The Relation of Eye-Contact to Retention of Information in a Public Speaking Situation

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THE RELATION OF EYE-CONTACT TO RETENTION
OF INFORMATION IN A PUBLIC
SPEAKING SITUATION

A Thesis
Presented To
The Faculty of the Department of Speech and Theatre
Western Kentucky University
Bowling Green, Kentucky

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts

by
William M. Weathers, Jr.
July, 1972
THE RELATION OF EYE-CONTACT TO RETENTION
OF INFORMATION IN A PUBLIC SPEAKING SITUATION

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ACKNOWLEDGEMENTS

The author wishes to express grateful appreciation to Joe Kline, Jack Drago, William Turpen, Geri Hahn, and Ruth Richardson for their help in collection of the data.

To Gerald Beckham, who delivered the speech used in the study.

To Fred King, who composed the speech.

To Fonzole Childress and Ramona Howard, who helped in so many ways.

The author extends special gratitude to Dr. Joseph G. Stearns, under whose guidance this study was made.
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CHAPTER I

INTRODUCTION AND STATEMENT OF THE PROBLEM

If the purpose of speaking to others is communication,\(^1\) then the purpose of teaching public speaking must be to aid in the learning of those speech skills which will facilitate effective communication. In striving to achieve this goal, every opportunity must be taken to emphasize areas of development which are particularly important. Ideally, such areas should be those involving precepts long held in places of importance by the tradition of the speech discipline and verified through scientific examination. As Clarence T. Simon has written:

> During its long life speech has accumulated diverse beliefs and assumptions, many of them from speculative or authoritarian sources. Efficiency in speech performance and in pedagogical practice demands the scientific testing of the tenability of these accumulated traditions.\(^2\)

Many of these traditions can be found in the area of delivery.\(^3\) Courses of instruction in public speaking usually include a substantial treatment of at least several selected delivery factors. A survey of four introductory speech texts with publication dates ranging from 1955

\(^{1}\)The term "communication" is taken here to mean the interpersonal process by which thought is shared.


\(^{3}\)"Delivery" as used here is the speaker's physical transmission of the message in a communication act, in this case, a public speaking situation.
through 1972 (three of them traditional and one which was oriented toward communication theory) revealed a total of 184 pages devoted to various facets of delivery. Yet delivery remains a subject which has not been explored adequately from a scientific standpoint. In 1967, Wayne N. Thompson wrote:

A great many aspects of delivery have not been examined experimentally or even descriptively, and those generalizations supported by at least two studies produce no surprises. The verification of such established, intuitive precepts as 'stand still except when moving purposefully,' and 'look at your audience,' however, is not pointless, for not every belief of this sort is confirmed. The eventual separation of practices that affect response from those that are not significant will enable instructors and students to direct their efforts fruitfully.

As Thompson suggests, one precept in the area of delivery which traditionally has been stressed concerns eye-contact (EC). Speech teachers with even limited experience will recall having commented on a student-speaker's failure to look at his audience. They may also recall having observed that a contributing factor to a good speaker's "directness" is his ability to voice his thoughts while looking into the eyes of his listeners.

In an informal survey of 12 instructors currently teaching either

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the basic speech course or an advanced public speaking course, respondents were asked to rank, in the order of their "relative importance to effective communication," 10 selected factors of delivery. Ten of the respondents ranked EC above fourth place and none of the respondents ranked it below fifth place. This gives some indication of the importance attached to EC by a small group of university speech teachers. It would seem reasonable to infer that their responses, which reflect practices in the classroom, are not atypical.

Eye-contact, then, certainly falls into this category of factors included and often emphasized in the teaching of public speaking. Further, a review of the literature indicates that EC is a topic which has not been subjected to adequate scientific investigation as it directly concerns retention of information in the public speaking situation.

The purpose of the present study was to examine the relation of the amount of EC between speaker and audience and the retention of content by the auditors. "Amount of EC" was defined as the amount of time during which speaker and auditor are looking directly into each other's eyes as measured by recording the cumulative totals (in seconds) of EC during a speech of approximately six minutes' duration. "Retention of content" was defined as the amount of content material remembered on immediate and on delayed recall as measured by the method of written delivery factors listed were: articulation, bodily action, eye contact, fluency, force, pitch, pronunciation, quality of voice, rate, and volume.

The question on the probe was phrased in terms of the teacher's current practices, i.e., "I tend to stress . . ."
reproduction. The purpose of most informative speeches is to communicate information so that the information will be remembered over a period of time and not merely for a few minutes after the delivery of the speech. Therefore, delayed recall is a more meaningful measurement with respect to the purpose of informative speaking and a more accurate indicator of true retention than is immediate recall.

In 1962 Martin Cobin experimented with the effects of an interpreter's EC with his audience members on their responses to his "speech delivery."\(^8\) Seventy-three University of Colorado students enrolled in the basic speech course were asked to rate on a seven-point scale the delivery of the interpreter on five successive passages from a ten minute reading. Alternate sections were each read with good EC and no EC, or eyes on the book. The same procedure was followed with 56 students and a less experienced reader. Cobin was apparently trying to validate the theoretical position that there is desirability in EC when interpreting to a live audience, although he did not state any specific hypotheses. In conclusion he raised several questions and stated that his study had established that an audience will show conscious preference for a reader with good EC in the face-to-face situation.

It was felt possible that a more comprehensive dependent variable than an audience's conscious preference for a certain type of delivery could be devised. If the central idea is to test the validity of the traditional precept "It is desirable to look at your audience," then

\(^8\)Martin Cobin, "Response to Eye-Contact," Quarterly Journal of Speech, XLVIII (December, 1962), 416.
consideration must be given to what is meant by "desirable" in this connection. With respect to public speaking, it seems reasonable to assume that EC has not been considered desirable through the years solely for the purpose of displaying a skill of delivery which an audience will consciously prefer. If Cobin's interpretation of the precept included this assumption, then perhaps his design served him well. In the present study, however, EC is assumed to be desirable for the purpose of facilitating effective communication of information. For an appropriate test then, a measure of communicative effectiveness has been devised.

A second consideration concerns Cobin's use of alternate passages for the good and no EC conditions. If the same passage is not being read by the same reader at the same time while EC is being manipulated, no attempt has been made to hold constant a particular set of other variables, or delivery factors, separate from EC. There is the definite possibility that the reader's voice may influence the auditor in making his decision, or that his bodily action, or his facial expressions, or the like, may do the same.

Finally, there is the matter of good and no EC. During the no EC passages the reader looked down into his book, and on the good EC passages he looked at his audience. The no EC condition is workable for a study concerned with oral interpretation, where looking down into the book is the usual alternative to EC. It is not applicable to the public speaking situation, where, with or without notes, the speaker tends to choose the window, ceiling, tops of heads and other areas as the objects of his gaze. In the good EC condition there is certainly a need to discover "how much" or "how little" EC occurs for there to be any sort of sophistication in the quantifying process.
The Cobin study provided a good point of departure, while, as he admitted, the method was crude. Cobin provided evidence that EC is consciously preferred to no EC in an environment very similar to that in public address.

Ralph V. Exline contributed to the methodology of experimentation with EC in his 1963 study of the phenomenon in relation to competition, sex, and need for affiliation. While the study itself and most aspects of the methodology employed are not germane to the consideration of EC as it relates to effectiveness of communication, the observation procedure used is worth noting and has been modified for use in the present study. Exline used observers recording the head motion of a subject (S) who repeatedly made EC with a staring confederate. The study reported here used observers recording the head and eye motions of a confederate who repeatedly looked at a number of S's who were assumed to be staring at him. The technique is essentially the same, although the roles of confederate and S are reversed. The function of Exline's staring confederate was to make reasonably certain the occurrence of EC whenever S's looked at him. Since S's in the present study are assumed to be staring, this will make reasonably certain the occurrence of EC when the speaker looks at them. Exline's method of counting the number of glances so that the mean duration of glance could be computed, was also adopted here. Exline found that the index of agreement as to the occurrence of EC was high between two observers recording EC in a dyad. Using an operations recorder with the observers behind a one-way mirror, the head motions

of the S's were found to be noticeable enough for purposes of ob-
servation and reliable recording of EC. Exline noted that while S's
might be looking at the chin or ear of each other and that this might
be recorded as EC, it is unlikely to result in too great an error if
observers are seated at proper angles. He also maintained that such an
error is one that could not have been reduced by the use of a different
experimental condition. This seems reasonable, since a given instance
of EC must occur as a result of behavior in a dyad. In order for the
researcher to be certain that EC is happening an observation and a record
must be made by both members of that dyad. Obviously, such a procedure
would have carried a high risk of contaminating Exline's study. Therefore,
one member of each dyad was kept ignorant of the experiment. This made
an observer seated at a proper angle an unavoidable necessity.

James Gibson and Anne Pick employed psychophysical experimentation
in 1963 in order to find how well, or with what degree of accuracy a
person can perceive direct EC.10 A "looker" and an observer were used.
The looker was instructed to gaze at different positions or stations on
or near the face of the observer from a distance of two meters. Tabula-
tion of "You are looking directly at me" ("yes") responses and "You are
not looking directly at me" ("no") responses, plus subsequent analysis
of data provided conclusive evidence that at a two-meter distance persons
can perceive direct EC with great accuracy. While this was perhaps a
validation of the obvious, it served to refine a methodology for testing
the psychophysics of EC and thus to display its amenability to experi-
mentation. However, the findings of Gibson and Pick must be thought of as

10James J. Gibson and Anne D. Pick, "Perception of Another Person's
Looking Behavior," American Journal of Psychology; LXXVI (September,
1963), 386.
being indirectly related to the present study, because of the greater interpersonal distance operant in the latter.

Two 1965 studies which investigated EC as it functions in dyads provided some specific insights which can also be applied to the public speaking situation. Exline, Gray, and Schuette explored the effect of interview content and sex on visual behavior and found that S's looked more at each other when listening than they did when speaking. Although it is taken for granted in public speaking that auditors will be looking at the speaker, this experimental verification of such a tendency in dyads lends justification to the assumption of the present study that the auditors will be listening for a large per cent of the total time of the speech.

Argyle and Dean attempted to relate EC to distance and affiliation through a series of experiments employing a modification of the Exline method. Instead of using an operations recorder, one observer recorded EC on a cumulative stopwatch while the other tallied the number of separate glances. This technique made possible a computation of the mean duration of glance as well as EC per given session of conversation. The same technique was employed in the present study. One of the conclusions of the Argyle and Dean study is also pertinent. After discussing the determinants of EC, it was concluded that gazing directly into another's eyes serves the important function of being a "quest for feedback in social interaction, together with that of signalling that the channel is


12Michael Argyle and Janet Dean, "Eye-Contact, Distance and Affiliation," Sociometry, XXVIII (September, 1965), 289-304.
open."\textsuperscript{13} This statement brings out the reciprocal nature of EC and is important in public speaking in that auditors use EC as a communicator of feedback.

One study which has bearing on retention in the public speaking situation is noteworthy here. William Conboy experimented with retention of speech content as it is affected over time by measuring immediate and delayed recall.\textsuperscript{14} Six-hundred students were requested to reproduce in written form as much of a five-minute speech as they could remember. They did this immediately after the speech was delivered, and again nine days later. The amount retained after nine days was approximately one-half the amount retained immediately after the speech, while the number of distortions of meaning and additions almost doubled. Most notable is the fact that Conboy's study provided a workable methodology for testing retention in such a way that data recorded form a comprehensive profile of the amount and accuracy of information retained. In adapting this methodology to the present study, Conboy's technique of measuring the dependent variable by monitoring adherence to main ideas, or key concepts, was found particularly valuable.

That the uniqueness of the present study lies less in its procedures than in its purpose can be seen from the above. In planning the experimental design, adaptations were made of three techniques from other studies. A review of the literature indicated that no research to date has been aimed directly at discovering relations between EC and retention

\textsuperscript{13}Ibid., p. 304.

of information in the setting of public address.

In order to examine these relations in a public address situation, two major questions of interest were asked. First, is there a significant relation between the amount of EC from speaker to auditors and the auditors' retention of the content of an informative speech on immediate recall? Secondly, is there a significant relation between amount of EC in the public speaking situation and retention of information on delayed recall? The null hypothesis which follows from this is: There is no significant relation between EC in the public speaking and retention of content. The following hypotheses were tested: (1) There is a significant relation between EC in the public speaking situation and retention of content on immediate recall. (2) There is significant relation between EC in the public speaking situation and retention of content on delayed recall.
CHAPTER II

PROCEDURES

The experimental phase of this study consisted of two pilot experiments and one formal experiment. Procedures leading up to and including the first pilot experiment will be discussed first. In order to avoid repetition, aspects of the two succeeding experiments which are identical to those of the first pilot will not be covered again in discussion of the second pilot and the formal experiment. Procedural changes which were implemented in the second pilot and in the formal experiment will be noted in the discussion of each.

In the first pilot experiment (Experiment 1) an instructor of speech at Western Kentucky University was used as the confederate-speaker. Two weeks before the date of the experiment, he was asked to select a topic conforming to his own interests and knowledge and to make some notes on his ideas concerning the topic. It was assumed that such a method would allow the speaker greater ease and flexibility in preparing the speech than would a manuscript prepared in advance by the experimenter and given to the speaker to memorize. Several days later the speaker and experimenter conferred and agreed that the topic "listening" would be appropriate for use in the experiment. It was also agreed that the speaker would speak from notes, extemporaneously, so that the speech might be as conversational as possible. Since a tape recorder was to be used to enable the experimenter to transcribe the speech exactly as it would be delivered, a prepared manuscript was felt to be unnecessary.
On the day before the experiment, the speech was rehearsed in the presence of the experimenter. A tape recording was made and played back so that the speaker and experimenter could evaluate the speech and make any changes which might be necessary. No changes were made, since the speech conformed in content, organization, apparent purpose, and length to that desired (see Appendix A).

For the experiment a normal classroom setting was used (see Appendix B). The chairs in the room were arranged so that they were bisected by an aisle four feet wide. The purpose of the aisle was to allow the speaker to perceive each half of the audience clearly so that he could easily discriminate between them in directly manipulating the independent variable. Four feet was chosen as the width of the aisle because the assumption was made that an aisle one to one and one-half feet wider than the other aisles would be wide enough to be perceptible to the speaker and to the observers, and narrow enough to be imperceptible to the S's, who would be initially ignorant of its existence. Seated in the back of the room behind the section of S's on the speaker's left (EC group; the experimental group, in which EC occurred) were two observers, one with a tally sheet and one with a cumulative stopwatch. Their seats were placed at angles which allowed them to see the speaker's face clearly. The third observer was seated along the outside aisle of the EC group, one-third of the way up the aisle from the back of the room. His seat was placed so that he faced along the width of the room, an attitude which granted him a view of the EC group from the side. This

1Three graduate assistants in the Department of Speech and Theatre at Western Kentucky University were used as observers. Since no interaction among observers was required, they had been given instructions individually, several days before the date of the experiment.
observer had a pad of paper and a cumulative stopwatch. The observer behind the EC group who operated the stopwatch had been instructed to let the watch run whenever the speaker was looking toward the EC group. She had been instructed to keep the watch stopped whenever the speaker was not looking toward the EC group. The observer with the tally sheet had been instructed to record the number of separate instances of EC achieved in the EC group by making a mark on each change in the speaker's gaze direction while the speaker looked toward the EC group. The observer seated on the outside aisle had been instructed to let his watch run whenever one or more S's in the EC group "looked away", or held their heads in an attitude other than one of looking at the speaker. At all other times, the watch was to be held stopped. In addition to the stopwatch, this observer had a lined note-pad. At the beginning of the speech he was to record, on the top line, the number of EC group S's who were "looking away". Every time there was a change in the number of S's looking away, the new number would be recorded on the next line directly under the one just used.

Sixteen S's, who were members of a basic course in speech, were told that in the next few minutes they would be listening to a short speech delivered by a speaker who wanted their help in getting feedback on the worth of the speech, so that he could improve it for some future delivery. As soon as they were seated, the speaker entered the room, turned on the tape recorder, and delivered the speech. He had been instructed to look directly into the eyes of the group on the left side of the aisle, and to avoid looking at anyone in this group who was not looking at him. He had been told to effect EC of two to four seconds with these S's and to distribute EC equally among them. His instructions
with regard to the right side of the audience (No EC group) were to make no EC but to look to the left or right of these S's' heads, just over the tops of their heads, and so forth. This stipulation was intended to minimize the possibility that the S's would detect the change in the speaker's looking behavior as his glance shifted from one side of the room to the other. The speaker stood at the front of the room, behind a lectern, facing the bisecting aisle so that he could clearly discriminate between groups.

As soon as the delivery of the speech was completed and the speaker and observers had left the room the experimenter distributed three blank sheets of paper to each S. The sheets were stapled together with an instruction sheet on top bearing the single sentence: "On these blank pages write the speech you have just heard in the words in which it was delivered, or as much of it as you can." Subjects were given the following oral instruction: "There's an instruction on this sheet. You'll have about 25 minutes to complete this." As the responses were returned, they were separated according to EC group and No EC group. Subjects left the room as they completed the task.

Several procedural errors were apparent after the completion of Experiment 1. The observer recording duration of EC with the stopwatch became confused about her instructions a few seconds after the speaker had begun. On post-experiment analysis it was learned that she had recorded the amount of time that the speaker had looked toward the No EC group. The experimenter noticed that the observer with the tally sheet allowed many changes in speaker's gaze direction to go unrecorded. These errors suggested the need for more emphasis on detail in instructing observers, and perhaps for greater clarity in the instructions themselves. Another error was allowing more seats in the room than there were S's,
an oversight which was easily corrected in the succeeding experiments. A look at the data indicated that the speaker had looked at the EC group for an inordinately large portion of the total time of the speech. This suggested that the speaker be instructed to divide attention equally between the EC group and the No EC group.

Data obtained by the observer on the outside aisle indicated that "looking away" behavior in the EC group was small enough to be considered negligible. While this verified the assumption that most of the EC group would look at the speaker most of the time, the observer was retained for succeeding experiments as a check on the possibility that "looking away" behavior might vary from audience to audience.

For the second pilot experiment (Experiment 2) an undergraduate speech contest winner at Western Kentucky University was used as the speaker. The speech preparation procedure used in Experiment 1 was abandoned for Experiment 2 because the "listening" speech already prepared fit the needs of the experiment so well. In lieu of that procedure the speech was edited by the experimenter and given to the speaker to memorize (see Appendix A). The speaker was told that he could make any syntactical or occasional one-word alterations in the text which would better suit it to his own manner of speaking. He was instructed to speak ad libitum in the actual delivery of the speech, if he felt it necessary, as long as he adhered to the basic content of the prepared speech. Exact wording was not imperative in any of the experiments because each speech was transcribed from a tape recording of its actual delivery. Before the experiment, the speech was rehearsed in the presence of the experimenter, and suggestions concerning delivery were then given.

Three undergraduate speech and theatre majors at Western Kentucky University were used as observers. Again, they were instructed individually,
this time with consideration given to the instructional modifications mentioned above. Also, a change was made in the seating position of the observer with the stopwatch who had previously been seated behind the EC group. The observer suggested that he might be more clearly able to perceive which group was receiving the speaker's gaze if he stationed himself against the back wall, in the bisecting aisle. This suggestion was adopted.

Subjects in Experiment 2 consisted of 12 undergraduates from one section of the basic course in speech and 12 undergraduates from another section of the same course. The instructor of each section was asked to tell them that they would be listening to a speech in order to provide feedback so that the speaker, who was acknowledged to be a contest winner, could improve the speech. After they were all seated\(^2\) in the experiment room, the speaker entered, turned on the tape recorder, and began to deliver the speech. A videotape recording of the speaker was made from behind the EC group, in the expectation that it might be helpful on post-experiment analysis.

As soon as the first immediate post-test sheet was returned to the experimenter, the experimenter made the following statement: "You've been participating in an experiment on listening, to determine the effects of distracting noises and so forth." This was done in order to allay any questions the S's might have which, if answered, would tend to influence their responses on the ensuing delayed post-test. During the immediate post-test, S's had been instructed to write their names on the sheet, and told that this exercise would in no way affect their grades in the speech

\(^2\)The EC group consisted of six students from each speech class section, as did the No EC group.
course they were taking.

On the fifth day following the speech the experimenter administered the delayed post-test to S's in their two respective classrooms. The instruction in each case was: "Do the same thing with these that you did before." Several questions were answered by the experimenter with: "Yes, the same thing."

Following the delayed post-test S's were asked to come to the experimenter's office on the first and second days after the test was administered. They were interviewed on these days, and the entire interview, in each case, was recorded on audiotape.

The results of the interviews, which are detailed in Chapter IV, indicated that two changes in preparation for the main experiment (Experiment 3) were necessary. Strong and recognizable EC between the speaker and EC group S's was imperative. If too little discrimination in the use of the independent variable was made between groups, no possible validity could be attached to the results of subsequent data analysis. Therefore, much greater emphasis was placed on the need for two to four-second individual instances of EC when the speaker was given instructions for Experiment 3. Also, a special speech rehearsal was held in which the speaker was drilled in sustaining EC for long periods of time (15-20 seconds). This enabled him to make two to four-second glances at will and with greater ease.

The speaker and observers used in Experiment 2 were also used in Experiment 3. Eighteen S's who were members of a basic speech course were given the same instructions, with the exception of the explanation of the experiment after the immediate post-test. Instead, they were told: "Along with helping this speaker get some feedback on his speech, you've been participating in an experiment on listening. Your
instructor will explain the details sometime in the near future." Video-tape recording equipment was placed in the experiment room to enhance the disguise, but only an audiotape recording was made.

On the fifth day after the speech the delayed post-test was administered in a fashion identical to that in Experiment 2. The interviewing procedure was also carried out as before.

From a transcript of the speech, the experimenter and a co-worker independently chose a set of eight concepts which they believed to be the main ideas of the speech. On comparison, one set with the other, the sets proved identical (see Appendix C). This procedure was followed in order to facilitate the analysis of subject-response data, which is reported in the following chapter.
CHAPTER III

ANALYSIS OF DATA

Data fell into three categories: (1) data from the speech, (2) data from interviews, and (3) data from subject-responses. Analysis of data is reported in order, according to these three categories.

The duration of the speech was 390 seconds. For 270 seconds of this time, the speaker looked toward the EC group and achieved a total of 116 separate instances of EC with EC group S's. This amounts to a mean duration of glance of 2.3 seconds. There were 20 instances of "looking away" among EC group S's, for a total of 96 seconds. On the average, 1.1 EC group S's were looking away at any given time during the speech.

The Fisher Exact Probability Test was used to determine the significance of difference between groups concerning S's' perception of whether EC had or had not been achieved with them. Numbers of "yes" and "no" responses to the post-experiment interview question: "Did the speaker look directly into your eyes?" were cast in the following 2 x 2 contingency table shown on page 20.

1This chapter reports analysis of data for Experiment 3 only. Analysis of data from the second pilot experiment (Experiment 2) which had bearing on general conclusions and implications is noted in Chapter IV.

As shown in Table 1, results were significant at alpha = .05, the preset level of confidence.

**TABLE 1**

**ANALYSIS OF POST-EXPERIMENT 3 INTERVIEW DATA BY APPLICATION OF THE FISHER EXACT PROBABILITY TEST**

<table>
<thead>
<tr>
<th>No. of &quot;yes&quot; responses</th>
<th>No. of &quot;no&quot; responses</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC group</td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>No EC group</td>
<td>C</td>
<td>D</td>
</tr>
<tr>
<td>A + C</td>
<td>B + D</td>
<td>N</td>
</tr>
</tbody>
</table>

Observed value of $A = 7$, Critical value of $C = 2$,\(^a\) (for $A = 7$, at $\alpha = .05$) Observed value of $C = 2$, Observed value of $C \leq$ Critical value of $C$, Therefore $p < .05$

\(^a\)See Siegel, p. 257.
This simply means that there was a significant difference between groups in the amount of EC consciously perceived. The test, therefore, constitutes a further check on correct manipulation of the independent variable. At the .05 level of confidence, it can be assumed that EC group S's achieved EC and that the No EC group S's did not.

The score for each S's written reproduction response (see Appendix D) was obtained by a hand count of the number of key concepts which that S had reproduced or paraphrased. The eight key concepts of the speech constituted the eight category assignments on a code sheet, into which was entered a "1" for "yes, this concept was reproduced (or paraphrased)," or a "0" for "no, this concept was not reproduced (nor paraphrased)." The sum of all "1's" for a given S was the score for that S. Two coders, working independently, accomplished this task. To estimate intra- and intercoder reliability, five of the 16 subject-response sheets were randomly selected and recoded at a later date. The results were treated by using the formula for the two-coder situation and an index of agreement of .94 was established.

Table 2 shows each score from S's in each condition (EC and No EC) on both immediate and delayed recall.

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3 Paraphrase here is taken to mean "... a restatement of a passage giving the meaning in another form, for example using other words." See Joseph G. Stearns, "An Analysis of Selected Speeches and Relevant Newspaper Coverage of the Political Campaign Communication of Paul Eggers, Texas Republican Gubernatorial Candidate, 1968" (unpublished Ph. D. dissertation, Department of Speech in the Graduate School, Southern Illinois University, 1969), p. 21.

4 The formula, \[ R = \frac{2(C_1, 2)}{C_1 + C_2} \], where the number of category assignments on which all coders agree is divided by the sum of all category assignments by all coders, determines the ratio of category assignments "agreed upon" to total category assignments, and is found in almost any book on content analysis. For example, see Richard W. Budd, Robert K. Thorp, and Lewis Donohew, Content Analysis of Communications (New York: Macmillan Co., 1967), pp. 23-24.
TABLE 2
SCORES FROM SUBJECT-RESPONSE SHEETS (EXPERIMENT 3)

<table>
<thead>
<tr>
<th></th>
<th>Immediate Post-Test</th>
<th>Delayed Post-Test</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EC group</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>4</td>
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<td>1</td>
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<td>1</td>
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<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>0</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td><strong>No EC group</strong></td>
<td>3</td>
<td>No EC group</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>0</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>0</td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>

For a simple comparison of the scores from the EC group with the scores from the No EC group, the median was chosen as a measure of central tendency, since ordinal measurement had been achieved. Table 3 shows these medians.

TABLE 3
MEDIANS OF SCORES FROM EC GROUP AND NO EC GROUP ON IMMEDIATE AND DELAYED POST-TEST (EXPERIMENT 3)

<table>
<thead>
<tr>
<th></th>
<th>Immediate Post-Test</th>
<th>Delayed Post-Test</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EC group</strong></td>
<td>2.3</td>
<td>EC group</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.0</td>
</tr>
<tr>
<td><strong>No EC group</strong></td>
<td>1.4</td>
<td>No EC group</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.4</td>
</tr>
</tbody>
</table>
Of a possible 72 concepts which could have been recalled by EC group S's on the immediate post-test, 5 26 concepts were recalled, or 36.1% of the number possible. Computed in the same way, the figure for the No EC group on the same immediate post-test was 14.3%. On the delayed post-test, the EC group recalled 26.4% of the possible concepts, while the No EC group recalled 7.1%.

The Fisher Exact Probability Test\(^6\) was used to determine the probability of observing the particular set of scores shown in Table 2 under the conditions of the null hypothesis. For each post-test, a combined median of EC group and No EC group scores was computed. Scores for each post-test, immediate and delayed, were then cast in the 2 x 2 contingency table:

<table>
<thead>
<tr>
<th></th>
<th>No. of scores Above the Median</th>
<th>No. of scores Below the Median</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC group</td>
<td>A</td>
<td>B</td>
<td>A + B</td>
</tr>
<tr>
<td>No EC group</td>
<td>C</td>
<td>D</td>
<td>C + D</td>
</tr>
<tr>
<td>Totals</td>
<td>A + C</td>
<td>B + D</td>
<td>N</td>
</tr>
</tbody>
</table>

The test was applied by using the following formula\(^7\) for the exact probability:

\[
p = \frac{(A + B)! (C + D)! (A + C)! (B + D)!}{N! A! B! C! D!}
\]

Table 4 shows the contingency tables for each post-test, applications of the formula, and exact probabilities.

\(^5\) Nine subjects x eight possible concepts per subject = 72 possible concepts.

\(^6\) See footnote 2.

\(^7\) Siegel, p. 97.
### TABLE 4
**ANALYSIS OF SUBJECT-RESPONSE DATA FROM EXPERIMENT 3 BY APPLICATION OF THE FISHER EXACT PROBABILITY TEST**

<table>
<thead>
<tr>
<th></th>
<th>Immediate Post-Test</th>
<th>Delayed Post-Test</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No. of Scores</strong></td>
<td><strong>No. of Scores</strong></td>
<td><strong>No. of Scores</strong></td>
</tr>
<tr>
<td><strong>Above the Median</strong></td>
<td><strong>Below the Median</strong></td>
<td><strong>Above the Median</strong></td>
</tr>
<tr>
<td>EC group</td>
<td>A 7</td>
<td>B 2</td>
</tr>
<tr>
<td></td>
<td>C 3</td>
<td>D 4</td>
</tr>
<tr>
<td>No EC group</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td>10</td>
<td>6</td>
</tr>
</tbody>
</table>

\[ p = \frac{(A+B)! (C+D)! (A+C)! (B+D)!}{N! A! B! C! D!} \]

\[ = \frac{9! 7! 10! 6!}{16! 7! 2! 3! 4!} \]

\[ = .157 \]

\[ p = \frac{(A+B)! (C+D)! (A+C)! (B+D)!}{N! A! B! C! D!} \]

\[ = \frac{9! 7! 5! 11!}{16! 4! 5! 1! 11!} \]

\[ = .0337 + (p \text{ of an even more extreme occurrence})^a \]

\[ = .0337 + .0288 \]

\[ = .0626 \]

---

\(^a\)This \( p \) was computed and added to the exact \( p \) for delayed post-test analysis because the exact \( p \) was slightly less than .05 and it was correctly anticipated that the additive correction for an even more extreme occurrence would raise the value of \( p \) to some fraction larger than .05. The \( p \) of an even more extreme occurrence was omitted from the computation in analysis of immediate post-test data because the value of the exact \( p \) was already greater than .05, thus showing no significance. See Siegel, pp. 98-99.
Neither p for the immediate post-test nor p for the delayed post-test indicated that the null hypothesis could be rejected at the .05 level of significance.

Also used to check the significance of difference between EC and No EC groups on each post-test was the Mann-Whitney U Test, a more powerful non-parametric technique than the Fisher Exact Probability Test. The value of U (the statistic used in this test) was given, in the present application, by the number of times that a score from the EC group preceded a score from the No EC group when scores from both groups had been ranked in order of increasing size. (Tied scores were assigned the average of the ranks they would have had if no ties had occurred.) The following formula was applied to determine the value of U:

\[ U = n_1 n_2 + \frac{n_1 (n_1 + 1)}{2} - R_1 \]

where \( n_1 = \) the number of No EC group S's, \( n_2 = \) the number of EC group S's, and \( R_1 = \) the sum of the ranks assigned to the No EC group scores. Score rankings and formula applications are shown in Table 5 (see next page). A comparison of the observed values of U with tabulated critical values of U at the .05 level of significance indicated that the null hypothesis could be rejected. (The observed value of U for the delayed post-test indicated rejection of the null hypothesis at a level of confidence as low as .025.)

In summary, analysis of data from the interview showed significance of difference (p < .05) between the EC and No EC group, and thus confirmed correct manipulation of the independent variable. Analysis of subject-response data by the Fisher Exact Probability Test showed no significant

---

8Ibid., pp. 116-127.

9Ibid., p. 120.
TABLE 5
ANALYSIS OF SUBJECT-RESPONSE DATA FROM EXPERIMENT 3
BY APPLICATION OF THE MANN-WHITNEY U TEST

<table>
<thead>
<tr>
<th>Immediate Post-Test</th>
<th>Delayed Post-Test</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EC group (n&lt;sub&gt;2&lt;/sub&gt;)</strong></td>
<td><strong>No EC group (n&lt;sub&gt;1&lt;/sub&gt;)</strong></td>
</tr>
<tr>
<td>Score</td>
<td>Rank</td>
</tr>
<tr>
<td>6</td>
<td>16</td>
</tr>
<tr>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>4</td>
<td>13.5</td>
</tr>
<tr>
<td>4</td>
<td>13.5</td>
</tr>
<tr>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>1</td>
<td>5.5</td>
</tr>
<tr>
<td>0</td>
<td>2.5</td>
</tr>
</tbody>
</table>

U = n<sub>1</sub>n<sub>2</sub> + \frac{n<sub>1</sub>(n<sub>1</sub>+1)}{2} - R<sub>1</sub>

= (7) (9) + 7 \cdot \frac{(7+1)}{2} - 43

= 15

Critical value of U at α = .05 is 15

15 \leq 15,

Therefore, p < .05

U = n<sub>1</sub>n<sub>2</sub> + \frac{n<sub>1</sub>(n<sub>1</sub>+1)}{2} - R<sub>1</sub>

= (7) (9) + 7 \cdot \frac{(7+1)}{2} - 38.5

= 10.5

Critical value of U at α = .05 is 15

10.5 \leq 15,

Therefore, p < .05

<sup>a</sup>The critical value of U at α = .025 is 12 and 10.5 \leq 12. Therefore, analysis of delayed post-test data show significance at a level of confidence as low as .025. See Siegel, p. 276.
difference, while analysis of the same data by the Mann-Whitney $U$ Test showed significance at $p < .05$.

Treatment of data from Experiments 1 and 2 was executed in virtually identical fashion to the treatment of data from Experiment 3. Results which are pertinent to general conclusions and implications are discussed in the following chapter and tabulated when so noted.
CHAPTER IV
SUMMARY, CONCLUSIONS, AND IMPLICATIONS

Modifications of two pilot experiments led to a main experiment in which 16 S's were used to test the relation of speaker-listener EC with listeners' retention of information in a public speaking situation. At various times during a six and one-half minute speech, a confederate-speaker looked directly into the eyes of nine S's and did not look directly into the eyes of seven of the S's. The speaker looked at the group of seven S's with glances which were aimed over, under, or to either side of their eyes. All S's' retention of the speech's content was measured by the method of written reproduction on both immediate and delayed (five-day) recall. Two statistical tests were used to determine the significance of difference (between the EC and the No EC groups) in the number of key concepts retained.

The first statistical test used, which was the Fisher Exact Probability Test, showed no significant difference at the .05 level of confidence on either immediate or delayed recall. The second test, the Mann-Whitney U, showed a significant difference (p<.05) on both immediate and delayed recall. Before any conclusions could be drawn, some explanation of this apparent conflict of results was felt to be necessary.

The simplest explanation is that the Mann-Whitney U Test is more powerful than the Fisher Exact Probability Test. A look at the raw data, however, gives a clue to further explanation. The Fisher Exact
Probability Test determines whether two independent groups, in this case EC and No EC, differ significantly in the proportion with which they fall into two mutually exclusive classifications, in this case above and below the median. Since the computed median included a decimal fraction and therefore did not coincide with any actual score, the classifications "above and below the median" were indeed mutually exclusive and thus the data conformed to the type which the test was intended to analyze. It must be noted, however, that classifying scores according to an "above or below the median" criterion treats the data as if each S has received one of two possible scores, say "agree or disagree." While this made the Fisher Test perfectly appropriate for analyzing interview results (see p. 20 of this study) where each S responded "yes" or "no", it is less than suitable when there is a need to account for intra-classification distribution.

The Mann-Whitney U Test therefore seems to be more appropriate with respect to these data than does the Fisher Test, because the former analyzes significance of difference between groups based on how many scores from one group precede a score from the other group. Thereby the determinants of value of U include a consideration of distribution within "above and below the median" classifications.

Since the observed value of U for both immediate and delayed recall indicated rejection of the null hypothesis (p<.05), the following general conclusions were made: (1) There is a relation between EC in the public speaking situation and retention of content on immediate recall. (2) There is a relation between EC in the public speaking situation and retention of content on delayed recall. More specifically, auditors with whom the speaker has achieved EC in a public speaking situation tend to retain more of the content of a speech than do auditors with whom the speaker
has not achieved EC. These conclusions support the traditional precept "It is desirable to look at your audience," as mentioned in Chapter I of this study, and lend justification to the time-honored pedagogical practice of emphasizing the importance of EC to students of public speaking.

Analysis of the data also indicated that significant difference between groups could be assumed with greater confidence on delayed recall than on immediate recall. The Mann-Whitney U Test showed significant difference between groups on the immediate post-test at p<.05, but showed significance at p<.025 on the delayed post-test.¹

A direct indication of greater difference between groups on delayed post-testing was seen in comparing the per cent of possible concepts reproduced by each group on the immediate post-test with the corresponding per cents on the delayed post-test. While the per cent-of-the-possible-concepts figure for the EC group dropped from 36.1% to 26.4% over the five-day delay, the same figure for the No EC group dropped from 14.3% to 7.1%. Comparing the medians from each group in the same way showed that the median for the EC group had dropped from 2.3 to 1.0, while the median for the No EC group dropped from 1.4 to 0.4.

These observations suggest that a relation exists between EC and the amount of decrease in retention over time. More precisely, it is suggested that auditors with whom a speaker achieves EC will tend to

¹The Fisher Test, which did not show significant difference on either post-test, nevertheless yielded a p (exact probability of occurrence under the conditions of the null hypothesis) of .0625 for the delayed post-test and a p = [.157 + (p of an even more extreme occurrence)] for the immediate post-test.
retain more, over time, of what they had retained immediately after the speech than will auditors with whom the speaker does not achieve EC. Future scientific verification of this suggestion would have definite implications for public speakers or students of public speaking. It is possible that EC contributes heavily to retention over time, and if so the speaker would be well advised to consider his specific purpose in conjunction with his delivery technique on a given occasion. If his only purpose were one which depended on immediate reaction or recall from his audience, he might decide to neglect EC in favor of another speech factor, say, the content of his message. Conversely, if the audience's recall at a much later date were his purpose, he might neglect an elaborate content (which might necessitate a manuscript, thereby inhibiting EC) in favor of devoting more time to practicing effective EC behavior.

A more intriguing possibility is suggested by comparing the results of Experiment 2 with those of Experiment 3. In Experiment 2 the average length of the speaker's glance (mean duration of instances of EC) was 1.3 seconds. Mean duration of glance in Experiment 3 was 2.3 seconds. Other conditions to which auditors were subjected seemed virtually identical. The results, however, were vastly different. On post-Experiment 3 interviews, there was significant difference between EC and No EC group S's perception of whether EC had or had not been achieved with them, as was reported in Chapter III. Post-Experiment 2 interviews, on the other hand, revealed uncertainty on the part of EC group S's as to whether EC had or had not been achieved with them. The results of the interview are shown in Table 6.
### TABLE 6

POST-EXPERIMENT 2 INTERVIEW RESPONSES TO "DID THE SPEAKER LOOK DIRECTLY INTO YOUR EYES?" FROM 12 SUBJECTS

<table>
<thead>
<tr>
<th>RESPONSES FROM EC GROUP SUBJECTS</th>
<th>RESPONSES FROM NO EC GROUP SUBJECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>no (... not very good EC)</td>
<td>yes, I guess</td>
</tr>
<tr>
<td>I don't remember</td>
<td>no</td>
</tr>
<tr>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>not much, maybe three or four times</td>
<td>no</td>
</tr>
<tr>
<td>no, but I always look away when a speaker looks at me</td>
<td>no</td>
</tr>
<tr>
<td>no</td>
<td>no</td>
</tr>
</tbody>
</table>

This may indicate that it takes longer than 1.3 seconds to establish an auditor's conscious perception of EC in a public speaking situation.

A final indirect observation which can be made concerns the results of the analysis of written reproduction data from Experiment 2. Statistical tests were omitted in the treatment of these data, because a computation of the medians showed that the No EC group had recalled more than the EC group on both immediate and delayed post-tests. These medians, along with per cents of possible concepts remembered by each group on each post-test are shown in Table 7.
TABLE 7
MEDIANS AND PER CENTS-OF-POSSIBLE-CONCEPTS
FIGURES FROM EC AND NO EC GROUPS ON
EACH POST-TEST FOLLOWING
EXPERIMENT 2

<table>
<thead>
<tr>
<th></th>
<th>Medians</th>
<th></th>
<th>Per cents-of-possible-concepts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>immediate</td>
<td>delayed</td>
<td>immediate</td>
</tr>
<tr>
<td>EC group</td>
<td>1.7</td>
<td>1.1</td>
<td>EC group</td>
</tr>
<tr>
<td>No EC group</td>
<td>3.0</td>
<td>2.7</td>
<td>No EC group</td>
</tr>
</tbody>
</table>

The results suggest that the 1.0 second difference between the 2.3 and 1.3 second mean duration of glances in Experiments 3 and 2 respectively is important in public speaking. It may be the range of glance duration which is critical to both establishing conscious perception of EC and promoting greater retention immediately, and especially over time. In other words, a little EC may be worse than none at all. If so, perhaps "a little" lies in the range: 0.0 seconds < (mean glance duration) < 1.3 seconds. A possible explanation for this is that a small amount of EC may be more distracting than the absence of EC. The speaker who engages each listener's glance very briefly may distract listeners by the rapid changes in gaze direction required to achieve such short glances. The speaker may also annoy listeners who want him to look at them longer during each period of time in which they "meet" his gaze. The speaker who completes no EC with his audience members may very well
allow them to forget completely about the matter of EC and thereby contribute less to the general distraction than does the speaker who completes too little EC with his listeners. Verification of such relationships would carry strong implications for speakers and teachers of speaking alike. For example, it might be proved effective practice, if one can't look at each listener in his audience for two to four seconds on the average, to look at a manuscript or over listeners' heads rather than to "bob" up and down trying to achieve EC of .75 or 1.0 second length.

Further research into EC behavior as it pertains to communication is certainly warranted. Such research can contribute greatly to a more correct placement of emphasis in teaching public speaking. There is need to gain more than merely the knowledge that EC tends to facilitate greater retention. Speakers and teachers of speech communication must know if various types of EC exist, and if so, which types are more effective than others, and under what circumstances. Investigation is needed to determine precisely the "critical range of glance duration" mentioned in the above discussion. Also, research into EC behavior as it may function in facilitating feedback will surely be profitable. Possible differences between the effects of No EC as defined in the present study and No EC due to a speaker's never looking toward his audience might prove to be phenomena worthy of examination. Avenues of study in these areas are obviously numerous.
APPENDIX A
APPENDIX A

SAMPLE TRANSCRIPT OF THE SPEECH¹

Have you ever stopped to think just how important your ability to listen is to you, as a functioning member of society? Dr. Paul Rankin of Ohio State University recently conducted an experiment in which he found that, of our waking hours, 70 per cent of our time was spent in communication. Of this time, 45 per cent was devoted to listening, 30 per cent to speaking, 16 per cent to reading, and nine per cent to writing. Experts also estimate that people learn approximately 85 per cent of what they know through listening, but that only 20 per cent of what they hear, they retain. My contention is that obviously you can gain a great deal by being able to sharpen your listening ability. In fact, you could become a walking encyclopedia of fact and knowledge if you were to do so.

Now if you are like most people, you have taken your ability to listen for granted. The listener must be looked upon as an equal partner in the communication process, and not as an inferior partner. In many ways, listening is even more difficult than speaking, in that the listener must interpret the message as it progresses. Listening requires four things: One, thought; two, attention; three, interpretation; and four, imagination. All four of these are brought into active use when the listener projects himself into the speaker and tries to understand not just words, but the ideas and the feelings that the speaker is trying to

¹This is a transcript of the speech in Experiment 3 exactly as it was delivered.
convey.

Listening is much more difficult than you might have, at first, thought. You know, the speaker really has it easy, in that the listener must project himself into the mind of the speaker, as I just mentioned, he must look not only at what the speaker says, but what he means. Not only must the listener pay attention to the words, but he must pay attention to the speaker's vocal tones, his inflections, and other, non-verbal behaviors, such as facial expressions, movements, and gestures. The listener who is alert to signs such as these has made it a little bit easier on himself in terms of facilitating effective communication. Now I know this all sounds difficult, and sometimes it is. However, you have all learned the basic ability to listen. You know the essential concepts. I don't believe any of you need to be taught the fundamentals, therefore I have brought with me four concepts which I feel will sharpen your present ability to listen.

Number one, adopt a positive attitude about the speaker. You know, if you think that the person up there in front of you is imaginative, has something to say, presents good material, such as good supporting facts and evidence, it is easier for you to listen. Now if you are like I am, no doubt you have been in a class where there was a teacher who was dull, monotonous, and tended to put a class to sleep. I know you have all had teachers such as this. I certainly have—a number of them, in fact. However, had you developed the ability to make yourself listen, and listen with energy, you might have found that the teacher had good supporting material, that he was well organized and so on, but that he was just a little too monotonous and did not show enough body expression, and as a result he lost the class. Therefore, adopt a positive attitude—tell yourself that he does have something to say.
Number two, be responsive. Ask yourself "just what is it that the speaker wants us to learn?" Are we to be informed, to be persuaded, or to be entertained? Find out just what it is that the speaker wants from you. Then with, say, alert posture, you can show the speaker that he is getting his point across. A nod of the head means that you agree, a puzzled look calls for re-explanation. A shrug, or a raised eyebrow shows a certain, questioning type of criticism, a laugh shows that you are enjoying what the speaker is trying to say.

Number three, shut out all distractions. You know, even under the best circumstances there will be distractions to the listener. Even if it is in your own mind, by allowing small concerns to enter your thoughts, such as: "this seat's uncomfortable," or "my nose itches," or "I wonder what time it is," or "hey, I wonder what Sally's doing tonight?" Don't let these things enter into your listening process. Shut out all such static as this.

Number four, evaluate the speaker's material. In other words, ask yourself if he gives logical explanations, if he uses relevant examples, if he uses, say, good facts and terminology. Also, there are split seconds that you can use to evaluate the speaker. We think four or five times faster than we speak, so while the speaker is speaking, use this time to evaluate what the speaker has said, and to project yourself into the immediate future to what he might say.

Now I'm sure that these four suggestions will not make any earth-shaking differences in your present ability to listen well, but I want you to become aware of the communication process, and to learn and practice to listen properly. Use every available opportunity to learn and practice good listening habits--when you're in class, in church, at a political rally, or just in front of the television set, and so on.
Then, reflect on your progress as a listener. You may be surprised, not only at your own development, but at the overall difference good listening will make.
APPENDIX B

FLOORPLAN OF THE CLASSROOM
IN WHICH THE EXPERIMENTS WERE CONDUCTED

A represents the audiotape equipment
C represents the confederate-speaker
E represents the experimenter
O represents an observer
S represents a subject
V represents the videotape equipment
APPENDIX C
APPENDIX C

THE EIGHT KEY CONCEPTS OF THE SPEECH

1. Ability to listen is important.
2. You can gain a great deal by sharpening your ability to listen.
3. Listening can be more difficult than speaking.
4. Adopt a positive attitude about the speaker.
5. Be responsive by giving the speaker nods, alert posture, shrugs, and so on, when appropriate.
6. Shut out all distractions to good listening.
7. Evaluate the speaker's material.
8. Use every available opportunity to learn and practice good listening habits.
APPENDIX D

Sample Written Reproduction

People spend 85 per cent of their waking hours in communication—speaking, listening, writing, etc. Good listening skills are an important part of communication, as people learn 80 per cent of their factual information through listening. However, only about 20 per cent of what is heard is retained because most people do not listen correctly.

To improve listening skills, it is important to keep four basic principles in mind, which are:

1. Disregard minor concerns that pop into your mind (such things as thinking of discomfort, thinking about people, etc.)

2. Give the speaker your attention—listen to him with an open mind. If you listen with a positive attitude, you are more likely to retain more information.

3.

4.

Generally, one's listening abilities will not be greatly changed or improved by simply hearing about them (as during the speech); but hearing about such improvement might evoke thought on the subject which, subsequently, might lead to a conscious effort on the part of the individual to strengthen his listening skills.
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