each visual deprivation level was tabulated and recorded. Table 1 represents the data obtained in response to questions one through four as posed in Chapter I, namely:

1. Is there a significant variation in the subject performance among the three levels of visual stimuli deprivation?
2. Is there a significant difference in lipreading performance between fifteen per cent and thirty per cent conditions of stimulus deprivation?
3. Is there a significant difference in lipreading performance between thirty per cent and forty-five per cent conditions of stimulus deprivation?
4. Is there a significant difference in lipreading performance between fifteen per cent and forty-five per cent conditions of stimulus deprivation?

Table 1.--Analysis of Variance

Source	df	ss	ms	F
Treatments	2	8.67	4.33	1.28*
Subjects	11	150.33	13.64	4.05**
Treatments X Subjects	22	74.00	3.36	

*With df equaling 2 and 22, an F value greater than 3.44 is required for significance at the .05 level.

**With df equaling 11 and 22, an F value greater than 2.26 required for significance at the .05 level.

A comparison was made of the differences between the total number of errors made in two syllable words at each of the visual deprivation levels. A similar comparison was also made for three syllable words. These data were needed to answer questions five through ten as posed in Chapter I. The questions were as follows:

5. Is there a difference between the error scores of subjects at the first deprivation level and the error score obtained at the second deprivation level for two syllable words?
6. Is there a difference between the error scores of subjects obtained at the first deprivation level and the error score obtained at the third deprivation level for two syllable words?

7. Is there a difference between the error scores of subjects obtained at the second deprivation level and the error score obtained at the third deprivation level for two syllable words?
8. Is there a difference between the error scores of subjects obtained at the first deprivation level and the error score obtained at the second deprivation level for three syllable words?
9. Is there a difference between the error scores of subjects obtained at the first deprivation level and the error score obtained at the third deprivation level for three syllable words?
10. Is there a difference between the error scores of subjects obtained at the second deprivation level and the error score obtained at the third deprivation level for three syllable words?

To analyze the data obtained in response to questions five through ten the following formula was employed:¹

$$t = \frac{M_1 - M_2}{\sqrt{\frac{\sum d^2}{N(N-1)}}}$$

The results of this analysis are presented in Tables 2 and 3.

¹Lindquist, op. cit., p. 59.

Table 2.---Results of $\bar{t}$ Test for Differences Between Total Number of Errors in Two Syllable Words for Three Deprivation Levels

Deprivation Level	Mean	Deprivation Level	Mean	$\bar{t}$ score	Level of Confidence
DL ₁	4.08	DL ₂	3.69	.020	Non sig. at .05
DL ₁	4.08	DL ₃	2.46	.529	Non sig. at .05
DL ₂	3.69	DL ₃	2.46	.512	Non sig. at .05

Table 3.---Results of $\bar{t}$ Test for Differences Between Total Number of Errors in Three Syllable Words for Three Deprivation Levels

Deprivation Level	Mean	Deprivation Level	Mean	$\bar{t}$ score	Level of Confidence
DL ₁	2	DL ₂	2.5	-.154	Non sig. at .05
DL ₁	2	DL ₃	2.75	-.982	Non sig. at .05
DL ₂	2.5	DL ₃	2.75	-.688	Non sig. at .05

Discussion

Table 1 shows a significant variation among subjects at the three deprivation levels studied. This fact is not surprising as one expects inter-subject variation.

The table also shows no significant difference among the three conditions studied.

Table 2 presents the differences between the total number of errors in two syllable words for the three deprivation levels.

A comparison of the difference between the number of errors in the first and second deprivation levels revealed no significant difference. The mean error score for the first level was 4.08 and at the second level 3.69.

No significant difference was noted in the comparison of difference between the mean errors in the first and third deprivation levels. The mean score for the third deprivation level was 2.46.

No significant difference was found in the last comparison made of differences between the errors in two syllable words. The second and third deprivation levels were analyzed in this comparison.

Table 3 presents the results of the t tests for differences between total number of errors in three syllable words at the three deprivation levels.

The t tests in these comparisons again showed no significant differences.

It must be remembered when analyzing the data from this study that the subjects used were trained persons. Each person had reached at least ninety per cent perfection in identifying the test words before taking the final filmed tests.

The results of this study would indicate that there is no difference in lipreading performance when as much as forty-five per cent of the visual stimuli are removed from the viewer.

It is certain, that at some point of deprivation there would be a significant difference. However, this point was not indicated by the results of this study.

It appears that additional learning took place during the course of the experiment even though the subjects were trained.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The purpose of this study has been to measure the differences in the lipreading performance of trained subjects as they were deprived specified amounts of the material to be lipread.

A review of the literature concerning the effects of visual perception and lipreading indicate that some research has been done in this area. There has been no reported research, however, on the effects of deprivation of specified amounts of visual stimuli and lipreading performance.

Twelve females participated as subjects in this study. Each person had at least a high school education. The Snellen Vision Test was employed to screen the sight of each subject and a pure-tone audiometric screening test was given at 15 decibels, for frequencies 250, 500, 1000, 2000, and 4000 cycles per second.

Four different silent motion picture films were made showing a speaker, full-face forward, repeating twenty-five non-homophenous words taken from Voelker's study. The subjects were trained to read the test material until ninety

per cent of the words were correctly identified. An eight second interval separated each word, this period allowed the subjects time to record each word on the answer sheet. The training and experimental sessions were held in the same room and each meeting was at the same time of day. The light and sound conditions were held constant in each session.

The subjects were presented all the test materials in one session. The test conditions required that the subjects lipread the vocabulary under the following amounts of visual deprivation, (1) fifteen per cent, (2) thirty per cent, and (3) forty-five per cent.

The findings of this study indicated that the selected amount of visual deprivation used, did not significantly affect lipreading performance.

Conclusions

1. The visual deprivation of stimuli employed in this study did not significantly affect lipreading performance.

2. The differences between total error scores for two and three syllable words are not significant at any of the three deprivation levels.

Recommendations

It is recommended that future research be directed toward investigating recognizability of the same word list

by trained subjects under increasing amounts of visual deprivation and performance on a different word list composed of an equal amount of one, two, three and four syllable words.

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APPENDICES

APPENDIX A

LIST OF FIFTY MOST FREQUENTLY SPOKEN-WORDS

The following word list was the vocabulary from which the test words were chosen. Words were taken from: Charles H. Voelker, "The One Thousand Most Frequent Spoken-Words," Quarterly Journal of Speech, 28 (1942), pp. 189-197.

- | | | |
|----------|-----------|------------|
| 1. the | 18. for | 35. will |
| 2. and | 19. he | 36. would |
| 3. of | 20. many | 37. with |
| 4. a | 21. you | 38. which |
| 5. to | 22. we | 39. people |
| 6. in | 23. one | 40. more |
| 7. it | 24. an | 41. light |
| 8. is | 25. as | 42. very |
| 9. that | 26. not | 43. at |
| 10. have | 27. if | 44. by |
| 11. this | 28. make | 45. man |
| 12. be | 29. on | 46. these |
| 13. work | 30. there | 47. can |
| 14. I | 31. was | 48. so |
| 15. are | 32. or | 49. his |
| 16. they | 33. all | 50. time |
| 17. do | 34. but | |

APPENDIX B

PRACTICE LIST FORM

Lipreading Experiment
Barbara Subar

The following vocabulary will be used in an experiment concerned with lipreading skill. The results of the experiment are dependent upon your ability to identify these twenty-five words. Please familiarize yourself with this list. Look at the first word, repeat the word aloud while standing in front of a mirror. Note the movement of the lips for each word. We will meet in Room 235 of the Auditorium. You will be notified as to the dates and time of the experiment.

- | | |
|-----------|----------|
| 1. so | 14. the |
| 2. not | 15. if |
| 3. people | 16. all |
| 4. that | 17. very |
| 5. we | 18. you |
| 6. many | 19. I |
| 7. with | 20. of |
| 8. in | 21. work |
| 9. on | 22. this |
| 10. and | 23. are |
| 11. a | 24. be |
| 12. but | 25. to |
| 13. for | |

APPENDIX C

ANSWER SHEET FORM

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____
23. _____
24. _____
25. _____

Name _____

APPENDIX D
TRAINING FILMS

<u>Original</u>	<u>Respliced</u>
1. for	1. people
2. the	2. so
3. very	3. are
4. not	4. for
5. but	5. the
6. on	6. very
7. work	7. to
8. people	8. if
9. so	9. I
10. are	10. not
11. that	11. but
12. this	12. on
13. many	13. work
14. be	14. that
15. a	15. this
16. we	16. many
17. you	17. of
18. in	18. and
19. all	19. in
20. with	20. all
21. to	21. with
22. if	22. be
23. I	23. a
24. of	24. we
25. and	25. you

APPENDIX E

WORK ORDER FOR FILM #1

	<u>No. of Frames</u>	<u>15% of Frames</u>	<u>Numbers to Delete</u>
1. the	17	2.55	8 10 11
2. and	21	3.15	7 14 16
3. of	25	3.75	1 5 10 11
4. a	25	3.75	1 5 10 14
5. to	19	2.85	7 9 13
6. in	22	3.30	7 14 16
7. that	27	4.05	2 6 15 27
8. this	22	3.30	5 14 20
9. be	23	3.45	12 19 22
10. work	25	3.75	9 12 13 19
11. I	26	3.90	1 5 14 26
12. are	22	3.30	9 14 16
13. for	21	3.15	11 12 15
14. many	13	1.95	12 13
15. you	13	1.95	6 7
16. we	21	3.15	6 12 13
17. not	19	2.85	4 10 17
18. if	19	2.85	7 8 11
19. on	17	2.55	7 13 14
20. all	26	3.90	7 8 15 17
21. but	17	2.55	5 7 17
22. with	20	3.00	3 4 10
23. people	20	3.00	6 9 16
24. very	22	3.30	8 10 20
25. so	18	2.70	7 12 17

APPENDIX F

WORK ORDER FOR FILM #2

	<u>No. of Frames</u>	<u>30% of Frames</u>	<u>Numbers to Delete</u>
1. this	21	6.30	7 9 12 13 19 21
2. a	21	6.30	7 9 12 19 20 21
3. we	19	5.70	6 9 11 14 15 16
4. that	24	7.20	1 6 7 8 10 11 20
5. so	19	5.70	2 6 7 14 15 19
6. not	18	5.40	2 5 11 12 15
7. in	14	4.20	2 6 7 11
8. all	26	7.80	4 6 10 12 13 22 23 25
9. for	22	6.60	2 5 7 9 10 19 22
10. work	24	7.20	2 5 7 13 17 19 20
11. to	22	6.60	1 2 4 7 11 16 20
12. be	16	4.80	4 6 12 13 16
13. the	21	6.30	1 5 7 14 20 21
14. you	18	5.40	8 10 11 15 18
15. on	21	6.30	3 4 7 9 13 21
16. and	22	6.60	2 6 7 14 15 19 20
17. with	24	7.20	5 11 12 15 17 19 22
18. if	31	9.30	1 5 7 10 11 14 20 26 31
19. many	23	6.90	2 5 7 13 17 19 20
20. of	28	8.40	7 9 12 13 14 19 20 21
21. but	19	5.70	2 4 7 11 13 16
22. people	19	5.70	1 8 11 14 16 18
23. are	18	5.40	4 6 7 14 16
24. very	22	6.60	1 5 8 10 11 14 20
25. I	19	5.70	2 7 9 12 13 19

APPENDIX G

WORD ORDER FOR FILM #3

	<u>No. of Frames</u>	<u>45% of Frames</u>	<u>Numbers to Delete</u>
1. we	19	8.55	2 5 6 7 9 14 15 16 17
2. that	25	11.25	2 5 7 9 14 13 14 17 19 20 21
3. so	22	9.90	3 4 7 9 10 12 13 16 21 22
4. the	24	10.80	2 5 7 9 11 12 13 16 17 19 20
5. a	21	9.45	2 5 7 11 13 16 17 19 20
6. but	21	9.45	1 3 4 10 11 12 15 17 19
7. for	22	9.90	2 3 4 6 8 9 14 15 19 21
8. very	25	11.25	3 4 7 10 11 12 14 16 18 23 25
9. I	24	10.80	1 2 3 4 5 7 11 13 16 17 20
10. you	17	7.65	2 5 7 9 12 13 14 17
11. to	21	9.45	2 5 10 11 12 15 17 19 21
12. and	22	9.90	1 5 7 8 10 11 14 19 20 21
13. not	22	9.90	3 4 8 9 10 14 15 16 19 22
14. are	20	9.00	2 6 7 8 11 14 15 19 20
15. be	19	8.55	5 6 7 9 11 14 15 16 17
16. on	18	8.10	3 4 7 10 11 12 16 18
17. if	29	13.04	2 5 7 9 12 13 16 17 20 21 26 27
18. in	20	9.00	1 5 7 8 10 11 14 19 20
19. with	25	11.25	4 7 8 10 12 15 16 17 19 22 25
20. people	22	9.90	4 7 8 10 12 15 16 17 19 22
21. work	22	9.90	1 2 3 4 7 10 11 16 17 20
22. all	29	13.04	6 9 11 12 13 14 15 16 18 20 24 26 29
23. many	19	8.55	1 2 3 4 7 10 11 16 17
24. this	25	11.25	1 2 3 4 5 7 11 13 16 17 19
25. of	28	12.60	1 5 8 11 14 16 18 19 20 21 22 23 24

APPENDIX H

Raw Score of Correctly Identified Words at Three Deprivation Levels

Subject Number	DL1 (15%)	DL2 (30%)	DL3 (45%)
1	16	20	17
2	16	18	18
3	21	20	20
4	19	16	21
5	13	18	15
6	19	18	20
7	17	14	15
8	19	17	21
9	16	16	18
10	21	20	24
11	20	22	23
12	19	21	18

APPENDIX I

Raw Score of Two Syllable Words Incorrectly Identified at Three Deprivation Levels

Subject Number	DL1 (15%)	DL2 (30%)	DL3 (45%)
1	5	4	6
2	6	2	3
3	4	4	2
4	4	5	2
5	8	5	5
6	4	5	3
7	2	7	3
8	5	4	3
9	5	4	3
10	3	3	0
11	3	2	1
12	4	2	3

APPENDIX J

Raw Score of Three Syllable Words Incorrectly
Identified at Three Deprivation Levels

Subject Number	DL1 (15%)	DL2 (30%)	DL3 (45%)
1	1	1	1
2	1	2	2
3	0	0	2
4	1	2	1
5	3	1	3
6	1	2	1
7	2	2	4
8	0	2	1
9	3	4	3
10	1	1	1
11	1	0	0
12	1	0	3

~~OCT 24 1963~~

~~MAY 12 1965~~

~~MAY 26 1965~~

~~JUN 9 1965~~

~~JUN 23 1965~~

~~JUL 17 1965~~

~~JUN 6 1965~~

~~JUN 19 1965~~

~~JUN 25 1965~~

~~JUL 2 1965~~

~~JUL 10 1965~~

~~JUL 17 1965~~

~~JUL 19 1965~~

~~AUG 21 1965~~

~~FEB 18 1966~~

~~MAR 4 1966~~

~~MAR 11 1966~~

~~APR 9 1966~~

~~APR 22 1966~~

~~MAY 6 1966~~

~~MAY 20 1966~~

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