

University of Montana

## ScholarWorks at University of Montana

---

Graduate Student Theses, Dissertations, &  
Professional Papers

Graduate School

---

1959

### Effect of delivery in the transmission of information

Frank Siegfried Gonzalez  
*The University of Montana*

Follow this and additional works at: <https://scholarworks.umt.edu/etd>

**Let us know how access to this document benefits you.**

---

#### Recommended Citation

Gonzalez, Frank Siegfried, "Effect of delivery in the transmission of information" (1959). *Graduate Student Theses, Dissertations, & Professional Papers*. 2154.  
<https://scholarworks.umt.edu/etd/2154>

This Thesis is brought to you for free and open access by the Graduate School at ScholarWorks at University of Montana. It has been accepted for inclusion in Graduate Student Theses, Dissertations, & Professional Papers by an authorized administrator of ScholarWorks at University of Montana. For more information, please contact [scholarworks@mso.umt.edu](mailto:scholarworks@mso.umt.edu).

THE EFFECT OF DELIVERY IN THE  
TRANSMISSION OF INFORMATION

by

FRANK S. GONZALEZ II  
B.A. Montana State University, 1949

Presented in partial fulfillment of the requirements  
for the degree of  
Master of Arts

MONTANA STATE UNIVERSITY  
1959

Approved by:

  
Chairman, Board of Examiners

  
Dean, Graduate School

\_\_\_\_\_  
Date

UMI Number: EP35880

All rights reserved

**INFORMATION TO ALL USERS**

The quality of this reproduction is dependent upon the quality of the copy submitted.

In the unlikely event that the author did not send a complete manuscript and there are missing pages, these will be noted. Also, if material had to be removed, a note will indicate the deletion.



UMI EP35880

Published by ProQuest LLC (2012). Copyright in the Dissertation held by the Author.

Microform Edition © ProQuest LLC.

All rights reserved. This work is protected against  
unauthorized copying under Title 17, United States Code



ProQuest LLC.  
789 East Eisenhower Parkway  
P.O. Box 1346  
Ann Arbor, MI 48106 - 1346

7/15/50  
10/5/50

#### ACKNOWLEDGEMENTS

The writer wishes to express his gratitude to the faculty of the Speech Department of Montana State University for their cooperation, and sincerest appreciation to Dr. Lee Brissey for guidance and assistance throughout this investigation.

TABLE OF CONTENTS

<u>Chapter</u>		<u>Page</u>
I	Statement of the Problem . . . . .	1
II	Procedure . . . . .	9
III	Results . . . . .	16
IV	Discussion . . . . .	30
V	Summary and Conclusions . . . . .	38
	Bibliography . . . . .	40
	Appendices . . . . .	42
	Appendix A . . . . .	43
	Appendix B . . . . .	59
	Appendix C . . . . .	61
	Appendix D . . . . .	75
	Appendix E . . . . .	77
	Appendix F . . . . .	79
	Appendix G . . . . .	81
	Appendix H . . . . .	83

## LIST OF TABLES

<u>Table</u>	<u>Page</u>
1. The Means of the Medians of Scale Value and the Means of the Semi-interquartile Range Values for Six Speakers Employed as Rated for Delivery Effectiveness on the Basis of Twenty Ten-Second Specimens Randomly Selected from Each Presentation . . . . .	17
2. Summary of Analysis of Variance for Testing Differences among the Means of Delivery Effectiveness Judgements for Six Speakers . . . . .	19
3. Summary of Analysis of Differences among the Means of Delivery Effectiveness Judgements for Six Speakers . . . . .	20
4. The Means of the Test Scores in Three Response Categories for Six Listening Groups . . . . .	22
5. Summary of Analysis of Variance for Testing Differences among Listening Groups Means for Test Items Correct . . . . .	23
6. Summary of the Analysis of Differences among the Means for the Listening Groups Scores in the Response Category of the Items Correct . . . . .	24
7. Summary of Analysis of Variance for Testing Differences among Listening Groups Means for Test Items Omitted . . . . .	25
8. Summary of the Analysis of Differences among the Means for the Listening Groups Scores in the Response Category of the Items Omitted . . . . .	27
9. Summary of Analysis of Variances for Testing Differences among Listening Groups Means for Test Items Incorrect . . . . .	28

## CHAPTER I

### STATEMENT OF THE PROBLEM

"Within the past few years, relatively speaking, interest in the phenomena of communication has become increasingly widespread."<sup>1</sup> There appears to be an ever increasing awareness, practically and theoretically, of the social importance of language and communication. Language is used to formulate purposes, express personality, stimulate mutual feelings, represent thoughts and feelings, achieve comprehension, analyze the past, plan for the future and achieve understanding of elements beyond immediate sensory perception.<sup>2</sup>

It is clear that speech is an essential part of the communication process and is a significant subject for inquiry for several reasons. Among the language skills, speech is perhaps more widely used than any other. In 1928, a survey was conducted by Rankin that would indicate that of our waking time, nine per cent is spent in writing, sixteen per cent is spent in reading, thirty per cent is spent in speaking, and forty-five per cent is spent in listening.<sup>3</sup> This survey indicates that

---

<sup>1</sup>Giles Wilkeson Gray and Claude Merton Wise, The Bases of Speech (3rd ed., New York: Harper and Brothers, 1959), p. 1.

<sup>2</sup>Robert T. Oliver and Rupert L. Cortright, New Training for Effective Speech (rev. ed., New York: Dryden Press, 1951), p. 5.

<sup>3</sup>Paul T. Rankin, "The Importance of Listening Ability," English Journal, XVII, 1928, pp. 623-630.

seventy-five per cent of our waking time is spent in listening or speaking. Much of the listening, presumably, is in response to the speech of others, whether it be on radio or television, or in conversation. Although this survey is outdated, there doesn't appear to be any reason to believe that speaking and listening are less important than at the time of this study.

It has been hypothesized that thoughts are "restrained speaking" or "sub-vocal" talking.<sup>4</sup> Thoughts may be concepts and ideas put into words which are not spoken.<sup>5</sup> If there is any merit in these speculations speech may be regarded as intimately related to thought itself, and this identification would appear to increase the significance of symbolic behavior.

Speech has an historical significance. It has been commonly regarded that the speeches of "important" individuals have been influential in shaping the course of human events examined in their times and situations. The speeches of Franklin D. Roosevelt were spoken of by the man himself as seeking to banish "as far as possible the fear of the present and the future which held the American . . . spirit within its grasp."<sup>6</sup> Similarly, the speeches of Winston Churchill are reported to

---

<sup>4</sup>Norman Munn, Psychology (New York: Houghton-Mifflin Co., 1946), p. 181.

<sup>5</sup>Wendell Johnson, Your Most Enchanted Listener (New York: Harper and Brothers, 1956), p. 5.

<sup>6</sup>Houston Peterson, ed., A Treasury of the World's Great Speeches (New York: Simon and Schuster, 1954), p. 746.



have "enthralled and dominated" the times.<sup>7</sup> Clearly, the words of Abraham Lincoln are regarded as being of profound historical significance. In terms of international consequence the "Blood Purge" speech of Adolf Hitler has been spoken of as overcoming "the brooding terror of his followers and reuniting them under him."<sup>8</sup> In the field of speech the influence of a speaker upon a given situation is commonly recognized as a fundamental assumption of historical theory.

Within the past few years the communication processes have been markedly modified by the invention of media which have given man the power to communicate beyond the unaided range of his own voice. These developments "illustrate(s) a principle ascribed by many writers to the human species, not shared by the lower orders, that there is an inherent impulse to communicate, to establish and maintain a social relation with one's fellows, to break through the barriers to free intercourse."<sup>9</sup> The barriers of a geographic nature are no longer as significant in the communicative process because of man's technological advances.

It is perhaps because of its wide use, its hypothesized identification with thought, its historical significance, and the mass media which have been developed that speech has received increasingly greater attention from an increasingly wider range of professional

---

<sup>7</sup> Ibid., p. 773.

<sup>8</sup> Ibid., p. 760.

<sup>9</sup> Gray and Wise, p. 5.

people.<sup>10</sup>

The conduct of oral communication is subject to the influence of many variables. Aristotle, for example, spoke of invention, arrangement, style, and delivery.<sup>11</sup> Others have used such terms as evidence, style, organization, bodily action, and delivery. Standard references, past and present, deal at length with these aspects of speaking and oral communication.

The communicative effectiveness of a speaker seems to be the theme upon which many works dwell. Style, invention, arrangement, delivery, when properly employed, are commonly regarded as among the major influences that contribute to speaker effectiveness.

Of these variables, one that has traditionally received considerable attention is that of delivery. In the Rhetoric of Aristotle, for example, may be found the following: ". . . it is not enough to know what to say--one must also know how to say it. The right way of doing this contributes much to the right impression of a speech . . . for success of delivery is of the utmost importance to the effects of the speech."<sup>12</sup> Later, Cicero added a fifth variable, that of memory, but

---

<sup>10</sup>Charles W. Morris, "Foundation of the Theory of Signs," International Encyclopedia of Unified Science (Chicago: University of Chicago Press, 1938), Vol. I, #2, p. 1.

<sup>11</sup>Lane Cooper, Trans., The Rhetoric of Aristotle (New York: Appleton-Century-Crofts, Inc., 1932), pp. 180-182.

<sup>12</sup>Ibid., p. 5.

he retained the original four outlined by Aristotle, including delivery.<sup>13</sup> One of Quintilian's books, written about 95 A.D., is devoted to delivery and memory.<sup>14</sup> In 1872, an Englishman, Richard Whately, speaks of elocution in essentially the same way delivery is spoken of, and indicates it is an important factor.<sup>15</sup> In 1915, Robinson indicates the importance of delivery more strongly perhaps: "Actors have ruined plays by bad breathing; ministers have driven people from their churches by bad breathing; political campaigns have been lost by the bad breathing of candidates; thousands of voices have been ruined by the same pernicious evil."<sup>16</sup> Presumably, breathing is intimately related to the quality of the voice and therefore is related to delivery. Robinson states further: "A prolonged sound of a given pitch (here he refers to monotonous delivery) or intensity will not long be attended."<sup>17</sup>

A similar trend is in evidence in modern theorizing. The authors of contemporary textbooks have continued to regard delivery as a variable of basic significance. McBurney and Wrage write: "How talk is presented

---

<sup>13</sup>Ralph Y. McGinnis, "Outline of Survey of Rhetoric" (unpublished, Missoula, Montana: Montana State University), p. 4.

<sup>14</sup>Ibid., p. 5

<sup>15</sup>Richard Whately, Rhetoric (London: Charles Griffin and Co., 1872), pp. 113-189.

<sup>16</sup>Frederick B. Robinson, Effective Public Speaking (Chicago: LaSalle Extension University, 1915), p. 124.

<sup>17</sup>Ibid., p. 214.

is of great importance--both to the listener and to the speaker. . . . Effective presentation is an art-- . . ."<sup>18</sup> Sarett, Foster and Sarett write: "Unless your vocal expression and accompanying bodily action helps convey the specific meaning you intend, you have not achieved communication--or at least not the communication you wanted."<sup>19</sup> McBurney and Wrage further write: " . . . good delivery certainly can give life and vitality to ideas which cannot be captured on the printed page."<sup>20</sup> Similarly, Brigance states: "'Anybody can talk' runs a thoughtless adage; but talking is not necessarily communicating."<sup>21</sup> The textbook, Public Speaking for College Students, analyzes some of the facets of delivery and their effect on communication: "Each language has a characteristic rhythm determined partly by its grammar and partly by its pronunciation. Hence a stilted or artificial speech rhythm hinders understanding."<sup>22</sup> Delivery is mentioned as one criterion for judging. Crocker asks the questions: "How does the speaker manage his voice? . . . Is the rate monotonous?"<sup>23</sup> Delivery is thought of as the "flavor" which makes speech

---

<sup>18</sup>James H. McBurney and Ernest J. Wrage, The Art of Good Speech (New York: Prentice Hall, Inc., 1955), p. 456.

<sup>19</sup>Lew Sarett, William Trufant Foster, and Alma Johnson Sarett, Basic Principles of Speech (3rd ed., Boston: Houghton Mifflin Co., 1958), p. 363.

<sup>20</sup>McBurney and Wrage, pp. 456-457.

<sup>21</sup>William Norwood Brigance, Speech Communication (New York: Appleton-Century-Crofts, 1955), p. 57.

<sup>22</sup>Lionel Crocker, Public Speaking for College Students (New York: American Book Co., 1956), p. 58.

<sup>23</sup>Ibid., p. xiii.

distinctive from many forms of communication. In speaking of one aspect of delivery, Sarett, Foster, and Sarett are of the opinion that melody "supplements the words."<sup>24</sup> Without proper delivery the "powers of expression are necessarily limited."<sup>25</sup> The monotone delivery is vividly described by Sarett, Foster, and Sarett as "a defective faucet from which words drip with a dull and steady tap."<sup>26</sup> A statement of this kind carries with it the implication that a monotonous delivery detracts from the attention received, and as attention wavers the communication suffers. Delivery communicates the "subtle shades of thought."<sup>27</sup> "Delivery puts the punctuation marks in speech."<sup>28</sup>

In general these sources seem to carry the common conviction that delivery is distinctly and positively related to the effectiveness of communication; and if the communicative qualities of speaking are improved, the amount of information transmitted to a listener would be increased. A search of the literature, however, reveals little evidence of an empirical nature concerned directly with the relationship between delivery and communicative effectiveness. This may be attributable to the fact that the hypothesis of a direct relationship appears to be so obvious as to require no investigation. But, in light of a growing tendency in the

---

<sup>24</sup>Sarett, Foster, and Sarett, p. 278.

<sup>25</sup>Ibid., p. 278.

<sup>26</sup>Ibid., p. 279.

<sup>27</sup>Brigance, p. 64.

<sup>28</sup>Ibid., p. 66.

field of speech to seek a body of verified principles relevant to the speech process, there is a need to examine empirically the hypothesized relationship. Thus it is the central purpose of this investigation to study the role of delivery in the transmission of information. The hypothesis guiding this investigation is, therefore, that the amount of information transmitted by a speaker is positively related to the effectiveness of the delivery.

## CHAPTER II

### PROCEDURE

To investigate the amount of information transmitted by a speaker and its relation to the effectiveness of delivery, the essential procedure consisted of having a speech delivered and subsequently administering a criterion test for the purpose of assessing how much information was retained by the listener.

A speech of approximately 4,000 words was prepared which required approximately twenty-eight minutes to deliver. The experimental speech was narrative and descriptive with some authentic information. But the speech was unique in that it was hypothetical and described a fictitious area that was said to be located in Brazil. This was done in an effort to control the error which might be due to prior knowledge of the subject, or the subjects being informed apart from the content of the speech itself. Although the experimental speech was fundamentally fictitious, care was taken to make it seem plausible. A copy of the experimental speech will be found in Appendix A.

Six volunteer speakers were employed in the investigation. Each reading was of the speech described above. Three of the speakers were graduate students in Speech with a background of academic instruction in public speaking and oral interpretation of literature. Three of the speakers were enrolled in the basic speech course and were relatively

naïve with reference to public speaking. This was intended to effect deliveries of the experimental speech that were perceptibly different with regard to effectiveness. It was anticipated that this selection of speakers would result in one set of deliveries being relatively more effective than the other.

The speeches were recorded on an Ampex tape recorder, model 601, full track recording at a speed of seven and one-half inches per second. The microphone used was an RCA 77D, on unidirectional setting.

The three graduate students were asked to deliver the speech with as effective a delivery technique as their own experience and style would allow.

The three students from the basic speech course were not permitted opportunity for advance preparation or rehearsal on the experimental speech. No systematic effort was made to influence their delivery since it was assumed their delivery would be relatively ineffective.

To determine the degree to which the reader selection procedure actually provided varying levels of delivery effectiveness, the six deliveries were rated in accordance with a technique similar to that described and employed by Thurston and Chave, and Ballin and Farnsworth.<sup>29</sup> A nine-point rating scale was utilized for judgements on delivery

---

<sup>29</sup>L. L. Thurstone and E. J. Chave, The Measurement of Attitude (Chicago: University of Chicago Press, 1929); M. Ballin and P. R. Farnsworth, "A Graphic Rating Method for Determining the Scale Values of Statements in Measuring Social Attitudes" (Journal of Social Psychology, XIII, 1941, 323-327), as reported by Allen Edwards, Techniques of Attitude Scaling Construction (New York: Appleton-Century-Crofts, Inc., 1957), pp. 83-84, 95-96.



effectiveness.

One hundred twenty ten-second specimens were selected, twenty from each delivery of the experimental speech. Entry points were randomly selected for each of the tape-recorded experimental deliveries. From each of the entry points the ten-second specimen was abstracted and arranged on a single tape so that the order was also random with regard to speakers. A specimen length of ten seconds was judged to be suitable on the basis of a brief preliminary investigation. The judging tape was approximately thirty-five minutes duration and contained the one hundred and twenty specimens to be judged.

A judging form was prepared with the following instructions to the judges:

You will hear a series of ten-second specimens randomly selected from speeches. Please listen to these specimens, then make a judgement regarding the overall effectiveness of vocal delivery of each.

You are asked to use a nine-point scale, a diagram of which is provided below these instructions. There are 120 specimens with space provided below for you to write in a scale number. Please write a scale number for each specimen beside that specimen's number.

Using a nine-point rating scale, assign a scale value of ONE to those specimens you judge to be least effective in vocal delivery. Assign a scale value of NINE to the specimens you judge to be most effective. Use the full range of the scale if it seems appropriate for you to do so. Assign appropriate intermediate scale values to those which you judge to be moderately effective in vocal delivery. The units of the scale represent equal distances. A scale value of three is considered to be as much more important than a scale value of two, as a value of four is more important than a value of three. Always write a full scale value. Do not use fractions.

Since these ten-second specimens are random samples, ignore the content. Only judge the overall effectiveness of vocal delivery in the specimens. Please judge each individually.

Following each specimen there will be a five-second pause for you to make and record your judgement. Make certain you

assign each specimen a value. Please do not discuss your judgements with each other until after the judging session is completed.

Before each specimen you will be told its number in order that you will not lose your place.

A reproduction of the judging sheet will be found in Appendix B. No attempt was made to define vocal delivery for the judges. There were ten judges, composed of faculty members, graduate students, and undergraduates selected for their knowledge of or experience in speech.

Thus ten judgements were obtained for each of the one hundred twenty specimens. A statistical analysis of the resulting data was undertaken with reference to reliability of the judgements and the scale separation of the speakers. For each specimen a median scale value and semi-interquartile range was determined. These values for the twenty specimens of each speech were then used in the calculation of a mean of medians and a mean of the semi-interquartile ranges. The technique of analysis of variance was used to evaluate the differences observed in the mean of the medians for statistical significance.

For the purpose of investigating the amount of information transmitted by speakers with varying degrees of effectiveness of delivery a criterion test was designed. This test was a sixty-question multiple-choice test with four possible foils. Careful consideration was given to the selection of the foils in an effort to render each of the choices equally plausible to the uninformed. A copy of the test will be found in Appendix C.

The subjects employed in this portion of the investigation were obtained from the introductory speech classes at Montana State University

during the Spring quarter of 1959. The scores of any foreign students taking the test were not included in the analysis.

The subjects were randomly assigned to one of six listening groups; each group heard a different delivery of the experimental speech.

To minimize the opportunity for subjects participating in the investigation to exchange information about the speech an effort was made to administer the tests with as little practical delay as possible. The tests were administered on three consecutive nights in two different rooms. In one of the testing rooms the speeches were reproduced on a Magnecord recorder, model PT6-AJ, full track at a speed of seven and one-half inches per second. In the other room the experimental speech was reproduced on the Ampex Recorder, model 601, full track at the same speed. The subjects were not informed that they would be tested on the information contained in the speeches. The subjects were told that they would not need any note paper and the monitors of the test insured that no notes were taken during the course of the speech.

The actual recording of the speech was turned on without introductory comment. Before the actual speech text was reproduced, the subjects were asked if they could hear the recording clearly. This question, posed twice, was read by the particular speaker and recorded at the same time and at the same recording level as his reading of the experimental speech. There was no indication from the subjects that the speeches were inaudible or unintelligible.

Immediately upon the completion of the experimental speech reproduction, the administration of the criterion test was undertaken.

To control any error that might occur as a result of variations in instructions these were recorded by a single individual. The subjects were requested not to guess in response to any of the questions on the criterion test, but to omit the questions about which they were not reasonably certain. The complete instructions which were reproduced for the subjects may be found in Appendix D.

This procedure was followed to allow three response categories: (1) the number of items correct was assumed to represent the degree to which the subjects were informed, (2) the number of items omitted was assumed to represent the degree to which the subjects were uninformed, (3) the number of items incorrect was assumed to represent the degree to which the subjects were misinformed.<sup>30</sup>

Following the recorded instructions the tests were distributed to the subjects. Further instructions on the test forms repeated the request not to guess by way of reinforcing the recorded instructions. A copy of the instructions will be found in Appendix C.

Monitors endeavored to see that test instructions were observed as the testing proceeded and that the subjects' responses were independent.

No time limit was set on the testing period. Every subject was allowed to complete the test, using whatever time was required.

When the last subject had completed the test a recording tape was

---

<sup>30</sup>Forrest L. Brissey, "The Factor of Relevance in the Serial Reproduction of Information" (Unpub., Iowa City, State University of Iowa, 1956).

reproduced which requested that there be no discussion of the criterion test or the experimental speech for a period of two weeks. This was done in an attempt to prevent error in results which might arise because subsequent subjects had been given information about the investigation by those subjects who had already been employed in the investigation. The aim was to insure as far as possible that the only source of information available to the subjects was the experimental speech.

Upon completion of the testing, criterion tests for each of the six groups were scored according to the number of items correctly answered, items omitted, items incorrectly answered.

The differences among the means of the scores in the three categories for each of the six groups were evaluated for statistical significance.

## CHAPTER III

### RESULTS

In accordance with the procedure outlined in Chapter II, each speaker was evaluated for delivery effectiveness by the use of the equal-appearing interval scaling technique. A median scale value and a semi-interquartile range value was calculated for each of the twenty specimens that were randomly selected from each delivery. From these data an arithmetical mean of the medians and of the semi-interquartile range values was calculated. The means of the medians and the means of the semi-interquartile range values are reproduced in Table 1.

Speakers indicated by  $S_1$ ,  $S_2$ , and  $S_3$  are the relatively naive speakers from the introductory speech course at Montana State University. Speakers indicated by  $S_4$ ,  $S_5$ , and  $S_6$  are the graduate students employed in reading the experimental speech.

The means of the semi-interquartile range values indicate that there was a relatively high degree of agreement with regard to the naive speakers, but a lesser degree of agreement for the more experienced speakers. The differences of the means of the semi-interquartile range were not tested for statistical significance.

The technique of analysis of variance was employed to test the difference between the means of the medians for statistical significance.<sup>31</sup> Table 2 summarizes the results of these calculations. The

---

<sup>31</sup>E. F. Lindquist, Design and Analysis of Experiments in Psychology and Education (Boston: Houghton Mifflin Co., 1953), pp. 37-40, 73.

Table 1

The Means of the Median Scale Values and the Means of the Semi-interquartile Range Values for Six Speakers Rated for Delivery Effectiveness on the Basis of Twenty Ten-Second Specimens Randomly Selected from Each Presentation

Speaker	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>	S <sub>6</sub>
Mean scale value	2.20	2.62	3.00	5.14	6.74	7.33
Mean semi-interquartile range value	.61	.63	.76	1.06	.95	1.40

value of F is significant at the five per cent level.

From this table there is evidence to reject the null hypothesis. In light of the statistical significance indicated by the analysis of variance, a further analysis of the differences among the speakers was undertaken by means of the "t" test.<sup>32</sup> The results of this analysis are reproduced in Table 3.

Table 3 indicates a significant difference between (1) speaker S<sub>1</sub> and speakers S<sub>5</sub> and S<sub>6</sub>, (2) between speaker S<sub>2</sub> and speakers S<sub>5</sub> and S<sub>6</sub>, (3) between speaker S<sub>3</sub> and speaker S<sub>6</sub>, (4) but no statistically significant difference among speakers S<sub>1</sub>, S<sub>2</sub>, and S<sub>3</sub>, (5) and no significant difference among speakers S<sub>4</sub>, S<sub>5</sub>, and S<sub>6</sub>. Thus, this analysis suggests that the deliveries were perceptibly different with regard to effectiveness, but not within the two categories of the more naive speakers and the more experienced speakers.

#### Criterion Test

In accordance with the procedure mentioned in the preceding chapter, three criteria were used for evaluating the informative properties of the respective deliveries as measured by the criterion test. The scores in each listening group were accumulated and a mean test score for each response category was calculated for each group. There was a total of one hundred thirty-three subjects whose tests were used in the analysis of the data. Group One listened to speaker S<sub>1</sub>, Group Two to S<sub>2</sub>, and so on for all groups. Table 4 provides a comparison of

---

<sup>32</sup>Ibid., p. 37.



Table 2

Summary of Analysis of Variance for Testing  
Differences Among the Means of Delivery Effectiveness  
Judgements for Six Speakers

Sources of variation	Degrees of freedom	Sum of squares	Mean square	F ratio
Treatments (A)	5	490.46	98.09	$F = MS_A / MS_W$
Within groups (W)	114	48.04	.42	$F = 232.99*$
Total	119	538.50		

\* The F required at the five per cent level is 2.29.

Table 3

Summary of Analysis of Differences  
Among the Means of Delivery Effectiveness  
Judgements for Six Speakers

Speaker	Mean Difference				
	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>	S <sub>6</sub>
S <sub>1</sub>	.42	.80	2.94	4.54*	5.13*
S <sub>2</sub>		.38	2.52	4.12*	4.71*
S <sub>3</sub>			2.14	3.74	4.33*
S <sub>4</sub>				1.60	2.19
S <sub>5</sub>					.59

\* Indicates significance at the five per cent level. A value of "t" = 1.96 is required for significance at the five per cent level.

the means of the listening groups in the three response categories: items correct, items omitted, and items incorrect.

Following the procedure outlined in Chapter II, the differences between the means of the response categories were tested for statistical significance. The technique of analysis of variance was used, and where the F ratio was significant at the five per cent level an analysis of differences was calculated by means of the "t" test. Table 5 is a summary of the analysis of variance of the items correct, which was assumed to represent the degree to which the listening subjects were informed.

There is evidence to reject the null hypothesis for the response category of informed. In light of the statistical significance indicated by the analysis of variance an analysis of difference among the means scores for items correct was calculated by means of the "t" test. The results of this analysis are reproduced in Table 6.

This table indicates that there was a statistically significant difference (1) between listening group one ( $S_1$ ) and groups three ( $S_3$ ), five ( $S_5$ ), and six ( $S_6$ ), (2) between group three and groups four, five, and six, and (3) between group four and group five.

Table 7 is a summary of the results of the analysis of variance for the items omitted, which was assumed to represent the degree to which the listening groups were uninformed.

There is evidence from the results indicated on this table to reject the null hypothesis. In light of the statistical significance indicated by the analysis of variance, an analysis of difference among the mean scores for items omitted was calculated by means of the "t"

Table 4

The Means of the Test Scores  
in Three Response Categories  
for Six Listening Groups

	Listening group					
<u>Score</u>	1	2	3	4	5	6
Informed (items correct)	34.80	24.32	27.27	36.52	42.32	40.47
Uninformed (items omitted)	7.84	19.95	16.08	9.33	5.18	5.24
Misinformed (items incorrect)	17.36	15.68	16.65	14.00	12.50	14.29

Table 5

Summary of Analysis of Variance for  
Testing Differences Among Listening Groups  
Means for Test Items Correct

Sources of variation	Degrees of freedom	Sum of squares	Mean square	F ratio
Treatments (A)	5	5620.23	1124.05	$F = MS_A/MS_W$
Within groups (W)	127	10338.14	81.40	$F = 13.81*$
Total	132	15958.37		

\* The F required at the five per cent level is 4.40.

Table 6

Summary of the Analysis of Differences Among the Means for the Listening Groups Scores in the Response Category of the Items Correct

Mean Difference					
Group	2	3	4	5	6
1	10.48*	7.53*	1.72	7.52*	5.67*
2		2.95	12.20*	18.00*	16.15*
3			9.25*	15.05*	13.20*
4				5.80*	3.95
5					1.85

\* Indicates significance at the five per cent level. A value of  $t = 1.96$  is required for significance at the five per cent level.

Table 7

Summary of Analysis of Variance for  
Testing Differences Among Listening Groups  
Means for Test Items Omitted

Sources of variation	Degrees of freedom	Sum of squares	Mean square	F ratio
Treatments (A)	5	4050.93	810.19	$F = MS_A / MS_W$
Within groups (W)	127	11387.16	89.66	$F = 9.04*$
Total	132	15438.09		

\* The F required at the five per cent level is 4.40.

test. The results of this analysis are reproduced in Table 8.

Table 8 indicates that there was a statistically significant difference in the response category of uninformed (1) between group one and groups two and three, (2) between group two and groups four, five, and six, (3) between group three and groups four, five, and six. There was no statistically significant difference between group four and groups five and six, and no statistically significant difference between group five and group six.

Table 9 is a summary of the results of the analysis of variance for the items incorrect, which was assumed to represent the degree to which the listening groups were misinformed.

There was no evidence from the results indicated to reject the null hypothesis in the response category of misinformed. Apparently delivery influences the degree to which the subjects were informed and uninformed, but there appears to be little difference in the degree to which they were misinformed. This would indicate that there are other variables than the delivery variable which influence the amount of misinformation transmitted. However, what was defined as delivery and judged as delivery does not necessarily exhaust the delivery variables functioning in the speech situation. There may be other ways of assessing delivery than the method employed in this particular investigation which would result in different conclusions.

The first three tables are pertinent to the judgments utilized to indicate the degree to which there was a perceptible difference between the speakers with regard to effectiveness of delivery.



Table 8

Summary of the Analysis of Differences Among the Means for the Listening Groups Scores in the Response Category of the Items Omitted

Group	Mean Difference				
	2	3	4	5	6
1	12.11*	8.24*	1.49	2.66	2.60
2		3.87	10.62*	14.77*	14.71*
3			6.75*	10.90*	10.84*
4				4.18	4.09
5					.06

\* Indicates significance at the five per cent level. A value of "t" = 1.96 is required for significance at the five per cent level.

Table 9

Summary of Analysis of Variances for  
Testing Differences Among Listening Groups  
Means for Test Items Incorrect

Sources of variation	Degrees of freedom	Sum of squares	Mean square	F ratio
Treatments (A)	5	381.23	76.25	$F = MS_A/MS_W$
Within groups (W)	127	6203.45	51.85	$F = 1.47^*$
Total	132	6584.68		

\* The F required at the five per cent level is 4.40.

Tables 4 through 9 then summarize the statistical treatment of the differences between the means in the response categories described in Chapter II. The implications of these results will be further discussed in the following chapter.

## CHAPTER IV

### DISCUSSION

It was one of the secondary aims of this investigation to determine the feasibility of assessing delivery by utilizing a random selection of ten-second specimens from the individual speeches. While there are limitations to the technique, it appears to have potential, theoretical, and practical significance and to warrant further investigation.

The presentation of each entire speech for judging would have required approximately three hours of judging time. A single judging session would have run the risk of introducing undesirable fatigue effects. On the other hand, multiple judging sessions would have allowed the influence of possible extraneous factors associated with different times.

Further, the judgements were required to be relevant to delivery, and it was assumed that familiarity with the overall speech content might have interacted and become confounded with judgements of delivery. The method of sampling and randomly arranging into unconnected segments appears to have merit.

The use of the described sampling technique seems to meet relatively well the foregoing judgement problems.

The judgements of ten-second specimens might be compared with

judgements of the entire speech to ascertain empirically whether judgements differ with the technique employed. The a priori categorization of the speakers appears to be corroborated reasonably well by the sampling technique. As a group the relatively naive speakers from the introductory speech course were judged to be less effective than the graduate students with more experience (see Table 1, p. 17).

A statistical analysis, however, suggests that the least effective among the more experienced speakers ( $S_4$ ) does not appear to be significantly different from any of the naive speakers (see Table 3, p. 20). Also, speaker  $S_5$  was not significantly different from the most effective naive speaker ( $S_3$ ).

The data on the means of judgements reveal that speakers  $S_1$ ,  $S_2$ , and  $S_3$  were not considered by the judges to be using effective delivery techniques. Speaker  $S_4$ , while trained and experienced in public speaking, appears not to be significantly different from speakers  $S_2$  and  $S_3$ . Thus a categorical statement that an experienced and trained speaker will be more effective in delivery as it was measured in this study cannot be made. An individual without benefit of extensive training and experience appeared to be no less effective than a person with relatively more extensive training in principles of effective speaking.

Variations did occur in judged effectiveness among twenty specimens randomly selected from a given speaker. It may be hypothesized that as the number of specimens is increased, the likelihood of getting a biased representation of the speaker's delivery is decreased. Further investigation of the relationship between the number of

specimens selected and overall effectiveness of judgements might fruitfully be undertaken.

There are limitations to the method employed for judging. A particular judge may identify a speaker after a number of samples have been heard. One possible effect of this identification may be to reduce the variability of judgements. This tendency to persevere has disadvantages and would appear difficult to eliminate.

The technique employed allowed only limited time for deliberations. Further study would be desirable to determine the influence on the judgements of the judging time allowed.

An investigation designed to study the influence of specimen length would prove useful. Ten seconds was chosen as a workable length on the basis of data gathered in a preliminary investigation. In this preliminary investigation specimens of varying length were employed, and ten seconds appeared to best meet the requirements of this study.

The semi-interquartile range values (see Table 1, p. 17) indicate the reliability of judgement and the judgements were assumed to be usable in the investigation, although the means of the semi-interquartile range values were not tested for statistical significance.

The three graduate students employed in the investigation were familiar to several of the judges. Some of the judges had previously heard or trained these speakers. This factor probably had an effect on their judgements. It may be hypothesized that these judges anticipated that these speakers would effect better delivery and that their ratings were therefore higher. On this basis it might be suggested that a panel

of judges unacquainted with the speakers might be employed so that familiarity would not be a biasing factor.

The primary aim of this investigation was to obtain data relevant to the problem of delivery and its effect on the amount of information transmitted; however, generalizations on the basis of the results should be made with caution and with full recognition that the materials, subjects and conditions of the present study represent but a single sample from all those that might have been chosen for such an investigation.

As outlined in Chapter II, the procedure for evaluating the amount of information transmitted was the use of three response categories: informed, uninformed, and misinformed, which were assumed to be represented by test items correct, omitted, and incorrect, respectively. An examination of these response categories indicates the relationship of delivery effectiveness to information obtained by the listener.

#### Informed

The response category of items correctly answered, which is assumed to represent the degree to which the subjects were informed, indicates that the original hypothesis may be generally correct; that is, more information is transmitted by the speaker employing techniques thought of as enhancing delivery.

The analysis in Table 6 (see page 24) would indicate that there was no significant difference in the category of items correct between the mean scores of those who listened to the speaker receiving the

lowest mean judgement ( $S_1$ ) and those listening to the speaker who received the lowest mean judgement among the more experienced speakers ( $S_4$ ). However, there is indication of a significant difference between the mean scores of the subjects who listened to the other "naive" speakers ( $S_2$  and  $S_3$ ) and the other two "experienced" speakers in this response category.

Speaker  $S_1$  who received the lowest mean judgement had what appeared to the investigator to be a monotonous delivery. However, this speaker appears to have better informed his listeners than did the other two naive speakers ( $S_2$  and  $S_3$ ). There is no significant difference in items correct between this speaker and speaker  $S_4$ . This would indicate that although the monotonous delivery, if such is the delivery weakness, might lack some "esthetic" appeal and other factors may vary, this type of delivery is not as detrimental to information transmission as some of the authors reviewed in Chapter I have indicated. An investigation of this particular speaker's delivery, both in random specimens and in its entirety, would be necessary to make an adequate evaluation of what was judged to be the delivery weakness and how this speaker was able to inform his audience in spite of what was judged to be delivery ineffectiveness.

#### Uninformed

Evaluating the degree to which the listening groups were uninformed appears to be dependent upon the degree to which these groups were able to refrain from guessing. Although the instructions



were repeated orally, "DO NOT GUESS," and the same instructions were given on the criterion test, it can be conjectured that the habit pattern of guessing answers is strong. There is a statistically significant difference between the groups who listened to speakers S<sub>2</sub> and S<sub>3</sub>, and those groups who listened to speakers S<sub>4</sub>, S<sub>5</sub>, and S<sub>6</sub>. With the exception, then, of speaker S<sub>1</sub>, the more experienced and trained speakers left their listeners less uninformed than did the other two naive speakers. This indicates that there is a relationship between delivery and the degree to which listeners are uninformed. The relationship appears to be that what was judged as delivery effectiveness, in two out of three cases examined, left the listeners less uninformed than did the speakers with less effective delivery techniques.

#### Misinformed

The misinformed response category may be hypothesized to lack statistical significance because of variables present in this investigation. The variability for this category is reduced when the scores in the other response categories are added together. The lack of significance in the category of incorrect items indicates that these response categories are not independent measures. The amount of information transmitted influences the lack of information and/or the amount of misinformation.

#### Testing Procedure

It might be hypothesized that groups would have been more attentive to the experimental speech had they been informed that they

would be tested on the information contained therein. This technique does approach some listening situations when retention of information is not a primary objective of listening. However, the classroom and lecture situation may tend to make listeners more attentive. Further investigations of these implications would indicate the degree to which a change of prior instruction would affect the criterion test scores.

#### Summary

The basic procedure employed in this investigation appears to lend itself to the accumulation of additional evidence relevant to the transmission of information. When viewed apart from individual variations, the present investigation indicated that the listening groups were more informed than uninformed or misinformed.

Although no statistical analysis was undertaken of the difference among these categories, inspection of the data revealed that the scores for the response category of informed were typically two or more times greater than for the category of misinformed, and approximately three times as great as scores in the category of uninformed. The variation occurred fundamentally between informed and uninformed. The data indicated they were more misinformed than uninformed.

With the caution that there are other variables within the scope of the term "delivery," such as visual cues, the generalization may be made from this investigation that there are statistical and practical indications that the amount of information transmitted is related to the

effectiveness of delivery. The speaker who employs techniques thought of in this investigation as enhancing delivery will transmit more information accurately; this statement appears to have validity under the conditions and limitations of this investigation.

## CHAPTER V

### SUMMARY AND CONCLUSIONS

The primary purpose of this study was to investigate the relationship between delivery effectiveness and the amount of information transmitted.

The experimental technique involved the preparation of a plausible but fictitious speech. Three speakers with relatively little public speaking experience and three speakers with training and experience in public speaking were selected to deliver the experimental speech. These six deliveries were judged for effectiveness of delivery on the basis of randomly selected and arranged ten-second specimens. Six groups of subjects listened to the delivery of the experimental speech. Each listening group heard the experimental speech delivered by a different speaker. A criterion test was then employed to evaluate the amount of information transmitted. The test scores were evaluated on the basis of three response categories: items correct, items omitted, items incorrect. These categories were assumed to represent the degrees to which the listening groups were informed, uninformed, and misinformed, respectively. The mean of the test scores for each group in each of the response categories was calculated. The differences in test score means were evaluated for statistical significance.

The data suggest the following tentative conclusions:

- (1) Speakers employing effective delivery techniques will better inform the listeners than those speakers with less effective delivery.
- (2) Speakers employing effective delivery techniques leave the listeners less uninformed than those speakers with less effective delivery.
- (3) The groups were more informed than uninformed or misinformed.
- (4) There appears to be a more impressive degree of misinformation than lack of information in the groups' mean test scores.
- (5) Randomly selected ten-second specimens can be usefully judged for delivery effectiveness.
- (6) Further investigation is needed to relate delivery effectiveness directly with the amount of information transmitted.

## BIBLIOGRAPHY

- Brigance, William Norwood. Speech Communication. New York: Appleton-Century-Crofts, 1955.
- Brissey, Forrest L. "The Factor of Relevance in the Serial Reproduction of Information." Unpublished, State University of Iowa, Iowa City, 1956.
- Cooper, Lane. Trans. The Rhetoric of Aristotle. New York: Appleton-Century-Crofts, 1932.
- Crocker, Lionel. Public Speaking for College Students. New York: American Book Company, 1956.
- Edwards, Allen. Techniques of Attitude Scaling Construction. New York: Appleton-Century-Crofts, 1957.
- Gray, Giles Wilkeson, and Wise, Claude Merton. The Bases of Speech. 3rd edition. New York: Harper and Brothers, 1959.
- Johnson, Wendell. Your Most Enchanted Listener. New York: Harper and Brothers, 1956.
- Lindquist, E. F. Design and Analysis of Experiments in Psychology and Education. Boston: Houghton Mifflin Company, 1953.
- McBurney, James H., and Wrage, Ernest J. The Art of Good Speech. New York: Prentice-Hall, 1955.
- McGinnis, Ralph Y. "Outline of Survey of Rhetoric." Unpublished, Montana State University, Missoula.
- Morris, Charles W. "Foundation of the Theory of Signs." International Encyclopedia of Unified Science, I, #2, p. 1. Chicago: University of Chicago Press, 1938.
- Munn, Norman. Psychology. New York: Houghton Mifflin Company, 1946.
- Oliver, Robert T., and Cortright, Rupert L. New Training for Effective Speech. Revised edition. New York: Dryden Press, 1951.
- Peterson, Houston (editor). A Treasury of the World's Great Speeches. New York: Simon and Schuster, 1954.
- Rankin, Paul T. "The Importance of Listening Ability." English Journal, XVII (1928), pp. 623-630.

Robinson, Frederick B. Effective Public Speaking. Chicago: La Salle Extension University, 1915.

Sarett, Lew, Foster, William Trufant, and Sarett, Alma Johnson. Basic Principles of Speech. 3rd edition. Boston: Houghton Mifflin Company, 1958.

Whately, Richard. Rhetoric. London: Charles Griffin and Company, 1872.

## APPENDICES



APPENDIX A

The Experimental Speech

A Copy of the Manuscript Employed  
by the Six Speakers Who Delivered the  
Experimental Speech

In central Brazil may be found 4500 square miles that are important to you though you may not have realized it. This is Jacobs Preserve. This preserve, or park, has international scientific significance. Nowhere on the face of the earth can be found such wide ranges of climate, altitude, topography. Nowhere can be found such complete assemblages of animal life. Nowhere else can be found so many varieties of plant life.

But now Jacobs Preserve in Central Brazil is in danger of being destroyed, or at least severely mutilated. This internationally important, natural laboratory for men of science may no longer be there for future generations to investigate and study.

Nor is the preserve's value great for men of science alone. Every year an increasing number of tourists, including Americans, have visited the area. Last year alone, nearly 80,000 Americans used the preserve and its facilities. This, in addition to the more serious visitors, over a hundred scientific investigation and study groups from this country.

The Brazilian people and Assembly have encouraged all people to come to Jacobs Preserve: for study, for pleasure, to investigate its wonders or merely marvel at them. Passage rates on Brazilian ships are even lowered during certain seasons to encourage travel to this fascinating area.

Students have always been welcome. Many governments, including our own, have subsidized student groups traveling to the preserve to study the climate conditions, the animal and plant life; for this is perhaps the last frontier for such extensive researches.

The natural barriers of the preserve have protected it from destruction for hundreds of years. When the white man first came to Brazil, their use of any of the area within the present park boundaries was extremely limited. The lumberman who wanted its forest products, generally found them scattered and the problems of transportation too great. The prospectors who occasionally found traces of riches in the preserve have, heretofore, found the concentration too limited for exploitation. The farmers found the natural plant life too ready to choke out the seeds they planted.

The land, the forests, the jungle, the animals stood ready to smother alien man, alien plants: erasing the tiny scars men made, as soon as the chance arose.

The Brazilian government later helped protect the preserve--- until now.

What threatens the preserve? In early 1956 uranium was discovered in large quantities in the Chilcoe Basin near the Western boundary. The Brazilian Uranium Extraction Syndicate was formed with great financial backing. This group wants to engage in open pit mining in the Chilcoe Basin, an area covering some 300 square miles. And this is only the beginning. They wish to build highways, and possibly a railroad cutting across the entire preserve. They propose a plant within the preserve for processing the ore.

But most significant, the Uranium Syndicate has requested full rights to explore and exploit the entire preserve, believing the Chilcoe discovery to be only a small discovery. They feel that other deposits of uranium will be found. Perhaps the entire preserve may be

dotted with deposits of the precious element.

There is every indication that the Brazilian Assembly will grant them all these rights. Both foreign and domestic pressure has been exerted since the syndicate was formed in late 1956. The private capital enlisted and subscribed to support this company's proposals, for profit of course, has been strong in its appeals, while the voice of the scientist and the casual visitor have hardly been heard. The Assembly of Brazil appears to be ready to give in to the more vocal, and the greater financial pressure of the Brazilian Uranium Extraction Syndicate.

In order to know what stand you take, if any, on this problem it will be necessary to familiarize yourself with this preserve that seems so distant but that is so important to the student, the scientist, the tourist. For here there are unlimited challenges and interest for all these people, from all the world.

So let's look at the preserve--its location, size, a little of its history, the native Indians living there, its natural splendor and even its unique city. Then let's look at what the results of uranium exploitation would be. Then make your own judgments about what action should or could be taken.

Jacobs Preserve is situated in the heart of the giant country of Brazil. Much of its 4500 square miles surround the Amazon River. A circle centering on the International Botanical Gardens near the old settlement of Andrada and with the easternmost part of the circumference 150 miles from the Atlantic Ocean will give you a general picture of the size and location. The names you see are a

polyglot mixture of Dutch, Portuguese, English and Spanish. Here, you will find high rugged mountains where the snow never disappears; low rolling plains, treacherous marshes and swamps, meandering rivers and streams, and the ever present foreboding jungle. That's Jacobs Preserve.

The preserve got its name from an Englishman. For centuries the Zeparos Indians were the only humans there. These Indians lived, as they still do, in small collections of huts scattered about the area, particularly near the open plains, or the better fishing grounds. They avoided, and still do, the high mountains and the marshes and swamps. When settlement of Brazil was begun by the whites, it only nudged at the fringes of the preserve and the Zeparos were left, almost completely undisturbed, remaining one of the most primitive people anywhere. To the white man the natural obstacles the preserve presented were too great for a few men with limited capital to overcome.

But in 1802 an English explorer entered the forest and jungle on the eastern boundary. With his small party he traveled and mapped much of the 4500 square miles, suffering all the privations of the primitive land. He found the Zeparos Indians aloof, but not unfriendly. But very unfriendly and hostile was the jungle.

John Jacobs was truly a man with a dream when he returned to the Eastern Coast of Brazil. He had the vision to see, at least in part, what this area could mean to future generations. His interest was not merely in adventure and exploration alone. He was also a scientist with a broad knowledge of plant and animal life.

Jacobs spent many hours in conference with any Brazilian Assemblyman who would give him the time. Finally he appeared before a Committee of the Assembly of Brazil. There he made his proposal: "The area should be preserved for all peoples; it should be protected from the commercial interests, and it should be a center of scientific study." He could not foresee that tourists, too, would come to visit the preserve. The committee took the matter under consideration. Long debates followed. A few men vigorously supported the idea, but generally apathy greeted their proposal. The assembly was too busy with an infant nation to be bothered with an area which had defied settlement. The opposition argued, on the rare occasions when they even troubled themselves to do this, that there was plenty of land and no one would ever want the preserve and if they did they should be allowed the usual settlement rights.

Primarily because of the apathetic opposition, the few supporters of the proposal pushed through an act which in a degree set the area aside. In 1812, ten years after he entered the region John Jacobs saw his dream beginning to materialize.

The area around Andrada was already settled. The city, if it could be called that, was far up one of the tributaries of the Amazon. A group of Portuguese shipbuilders had heard of the Zeparos' settlement there, learned that the river to the settlement was navigable with flat boats, and found heavy stands of hardwoods nearby with which to build wooden sailing ships. Mostly the hardwoods men wanted were scattered in small stands. But at Andrada there were concentrations of the wanted hardwoods and the river could be used to float the

timber to the coast. Thus the strange anachronism of a city within a jungle occurred, and by the time the Assembly had passed their first measure on the preserve, Andrada was firmly established. It survives today, but for a very different reason.

By 1860 the Brazilian Assembly formalized the concept of Jacobs Preserve. Unfortunately, John Jacobs did not live to see his dream completely fulfilled. After his death in 1842 the Assembly passed, by unanimous consent, an act which named this area for the far-sighted, intrepid man.

The rules and directives now governing the preserve are designed to help the visitor, but not at the expense of the park. Every effort is made to preserve all the natural beauty for all generations, all items of scientific interest for future scientists. No one, of course, may claim any land for their private use. Only with the special permission may the trees be cut down, and then only for the purpose of scientific study. All who enter the primitive areas must be accompanied by a professional guide. This protects both the preserve and the guest. The guide sees that the Indians are not exploited, that the animal and plant life are protected. And most important, the guide provides his invaluable training and experience which so often others must rely upon. He helps the visitor communicate with the Zeparos. Then of course the guide sees that the visitors are not swallowed up by the preserve, lost in its jungles or treacherous swamps, killed on its mountains. Still, in the last year, two guides and their parties were lost. The result for one group was fatal.

Except for the Zeparos Indians no one is allowed to trap or

kill the animals, except, again, by special permission for scientific study. The Zeparos have never been hunters and so have never posed any great threat to the animal population. Even were the Indians great hunters, their small numbers eliminated any problem. Fishing, by the visitors, however, in certain streams and lakes is permitted and even encouraged. Some of the lakes here are high and cold and deep, others shallow, low and typically tropical.

At the International Botanical Gardens, near the city of Andrada, is the greatest collection of native plant life found anywhere. Botanists from almost every country in the world are here continually to study and investigate. There are some 500 men and women employed by the gardens, subsidized by their various governments.

For the city proper there are special regulations. For here at Andrada is a unique situation, a city within a jungle, a strange civilized area in the midst of wilderness. The businesses are housed in the original buildings built by the settlers who came to cut the hardwoods, or reproductions of these buildings. The property belongs to the preserve. The commercialized aspects of the city are secondary. The largest store in Andrada supplies the expeditions that enter the primitive areas, for Andrada is the springboard from which most expeditions depart. Construction of homes and buildings in Andrada is carefully regulated, any remodeling is supervised. Changes can be made only after approval has been secured from a City Supervisor.

How do the residents of Andrada react when they cannot even re-roof a home without first getting sanction for the task? Well,



first, they've grown accustomed to it. Their livelihood depends upon the Gardens and the Preserve. The forest products for sailing ships, that were the foundation of the early settlement's economy, no longer have commercial significance. That was in a generation that has long since passed away. The generation of today realizes that it is the strange anachronisms which attract some people to the city in the midst of the jungle.

The International Botanical Gardens on the outskirts of Andrada are visited and studied by 750,000 people annually. There is the serious student and the dilettante. Both find here, in an area of 110 square miles, a collection of flora unique in all the world. There are few regulations, other than the obvious, governing the gardens. The permanent employees and scientists have always intelligently met the problems presented by the large numbers of visitors. As a matter of policy in their studies, they have made little attempt to change the setting for the hundreds of plants and trees which represent many of the botanical wonders of the preserve.

Within the preserve there is only one road. It is a two-lane, winding highway, if it could be called that, which penetrates the preserve to the Botanical Gardens and Andrada. The maintenance of this road is the greatest single expense of the Brazilian government in the preserve. But the road is usable for tourist vehicles and the buses, which run a schedule, never maintained because of the trees that sometimes fall, the wild animals that interrupt the travel, the occasional rainfalls which sweep away sections of the road.

But it is the natural, as opposed to the man-made or planned,

wonders and beauties which attract most of the people. The city of Andrada and the Botanical Gardens are only a small dot, in the center of an amazing area. Travel 50 miles along the crude jungle trails, that vegetation continuously threatens, and you'll soon forget the existence of the civilization that is marked in Jacobs Preserve only by Andrada and the Gardens. Outside the city you will see very little change from the days before John Jacobs.

Near the fishing grounds and the small open areas in the preserve you'll find the Zaporos living much as they always have. These Indians are short, with robust, round faces, small angular eyes, broad noses, thick lips and little beard. They are still aloof, but friendly. Their language is nasal and guttural. They still live in their small groups of huts and sleep in native hammocks. They seem to ignore the white visitors. Even those few who live near the most used trails still remain apart from any civilizing influences.

The vast, green kingdom slumbers peacefully on, and here are found the most startling wonders of Jacobs Preserve. The vegetation grows freely, almost with abandon. There are more than 200 varieties of forest woods. One of the unusual is the Jarina tree. Its large, hard seeds, when dried, take on many of the superficial characteristics of marble. The seeds are gathered, carved and used by the Indians to fashion their crude jewelry. There is the giant wild fig tree, whose branches extend over a circumference up to 480 feet and it is computed that 4000 persons could stand under its shade at noon-day. Orchids grow in profusion. In fact the preserve abounds with parasite and air plants. None of these are more graceful than the vanilla which is found in

greater or less abundance from the Northern limit of the preserve to the Amazon River. Ferns, tiny flowered plants, giant trees, even a sweet lemon tree, a veritable botanists' paradise is Jacobs Preserve.

The rich black earth, the fine ground sand, the colloidal clay are all deficient in mineral content, or so it was believed until the uranium discovery was made. But if that soil hid any mineral wealth beyond convenient reach, so it also grew a wealth of plant life. Potentially, the commercial value of the jungles is great today. But actually, the realization of that commercial value is nearly as limited as it was a hundred years ago. The jungle still chokes out the invader. Transportation difficulties are still economically not feasible to overcome. Of course it isn't the jungle and forest products which the Uranium Syndicate primarily wants.

The wild-life of the preserve is as varied as the plant life. In the reddish-colored hills one sees portions of earth freshly torn up. This has been done by the armadillo. The great Harpy Eagle is found in numbers only within the preserve. The boa constrictor, lazy and undisturbed, sleeps in the trees. The Hercules Beetle, bees that don't sting, with honey that isn't sweet, are only two of the great number of insects that are to be found here. The giant ant-eater, often measuring a full ten feet in length, and the paca, a little marmot, only two feet in length, can be seen. The jaguar, which quietly stalks its prey, is a more rare sight. Birds like the keel-bill remain oddities little known elsewhere. It is believed that nearly 300 species of animal life are found in abundance only within the boundaries of the preserve, and only the protection the preserve affords has kept many of these species from

extinction. Here is a zoologist's paradise too.

Naturally no one can fully appreciate such a paradise until he has seen it and studied it. But perhaps you have learned some of its importance and interest. Now what would the requests and demands of the Brazilian Extraction Syndicate mean to this preserve?

Where there is now only a single road and that only as far as Andrada and the Gardens, the Uranium Syndicate plans, and would need, many. At least one of them would dissect the park. They would have to be modern highways for trucks carrying ore and machinery. These highways would be an economic necessity to the Extraction Syndicate. And of necessity these highways could not skirt the jungles, would bridge the swamp, could not turn away from the villages of the Indians. About the proposed railroad we can only conjecture.

Andrada would grow, and with that growth would come the destruction of the International Botanical Gardens. A mining, boom-town atmosphere is not very compatible with the interests of the botanists. Andrada and the area covered by the Botanical Gardens would be swallowed up in the boom.

And what would happen at Chilcoe Basin? What would these new interests do in their exploitation of what appears to be a solid vein of uranium in this area? The syndicate will have assets, equipment, and one might even say the greed necessary to push back and hold back the jungle there. Here, of course, a new settlement would begin, with bunk-houses, warehouses, and the eternal scars left by open pit mining.

The ore processing plant planned by the Uranium Syndicate would be located a hundred miles from the Chilcoe Basin, near a conven-

ient potential source of water power, and still within the preserve. It is estimated that this plant will employ some 3000 men. Once again we have a great invasion of the preserve--and the accompanying evils. A large swamp and marsh area would be filled in for buildings. A Zaparo settlement near the proposed site would have to be re-located. Naturally the fishing done near the area would be affected. The company has not, perhaps deliberately, made their blueprints for the plant and its buildings available to the public. No mention has even been made of the disposal of the waste products of the extrusion process by the Uranium Syndicate.

Some of the plans of the syndicate are now known. But as you remember, the proposals and demands went even further.. They have requested full rights to explore and exploit the entire preserve. The eventualities of this request cannot be foreseen. One can only speculate. The syndicate, of course, has in mind that there are other deposits of uranium within the preserve, and they feel they must be given the opportunity to find and mine these. No one, not even the geologist, can predict how many deposits will be found, or of what size and value they will be. No one can predict whether new discoveries will mean more open pit mines or new processing plants. We can only speculate. But these speculations have an ominous ring of reality.

What will happen to the Indians? Their very meager adaptation to what we call civilization indicates that the Zaparos will not be useful in any mining or processing process. The syndicate's proposed highways would mean moving many of the scattered settlements of Indians. It isn't believed at this time that anyone can, or will, control the

treatment of these Indians once the Uranium Syndicate has been granted its wishes.

With the influx of a new and different population the wild-life will be threatened, where they are not pushed back into ever decreasing areas. Stream and river pollution are an obvious problem, to which no solution has been offered. Man will, of course, have to combat the insects, reptiles and other animals that interfere with his work. The syndicate recognizes this, and plans to, quote, "Eliminate any wild life problems within their areas of operation." Thus reads the brochure which has been sent to all interested engineers and workers. The very fact the brochure was printed indicates the assurance with which the syndicate is proceeding, even though their requests have not been formally granted. Zoologists tell us that some species of animal life may be wiped out by this invasion of permanent residents who care only about the uranium and the jobs it brings.

The study of plant life would be greatly limited. Again we can only speculate. The total effects upon the botanist's paradise would depend upon the extent of the Uranium Syndicate's discoveries and developments. It is certain, however, that the syndicate would not import the lumber it needs in its extensive construction proposals. The cutting here would not be selective. The botanists tell us the threat to study of plant life as it now naturally grows would be a serious one.

The Brazilian economy might be strengthened by the Uranium Syndicate, although most of the stock has been sold outside the boundaries of Brazil. Unfortunately no one can predict accurately the amount of income which the Uranium Syndicate proposals would mean to Brazil.

Thus we cannot compare figures with the income derived from the Preserve.

In America, interested parties have banded together to form an American Association for the Preservation of Jacobs Preserve. Included in this Association are the nation's leading zoologists, naturalists, botanists, and other men of science. There are similar associations throughout the world. These people are trying to enlist the aid of every interested person. Realizing that their efforts may be too late, they are, nevertheless, striving to obtain the support of interested groups and individuals. Several American colleges have already given their support to the Association's work.

Thousands of speakers throughout the world are making speeches for the park's preservation. These speakers are telling facts and making observations and speculations such as those you have just heard.

There are 4500 square miles in central Brazil that have been set aside for the student, the scientist, the casual visitor. The land, the plant life, the animals, the Indians are all of interest and scientific importance. Jacobs Preserve is being threatened... When YOU wish to visit the preserve will it be there? And if so, what will it be like? For thousands of years it has seen little change. Now a great and eradicating change is imminent.

In a small measure the decision may be yours. You can write the American Association for the Preservation of Jacobs Preserve if you feel the park should stay as it is now, and as it has been. Give them your opinions. If enough people become interested in this area their voice will be heard in the Brazilian Assembly through the spokesmen for the associations throughout the world. The Brazilian Assembly could not

ignore enough people expressing interest in Jacobs Preserve. At the very least the Brazilian Assembly might restrict the activities of the Uranium Extraction Syndicate. The Assembly might work out some compromise between the interests of the syndicate and science. Or at best the Brazilian Assembly will not allow any of the syndicate's proposals and requests, and the preserve will be there for the people to visit for any one of the many reasons that are as diversified as the visitors themselves. Some of those future visitors may be here, in this room, today.

What will you find when you visit Jacobs Preserve? Make your choice. Write your letter to the American Association for the Preservation of Jacobs Preserve.



You will hear a series of ten second specimens randomly selected from speeches. Listen to these specimens, then make a judgement regarding the overall effectiveness of vocal delivery of each.

You are asked to use a nine point scale, a diagram of which is provided below the instructions. There are 120 specimens with space provided below for you to write in a scale number. Please write a scale number for each specimen beside that specimen's number.

Using a nine point rating scale, assign a scale value of ONE to those specimens you judge to be least effective in vocal delivery. Assign a scale value of NINE to the specimens you judge to be the most effective. Use the full range of the scale if it seems appropriate for you to do so. Assign appropriate intermediate scale values to those which you judge to be moderately effective in vocal delivery. The units of the scale represent equal distances. A scale value of three is considered to be as much more important than a scale value of two, as a value of four is more important than a value of three. Always write a full scale value. Do not use fractions.

Since these ten second specimens are random samples ignore the content. Only judge the overall effectiveness of vocal delivery in the specimens. Please judge each individually.

Following each specimen there will be a five second pause for you to make and record your judgement. Make certain you assign each specimen a value. Please do not discuss your judgements with each other until after the judging session is completed.

Before each specimen you will be told its number in order that you will not lose your place.

1	2	3	4	5	6	7	8	9
1._____	16._____	31._____	46._____	61._____	76._____	91._____	106._____	
2._____	17._____	32._____	47._____	62._____	77._____	92._____	107._____	
3._____	18._____	33._____	48._____	63._____	78._____	93._____	108._____	
4._____	19._____	34._____	49._____	64._____	79._____	94._____	109._____	
5._____	20._____	35._____	50._____	65._____	80._____	95._____	110._____	
6._____	21._____	36._____	51._____	66._____	81._____	96._____	111._____	
7._____	22._____	37._____	52._____	67._____	82._____	97._____	112._____	
8._____	23._____	38._____	53._____	68._____	83._____	98._____	113._____	
9._____	24._____	39._____	54._____	69._____	84._____	99._____	114._____	
10._____	25._____	40._____	55._____	70._____	85._____	100._____	115._____	
11._____	26._____	41._____	56._____	71._____	86._____	101._____	116._____	
12._____	27._____	42._____	57._____	72._____	87._____	102._____	117._____	
13._____	28._____	43._____	58._____	73._____	88._____	103._____	118._____	
14._____	29._____	44._____	59._____	74._____	89._____	104._____	119._____	
15._____	30._____	45._____	60._____	75._____	90._____	105._____	120._____	

APPENDIX C

The Criterion Test Administered  
to Six Groups Who Listened to the  
Experimental Speech

PLEASE PRINT

Name \_\_\_\_\_ Group \_\_\_\_\_  
Last First Middle A,B,C,D,E,F

Speech 111, Section \_\_\_\_\_ Instructor \_\_\_\_\_  
(number)

Date \_\_\_\_\_ Day of Week \_\_\_\_\_ Time \_\_\_\_\_ Room \_\_\_\_\_

This is a multiple choice test. There are four possible choices to each question. Only one of the choices is correct. There are no so-called "trick" questions. Read each question carefully. DO NOT GUESS. If you are not reasonably certain about the answer to a question, then please omit that question. On the test sheets circle the number in front of the correct answer. You may now begin.

1. An economic necessity to the syndicate would be
  1. modern highways.
  2. airplane fields.
  3. access to cheap power.
  4. adequate railroads.
2. The legislation which brought the preserve into being was fostered by
  1. the insistence of scientific organizations.
  2. the efforts of a single man.
  3. the homestead demands of the settlers.
  4. the pressure of economic progress.
3. The Indians described in the speech live in
  1. wigwams.
  2. pueblos.
  3. huts.
  4. stilt-houses.

4. The soil found in Jacobs Preserve is primarily
  1. black earth.
  2. fine sand.
  3. colloidal clay.
  4. all of these.
  
5. The syndicate described in the speech is financed by
  1. private capital.
  2. public subscription.
  3. government funds.
  4. a mining cartel.
  
6. The confidence of the syndicate is demonstrated by their
  1. sale of stock certificates.
  2. brochures to prospective employees.
  3. expenditures for surveys.
  4. there are no indications.
  
7. Transportation into Jacobs Preserve is by
  1. road.
  2. river.
  3. air.
  4. trails.
  
8. If the syndicate's proposals are accepted the relations with the Indians would
  1. remain the same.
  2. be controlled by the government.
  3. not be controlled.
  4. be no problem.

9. Many student groups visiting Jacobs Preserve are
  1. discouraged by Brazilian regulations.
  2. subsidized by their governments.
  3. hindered by Indians.
  4. enrolled privately in a course of study.
10. The Indians described in the speech are primarily
  1. hunters.
  2. farmers.
  3. fishermen.
  4. all of these.
11. The city described in the speech is named
  1. Zaparo.
  2. Chilcoe.
  3. Jarina.
  4. Andrada.
12. The original explorer of Jacobs Preserve tried to persuade
  1. the Brazilian legislators to create the Preserve.
  2. other scientists to investigate the Preserve.
  3. private individuals to explore the Preserve.
  4. mining and lumbering interests to invest in the Preserve.
13. Of the 200 varieties of forest woods in Jacobs Preserve the largest mentioned is a
  1. Jarina tree
  2. redwood tree.
  3. fig tree.
  4. eucalyptus tree.

14. In Jacobs Preserve fishing is
  1. allowed only in certain areas.
  2. allowed only to the Indians.
  3. prohibited to the white man.
  4. allowed to all in any area.
  
15. Compared to the income from the Preserve the syndicate's contribution to Brazilian economy would be
  1. greater than.
  2. less than.
  3. almost equal.
  4. none of these.
  
16. The syndicate's effect on plant life found in the Preserve
  1. will be slight.
  2. is not known.
  3. will be great.
  4. will be controlled.
  
17. In Jacobs Preserve at present trees may be cut for
  1. building purposes.
  2. firewood.
  3. paper pulp.
  4. scientific study.
  
18. The jewelry of the Indians is fashioned from
  1. semi-precious metals.
  2. seeds of a tree.
  3. bones of animals.
  4. semi-precious stones.

19. The syndicate's processing plant would be
  1. near a source of power.
  2. outside Jacobs Preserve.
  3. near the mining area.
  4. near the city described.
  
20. It is believed by the syndicate that the element they wish to mine is
  1. concentrated in the river bottoms.
  2. in scattered concentrations throughout the area.
  3. concentrated in a single basin.
  4. restricted to the plains area.
  
21. Rare species of wild-life in the Preserve are protected from extinction by
  1. a zoological reserve.
  2. careful breeding.
  3. the Preserve's natural barriers.
  4. strict game laws.
  
22. The gardens described in the speech are located
  1. near the only city in the area.
  2. near the Chilcoe Basin.
  3. near the Eastern boundary.
  4. by the Amazon River.
  
23. How large is Jacobs Preserve?
  1. 3500 square miles.
  2. 4000 square miles.
  3. 4500 square miles.
  4. 5000 square miles.

24. The preserve was first explored in
  1. 1800-1825.
  2. 1825-1850.
  3. 1850-1875.
  4. 1875-1900.
25. Found in Jacobs Preserve in quantities is
  1. oil.
  2. bauxite.
  3. uranium.
  4. gold.
26. The Indians described in the speech live
  1. near the open plains areas.
  2. in the mountainous areas.
  3. near the swamp areas.
  4. in the jungle areas.
27. Jacobs Preserve has been protected by
  1. the wild-life.
  2. government funds.
  3. the natural barriers.
  4. the scientists.
28. Within the syndicate's area of operations the wild-life will be
  1. carefully protected.
  2. no problem to activities.
  3. eliminated as a problem.
  4. a great problem to overcome.



29. The syndicate's immediate plans call for which one of the following types of mining?
1. deep-shaft.
  2. hydraulic.
  3. open-pit.
  4. dredging.
30. Since the Preserve was established the Indians have
1. learned new languages.
  2. moved to the cities.
  3. learned farming methods.
  4. resisted civilizing influences.
31. Jacobs Preserve is threatened, if at all, by
1. the growing Indian population.
  2. the discovery of uranium deposits.
  3. the great influx of tourists.
  4. the need for greater area for scientific experiments.
32. The area where mineral concentration is now known to be great is called
1. Andrada Basin.
  2. Jacobs Basin.
  3. Chilcoe Basin.
  4. Zaparo Basin.
33. Within Jacobs Preserve the syndicate wants
1. extensive rights to a basin of 300 square miles.
  2. extensive rights to many areas.
  3. extensive rights to all the area.
  4. limited rights to all the area.

34. Proposed roads, if any, would
1. avoid Indian settlements.
  2. avoid swamp areas.
  3. avoid jungle areas.
  4. none of these.
35. Jacobs Preserve is located in
1. eastern Brazil.
  2. central Brazil.
  3. western Brazil.
  4. southern Brazil.
36. Capital for the syndicate came from
1. Brazil entirely.
  2. Brazil primarily.
  3. the United States primarily.
  4. many countries.
37. Some animals mentioned in the speech are the
1. cheeta and the anaconda.
  2. armadillo and the paca.
  3. great eagle and the parrot.
  4. alligator and the gazelle.
38. In the syndicate's operations the Indians would be
1. useful in mining.
  2. useful in construction.
  3. useful in both of these.
  4. useful in neither of these.

39. An insect oddity mentioned in the speech is
1. a long-lived beetle.
  2. a bee with sour honey.
  3. a giant breed of white ants.
  4. a keel-bill bug.
40. The Brazilian governing body is called the
1. Convention.
  2. Parliament.
  3. Assembly.
  4. Congress.
41. Most expeditions into the primitive areas begin from the
1. western boundary.
  2. city described.
  3. Chilcoe area.
  4. Amazon River.
42. The Brazilian government appears ready to
1. approve but regulate the syndicate's requests.
  2. deny the requests of the syndicate.
  3. ignore the requests of the syndicate.
  4. consent to the requests of the syndicate.
43. The idea of a creation of a Preserve was greeted by those in authority with
1. indifference.
  2. agreement.
  3. objection.
  4. enthusiasm.

44. The syndicate would
1. improve the Gardens.
  2. destroy the Gardens.
  3. not affect the Gardens.
  4. affect the Gardens slightly.
45. Jacobs Preserve has international significance in the field of
1. history.
  2. science.
  3. philosophy.
  4. politics.
46. The greatest expense of the Brazilian government within the Preserve is for
1. allowance to the Indians.
  2. the maintenance of the Gardens.
  3. the upkeep of the buildings.
  4. the maintenance of the road.
47. The syndicate would
1. cut lumber where they find it.
  2. bring lumber up the river.
  3. use selective lumber cutting.
  4. use little lumber in their work.
48. The Indians described in the speech are called the
1. Andradas.
  2. Chilcoes.
  3. Zeparos.
  4. Pacas.

49. With regard to the preservation of Jacobs Preserve the syndicate
1. has taken no stand on the problem.
  2. has exerted pressure on the Brazilian government.
  3. has been apathetic toward the problem.
  4. has gotten selfish legislation on the problem passed.
50. Originally the city's economy was based upon
1. lumber.
  2. fishing.
  3. Indian trade.
  4. farming.
51. Buses in the Preserve
1. run a regular schedule.
  2. do not run on schedule.
  3. are by charter only.
  4. run a schedule on holiday weekends only.
52. Employees of the Gardens in Jacobs Preserve are paid by
1. the Brazilian government.
  2. the Preserve's income.
  3. profits derived from the Gardens.
  4. the subsidies of their own country.
53. The Indians described in the speech are
1. hostile.
  2. shy.
  3. aloof.
  4. friendly.

54. The greatest attraction of the Preserve is
1. its strange city.
  2. its natural wonders.
  3. the Gardens.
  4. the Indians.
55. Jacobs Preserve was named for a
1. Dutch settler.
  2. Brazilian legislator.
  3. English explorer.
  4. Portuguese lumberman.
56. The city described in the speech is
1. a modern city on a highway.
  2. a now deserted city.
  3. an old city within a jungle.
  4. a restored city.
57. Your opinions about the Preserve should be sent to
1. the Brazilian government.
  2. the dean of your college.
  3. Jacobs Preserve, Brazil.
  4. the American association.
58. Guides are
1. an accomodation to those who want them.
  2. mandatory for any visiting group.
  3. mandatory for all who visit the primitive area.
  4. an accomodation to scientific investigating groups.

59. Most of the Indians described in the speech speak

1. a derivation of Portuguese.
2. only their native tongue.
3. a Spanish-Indian dialect.
4. a little of all of these.

60. Disposal of waste products of the syndicate's process is

1. not mentioned in the speech.
2. not a problem.
3. not provided for.
4. adequately provided for.

---

If a foreign student, please indicate nationality\_\_\_\_\_





APPENDIX D

The Recorded Instructions Given  
to Six Listening Groups Following the Reproduction  
of the Experimental Speech

The instructions below were reproduced by tape recorder before the criterion test was administered:

You will now be given a test on the speech which you have just heard. The tests will be passed out to each of you, but please leave them face down until told to begin. This is a multiple choice test. There are four possible choices for each question. There is only one correct choice. There are no "trick" questions.

At the top of the first page will be found places to put your name, the Speech III Section you are in, and the name of the instructor of that section. Also fill out the date, the day of the week, this room number, and the test letter which will be given to you at the beginning of the test. Please print all this information.

DO NOT GUESS. If you are not reasonably certain about the answer to an item, then please omit that item. Again, please, DO NOT GUESS.

The following instructions were given after the testing was completed:

For the purpose of this study it is of great importance that you do not discuss the speech you have heard or this test with anyone else. Others, some of whom may have appointments at a later date to listen to a similar speech and take a similar test may ask you about what you have done tonight. Telling them anything will affect their score and the comparisons with your scores. In short, others knowing about this speech and this test, or even the fact that you listened to a speech and took a test this evening will make the study inaccurate.

All listening sessions and all tests will be completed in two weeks. After that date you may discuss this evening's activities with anyone. You will be given an opportunity to discuss the purposes and results of this study with the investigator if you so desire.

Again, please do not mention what you have been told, what you have heard, or this test you have taken with anyone for two weeks. This is extremely important to the study. I am sure that in the interest of obtaining more knowledge about speech and its functions and limitations you will cooperate.

APPENDIX E

The Median Scale Values and the Semi-  
Interquartile Range Values for Twenty Ten-Second  
Specimens Randomly Selected from the  
Deliveries of Six Speakers

S*	Speaker											
	S <sub>1</sub>		S <sub>2</sub>		S <sub>3</sub>		S <sub>4</sub>		S <sub>5</sub>		S <sub>6</sub>	
	Mdn	Q	Mdn	Q	Mdn	Q	Mdn	Q	Mdn	Q	Mdn	Q
1.	1.80	.05	2.52	.67	3.17	.63	5.30	.73	7.50	.81	6.50	1.50
2.	2.83	1.27	2.83	.81	2.50	1.56	5.50	1.54	5.75	.88	7.83	.96
3.	3.50	.73	3.50	.83	2.50	.46	3.83	.88	7.70	.72	7.70	.72
4.	2.00	.67	1.90	.25	3.75	1.12	7.00	1.50	7.17	.96	7.25	.62
5.	2.75	.69	2.00	.67	2.90	.53	5.50	1.29	7.17	.81	7.50	.83
6.	1.90	.25	1.67	.21	2.30	.60	6.17	1.21	7.50	1.82	7.00	1.25
7.	2.50	.73	1.33	.27	2.70	.54	5.00	1.06	7.50	1.33	7.50	1.19
8.	2.17	.77	1.93	.29	2.70	.72	5.50	.83	6.50	.88	7.50	1.06
9.	2.00	.83	3.75	.69	2.30	.60	4.30	1.10	6.50	.83	7.00	1.12
10.	3.00	.96	1.50	.67	4.10	.53	4.30	.72	6.50	1.00	7.00	1.33
11.	2.00	.71	4.50	.83	3.00	.42	4.50	1.38	6.75	1.19	6.67	.67
12.	2.33	.67	2.25	.69	2.50	.73	4.90	.65	6.17	1.46	7.50	1.07
13.	1.75	.56	2.30	.70	4.75	1.19	4.25	.69	6.83	.67	7.75	.69
14.	3.00	1.00	2.33	.67	4.17	.81	3.50	1.02	6.83	1.50	7.17	.81
15.	1.75	.31	2.30	1.25	3.17	.82	5.50	1.04	6.83	.88	6.83	.87
16.	2.17	.71	2.50	.85	2.75	.85	5.83	1.50	5.83	.96	7.70	.60
17.	1.33	.34	3.25	.69	3.00	.94	5.50	1.00	7.00	.81	7.50	1.69
18.	1.22	.22	2.75	.69	2.50	.85	5.00	.67	6.90	.70	7.50	.73
19.	2.00	.42	2.79	.40	1.75	.62	6.00	1.29	6.75	.56	7.70	.72
20.	2.00	.25	4.50	.56	3.50	.62	5.50	1.17	5.17	1.31	7.50	.62
M <sub>m</sub> **	2.20		2.62		3.00		5.14		6.74		7.33	
M <sub>Q</sub> ***		.61		.63		.76		1.06		.95		1.40

\* Indicates specimen number.

\*\* Indicates the means of median scale values.

\*\*\* Indicates the means of semi-interquartile range values.

**APPENDIX F**

**Individual Test Scores in the Response  
Category of Items Correct on the Criterion Test**

**Mean Test Scores for Six Listening Groups  
in the Response Category of Items Correct**

	Listening group					
	1	2	3	4	5	6
17	7	4	25	26	21	
20	10	8	25	31	33	
26	11	12	27	34	33	
26	14	13	29	34	36	
27	16	17	29	35	37	
28	17	20	30	35	38	
29	19	20	31	38	39	
30	23	21	32	38	39	
31	23	21	32	39	39	
34	25	22	33	42	41	
34	25	23	33	44	44	
34	26	24	35	44	44	
35	26	26	36	45	45	
36	27	27	36	46	46	
38	27	29	42	47	48	
38	28	34	45	48	51	
40	30	34	47	49	54	
41	33	35	48	50		
41	34	35	49	50		
42	35	36	51	50		
42	39	36	52	52		
42	40	37		54		
43		40				
46		44				
50		45				
		46				
<b>Total number of subjects</b>	25	22	26	21	22	17
<b>Mean test score</b>	34.80	24.32	27.27	36.52	42.32	40.47

**APPENDIX G**

**Individual Test Scores in the Response  
Category of Items Omitted on the Criterion Test**

**Mean Test Scores for Six Listening Groups  
in the Response Category of Items Omitted**

	Listening group					
	1	2	3	4	5	6
0		1	1	0	0	0
0		2	2	0	0	0
0		2	2	0	0	0
0		5	4	0	0	0
2		7	4	2	1	1
2		12	4	2	1	2
4		13	5	6	1	4
4		14	7	6	2	4
4		15	9	6	3	5
4		16	10	6	3	6
5		17	11	7	3	6
5		19	11	8	3	8
5		22	12	9	3	8
6		23	12	9	6	8
6		23	13	12	7	8
6		24	15	15	8	14
9		26	18	18	9	15
10		30	20	19	11	
12		32	24	19	11	
14		44	24	24	12	
15		45	25	28	14	
18		47	31		16	
19			32			
20			33			
26			42			
			47			
<b>Total number of subjects</b>	25	22	26	21	22	17
<b>Mean test score</b>	7.84	19.95	16.08	9.33	5.18	5.24



**APPENDIX H**

**Individual Test Scores in the Response  
Category of Items Incorrect on the Criterion Test**

**Mean Test Scores for Six Listening Groups  
in the Response Category of Items Incorrect**

	Listening group					
	1	2	3	4	5	6
6		3	5	5	3	3
10		5	6	6	6	6
11		8	7	7	6	7
11		9	10	7	7	8
12		10	10	7	7	8
12		11	10	7	7	11
13		11	13	8	9	12
13		12	13	10	10	14
14		13	13	11	10	14
15		15	13	11	10	15
15		16	14	12	10	15
15		16	14	12	11	16
16		18	14	12	12	17
17		18	15	15	13	19
17		18	16	18	13	20
17		19	16	21	15	27
18		19	19	22	16	31
19		20	19	24	18	
24		24	21	26	20	
24		25	22	26	21	
25		26	22	27	25	
26		29	22		26	
26			25			
28			25			
30			30			
			39			
<b>Total number of subjects</b>	25	22	26	21	22	17
<b>Mean test score</b>	17.36	15.68	16.65	14.00	12.50	14.29