EFFECTS OF VARIOUS MODES OF PUBLIC READING¹

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This study is an attempt to bring the numerous problems of oral expression and public reading into the laboratory. For the beginnings of such an experiment the most promising place is the laboratory of psychology inasmuch as speech is intended to reach the minds of auditors who are expected to react to the stimulation furnished by the voice of the speaker or reader. Thus the problem deals with auditory stimulations and with behavior activities of listeners. The task to be met is that of finding a method whereby the stimuli can be controlled and receptivity measured; that is, of insuring an adequate description of the effect of the voice of the speaker or reader upon the responses of the auditors.

The method adopted after many preliminaries was based upon a study of the relation between *changes* in the use of the voice and specified responses of auditors; that is, the effects of various modes of public reading, employing *different combinations of changes* in the use of the attributes of sound while reading. These different combinations offer various *modes of reading*. The attributes of sound are pitch, intensity, time, and timbre (sometimes called quality when applied to the voice). While all speech that is meaningful to auditors employs constant changes in the use of these four attributes, still there are no results obtained under laboratory conditions that show which are most significant or what relation they bear to each other. A restricted series of modes of reading was selected for use throughout the study, limited to certain *gross degrees of change* in pitch, time, intensity, and timbre. A description of these modes together with the method of evaluating results from their use, is given later.

Changes in pitch, time, intensity, and timbre can be studied as general and total or as finely modulated and of narrow degree. Again they can be studied as affecting individual words, sentences, paragraphs, or larger units of discourse.

¹ From the Psychological Laboratory, Harvard University.

The type of change studied here applies to *large units* of discourse, in this case passages of twenty minutes in length. No attention is here paid to the modulations occurring between words, or sentences, or units of small measure. A certain "tone of voice" is selected and used throughout a twenty-minute passage.

THE ATTRIBUTES OF SOUND AS ELEMENTS OF CHANGE IN READING

Pitch Changes. When employing changes in Pitch as the basis of investigation, it is necessary to hold in mind that these are of at least three different kinds: (1) the slide within the individual syllable, (2) the step from one syllable to the next, and (3) the general pitch level on which a passage or a composition is uttered. The first two are continual changes required in normal speech; the last change is only occasional. When change of pitch is referred to in this paper, change of the slide within the syllable and from one syllable to the next is intended.

Time Changes. Changes in time are chiefly in the length of the vowel parts of words, i. e., the tonal part as against noises. "Gauthiot's² records show that there are two main classes of vowels in respect to duration, long and short, whose average lengths bear the remarkably constant relation of 4.2."

Changes in Pause. A cause of the frequency of duration change is that pauses must be included. Pauses—periods of silence—are necessary because of (1) the need of a break between syllables and words, and (2) because of the demands of breathing. Accordingly, in speaking here of changes in time we always include changes in pause; pauses between syllables, words, phrases, clauses, sentences, and the major divisions of composition.

Intensity Changes. Changes in tone intensity are also very common owing to the fact that accentuation is not possible, in English, without a change in intensity on the accented syllable; for accent, in this language at least, is largely a matter of a rise in pitch and an increased energy of utterance. Also emphasis, as distinguished from accent, is almost always accompanied by an increase or decrease in intensity.

Qualitative Changes. Changes in quality (timbre) are least common of all. Changes in quality are probably more influential than any other type of change in revealing the emotional

² Gauthiot, *De l'accent et de la quantite en literanien*, *La Parole*, 1900, II., 143. (Cited by Scripture.)

state of the speaker. Emotional states involve muscular and vascular changes in the throat and pharynx, and thus the body of overtones is greatly affected in number and intensity, producing attention changes in quality³

Overlapping Effect of the Four Attributes. In every manner of reading that involves a maximal change of one of the elements, there is a certain amount of overlapping. When the extremes of change in pitch are used, there is a necessary change in quality. Very high notes, lacking certain overtones, produce a different quality impression from tones possessing these overtones. A prolonged tone, especially a tone of speech necessarily involving a slide, tends to carry the slide on during the prolongation, thus involving a change in quality. A tone of strong intensity is kept loud most easily by being also high in pitch. Tones of "chest resonance" are prevailingly lower in pitch than those of "head" quality; at least the majority of people find it easier to form them in these combinations.

By isolating one attribute at a time, giving it an extreme degree of change while holding the others at a median degree, we get 4 modes of reading; by doing the same with no change of each of the attributes we get 4 more modes; by using a median change of all 4 we get another; by using an extreme degree of all four we add one more; and, finally, by employing no change at all in any of the attributes we add the last; making in all 11 modes of reading. These represent only gross situations, and so are capable of control at the hands of a trained reader. Following is a specific designation of each of these modes:

Mode 1. Median change of all four attributes.

Mode 2: Extreme change of Pitch; Median change of other three.

Mode 3: No change of Pitch; Median change of other three.

Mode 4: No change of Time; Median change of other three.

Mode 5: Extreme change of Time; Median change of other three.

Mode 6 No change of Intensity. Median change of other three

Mode 7: Extreme change of Intensity; Median change of other three.

Mode 8: No change of Quality; Median change of other three.

³ Blanton, S. *Quart Jour of Public Speaking*, Vol II. "The Voice and the Emotions"

Mode 9: Extreme change of Quality; Median change of other three

Mode 10: Extreme change of All Four Attributes.

Mode 11: No change in any of Four Attributes.

MODES OF READING

Mode 1. Median Change of All Attributes. In this mode all changes are of a median degree, but are constant in all four of the attributes of sound. Extremes of all kinds are avoided. The general effect of this type of reading is that produced by a congregation reading a Psalm in unison. There is a lack of what might be called "brightness," "animation," "alertness." In general it would be called rather dull reading, yet far from unintelligible and not at all bizarre or unusual

*Mode 2 Extreme Change of Pitch*⁴ In this mode the voice travels to extremes of height and depth continuously, in the use of the slide on the syllable and in the step from syllable to syllable. Changes are extreme not only in distance on the scale of pitch, but are frequent in occurrence, no passage of more than three or four syllables being without its abrupt and wide change. This mode is not altogether removed from meaningful and intelligible speech; for not a few sentences resemble a type of speaking frequently heard in public address and in private conversation. Yet the continual shifting of the voice up and down to extreme depths and heights produces an effect of monotony that is marked.

Mode 3. No Change of Pitch. In this mode the reader eliminates all inflection of the voice upwards or downwards on the scale whether in slide, step, or general level. In the first place, the level is approximately at the middle height of the reader's range. Then, all slides also were eliminated, and likewise the steps; so that every sound was of the same level as every other sound. This type of reading is far from meaningless and is by no means strange to listeners who are accustomed to the "intoning" customs used by certain ecclesiastical sects.

Mode 4. No Change of Time. In mode 4 every syllable was rendered with the same duration as every other syllable. Moreover, the pauses were of the same length, exception being made when breath had to be taken. A manner of speech employed by certain foreigners in learning the Eng-

⁴ A characterization like this assumes, it is to be remembered, a median degree of change of the other four attributes

lish language approximates this; also, some speakers in their anxiety to be distinct use this mode. A most noticeable effect is the staccato involved. This mode, though, is not without meaningful emphasis, inasmuch as the emphasis of slide and intensity are retained to a median degree.

Mode 5. Extreme Change of Time. Widely varying degrees of change in time were applied not only to the vowel sounds, but to the pauses. Still the prolongations in this mode were not so great as is sometimes heard on the stage and in impassioned speaking, where with such an extreme manner must go a wide range of pitch or an amplification of the quality or an increase in the intensity that would constitute an error in the use of the median range of these three demanded by the premises. This is a relatively common mode, "animated" conversation is almost always markedly broken in time.

Mode 6. No Change of Intensity. Reading on one level of intensity encounters a difficulty, in that there is need of eliminating all intensity factors from accentuation; and that is not easy. When all syllables must be made equally loud, accent disappears. Thus, choice had to be made between making unaccented sounds louder or accented sounds quieter. The latter alternative was chosen, for the reason that otherwise the whole effect would be merely that of blatant shouting. As a consequence, the reading in this mode gave the impression that the reader was very tired or uninterested in his task. Also when such accentuation by intensity change is eliminated, the listeners get the impression that the words are not being pronounced correctly and so reveal distress at first sound of the mode. Later they seem to be relieved.

Mode 7. Extreme Change of Intensity. The simple formula for describing this mode of reading is to state that the sounds that in "normal" speech are the loudest are here made very loud; those that are of a median degree of loudness ordinarily are made loud; the sounds of least intensity in every-day speech remain about the same, for they are merely audible then and cannot suffer lowering of intensity without disappearance. Listeners seemed to be benumbed by this manner.

Mode 8. No Change of Quality. To accomplish this, one system of resonance, or complexity of sound, had to be decided upon arbitrarily from the several possible in the use of a trained voice. The quality chosen is that known as "oral" in terms of elocution. It is a quality that derives its resonance

chiefly from the bones high in the head. It is rich in high overtones, but poor in the lower ones that add much to impressiveness in speech. All resonance from the "circle of the pharynx" is reduced to a minimum, if not eliminated altogether. The effect of this manner is to make the reader appear sick or weak.

Mode 9. Extreme Change of Quality. In this mode various complexities of tone are produced by "placing" the voice so that there is a continual change in the various resonance-producing chambers of the head, throat, and chest. The effect is what is loosely called a continuing change of "emotional" tone. This makes it a rather common manner of speaking. It carries the virtue of "interestingness."

Mode 10. Extreme Change of All Four Attributes. Here we have the mode that makes variation its chief quality. If variation may be predicated *a priori* as a value in reading, then this ought to prove an impressive and an interesting manner. Every kind of change is employed and in profusion. No one kind of change or lack of change was employed for any length of time. While great variety of change prevailed, yet only those changes were chosen which the reader thought were in conformity with the social speech habits of the type of auditors who served for subjects. It is a mode that empirically would be judged effective in making commonplace statements interesting and easy to listen to.

Mode 11. No Change in Any of the Four Attributes. This manner involved complete uniformity of pitch, time, intensity, and quality—the extreme of monotony. It inhibits the apprehension of the logical meanings of word-sounds. When all syllables are given the same duration and the same intensity, in addition to monotony of pitch and absence of change of quality, the listeners seem to have difficulty in catching the words. Yet this applies at the beginning of the reading more than later.

THE READING

The reader made no attempt to add to the effectiveness of his reading by any other means than the use of the voice. No gestures, postures, or facial expressions were intended; all such devices for inducing responses were scrupulously and successfully, it is fair to say, eliminated. Sitting comfortably in his chair, most of the time leaning back, though occasionally leaning forward on the desk for relaxation, he read in the manner he had prescribed for the day's reading.

At the close of the reading the reader shut the book, and announced that that was all for that reading. Then an interval of a few minutes was allowed, varying from two minutes to five. During this interim the experimenter wrote on the blackboard the title of the second story to be read during the next half of the period, together with the names of the characters that appeared in that story. The auditors were free to move about the room or to remain in their seats. The only prohibition put upon them was that they must not talk about the story just read or about the characters in it or about stories of which it reminded them. In fact they were prevented from making any reference or allusion to it that might establish or strengthen associations.

At the close of the second reading, the experimenter passed out the papers on which the reports were to be written. These papers were folded, numbered on the back, and dated with the date on which they were to be filled in. Subjects were instructed not to unfold them, and under no circumstances to look at the contents until ready to write out their report. The papers were presented in such a way that there was no occasion for looking at their contents. There is every reason to believe that this instruction was carried out to the letter. When the papers had been given out, all the auditors left the room.

Length of Reading The reader stopped arbitrarily at the close of the twenty minutes. With two readings a week for each subject and with two readings a meeting, a large number of stories had a place in the experiment.

The reports were returned to the experimenter any time after the fifth day.

REPORTS

Purpose. The purpose of the reports is to provide a measure of impressiveness of the different modes of reading, and to give this measure in mathematical terms. To do this required a new method with very little precedent as guide.

Tentative Method of Completion Test. In the first test to measure retentiveness of impression according to modes of reading, the subject was merely asked to write down what he remembered. No restrictions were placed upon the amount to be written, whether a brief summary or an extended narrative. As a consequence the reports differed so widely in the number of words employed and in minuteness of detail that they were not at all comparable.

Method Revised Further. To remedy this, a fixed schedule of instructions was given the subjects, as follows:

1. Identify and characterize the different personages.
2. Describe briefly the places pictured.
3. Give a consecutive account of the events of the narrative.
4. Outline the conversations given

Again the differences in the fulness of the reports of subjects were too great to make the results at all comparable; some subjects wrote volubly on these points, others in the most laconic manner possible. So this device was abandoned.

Method Finally Chosen. To remedy this defect, the system of "leads" was adopted. The "lead" is a partial or complete declarative sentence so selected that it brings to the observer some situation incident, or fact concerning the story. When the sentence is incomplete, then there is placed in parentheses some instruction as to what to do to complete the sentence. If the sentence is complete, however, then in the parentheses is given some instruction as to the offering of details, consequences, or characterization. Following is a sample of the type of "leads" used in the experiment:

THE INN

The inn of which we speak possesses many attractions (name 6)
 The present proprietor is Naum (describe him)
 The previous proprietor had been Akim (describe him)
 Akim kept the inn (how?)
 The land belongs to Elizaveta Kuntz (characterize her).
 Relate the affair between Akim and Dunyasha, the servant

Another example of this type of "lead"

FATHERS AND CHILDREN

The governor in the narrative was to be investigated (for what?).
 Matvei, sent to investigate, was (characterize).
 Matvei stunned his subordinates in the characteristic Russian way (how?).
 Sitnikoff the dilettanti took them to the home of Madame Kukshin (describe her)
 The present domestic status of Madame K was (what?).
 The three men were induced to go by (what promise?).
 Madame Kukshin talked of (detail her interests, using proper names)

LIEUTENANT ERGUNOFF

The Lieutenant was treated by the ladies from Riga (how?), (give specific details)
 One day the Lieutenant, wearied by (what?), (did what and with what results?).
 The next day the Lieutenant received a letter (give contents).
 Upon his arrival next day (describe his welcome)
 (Then what happened? Relate in detail.)
 (Give a visual and an auditory picture of the "Humming-Bird")

LEADS

Some Problems Involved. In devising leads several considerations have to be kept in mind, in order to make the data comparable:

(1) Nothing subjective was asked for beyond interpretations as to character and the meaning of events in the story. In the preliminary stages of the use of this method occasional descriptions and characterizations were demanded; but results **demonstrated** that individual differences in responding to such leads were so great that the results of the various subjects could not be compared.

(2) The matter asked for in the leads was uniformly concrete.

(3) Leading questions, those that can be answered with Yes, or No, were entirely eliminated. Also questions were so devised as to make difficult the inferring of the answer from the nature of the question.

(4) The leads were chosen in such a way that the total effect of them was to produce a running summary of the story in its chief details.

Number of Leads. According to this method there is no fixed number of leads for a report. In fact, the limiting of the number of leads to some specified figure would bring an error into the records, for the reason that there are differences in style from one story to another of enough significance to make necessary a flexible joint in the method. Thus the choosing of the number of leads is entirely a matter determined by the nature of each story or passage. Especially determinative of the flexibility is the matter of concreteness in the passage. In particular, events in time make serviceable material for leads. The number of leads presented on reports differs from 8 to 35.

SCORING

Determining the Value of a Point. In general every recorded perception of a process was counted a point. Then when characterizations were demanded, if the number of these was specified, the fixing of the value of a point was a function of the number demanded; if the number was not called for, the experimenter had to decide what kind of answer constituted a point. In general a "point" is to be defined here as a recorded fact of an event, a characterization, or a description. As nothing but objective matter was asked for,

the factual basis of points made scoring reports reasonably accurate and uniform.

Specific Answer. The answer to the lead must satisfy the specific question involved before any credit at all is given.

No Overlapping. The number of points given any specified lead must be only such as are needed to tell the facts called for without overlapping.

Essential Details. Only such details as are essential to the event, characterization, or description are accepted.

Verbosity vs. Conciseness. Neither verbosity nor conciseness are determining factors in scoring points. Some reporters are habitually wordy, others are by habit laconic. Regard must be had for this difference in estimating the number of points to be scored. A single word can carry the evidence that the reporter has retained the essential fact while sentences may be employed by another reporter without adding to the evidence for retention. This was kept in mind consistently in making out the scores.

Lack of Specificity in Answers. No credit is given for statements that do not specifically answer the question asked.

Guesses. Subjects are warned against offering guesses; they are encouraged to leave blanks rather than make replies the correctness of which they cannot substantiate. The important consideration in the understanding of their task is that they are not to make guessing a practice for the sake of shielding themselves from the effort necessary to answer with assurance, or for the sake of a full report.

The Total Score. The total score for a report is a fraction which uses the whole number of points assigned to that report for a denominator and the total number of points scored for a numerator. For purposes of uniformity this fraction is treated in the results on a percentage basis.

Mechanism of Scoring. As a measure for stabilizing the judgment of the scorer, all scoring was done with the reports of one selected painstaking subject as guide.

The first step in scoring is to estimate each lead separately, to determine how many points are needed to represent full retention for this lead. The number thus secured is then placed beside the lead at the left side of the paper. After all of the leads have been thus estimated, the total is found and set down at the top of the sheet for the denominator. The score of the paper, however, is not yet settled finally; two or three more papers are graded on this basis before arriving at a final judgment as to the weight of each lead and

so of the size of the denominator. This reading of additional reports sometimes shows errors in the preliminary judgment, or reveals that the replies in the report of the guide auditor are not precisely representative. Revision is then made of those thus far graded, and with the revised denominator as a final judgment the scores are made out for all the reports and entered at the top of each sheet both as a fraction and as a decimal

A TYPICAL REPORT GRADED

Reading A2

WIDE RANGE OF PITCH

MUMU

(Vol. 2, to p. 218)

- (2) IN MOSCOW LIVED WITH her retainers and
 2 a Russian mistress (widow) servants
- (5) AMONG THEM WAS GERASIM WHOSE DUTIES
 WERE (SPECIFY FULLY)
 3 to sweep out the courtyard/fetch water/and generally
 guard the premises/
- (3) GERASIM HAD PROVED HIS COMPETENCE BY
 (SPECIFY THREE DEEDS)
 3 not letting any dirt appear in the yard/if the cart for
 fetching water stuck in the mud he extricated it by his
 own strength/knocking the heads of two hapless rob-
 bers together/
- (4) IN CONVERSATION WITH GAVRILA THE MIS-
 TRESS DECIDED TO
 3 marry off one of her dependents, a drunkard/in the
 hope of reforming him/and settle on Tatyana as his
 destined wife/
- (3) GERASIM'S COURTSHIP OF TATYANA HAD
 CONSISTED OF (3 ITEMS)
 2 presenting her with little tokens as she passed him in
 the courtyard/not permitting her to be made sport of
 in his presence/
- (2) THE MISTRESS UPON HEARING OF GERASIM'S
 COURTSHIP WAS
 0 I did not think the Mistress knew anything of Gera-
 sim's courtship.

(3) KAPITON'S REPLY TO GAVRILA CONCERNING TATYANA WAS

- 3 that he would undoubtedly be killed by Gerasim/but that he was always doomed to ill luck/and might as well marry. He liked Tatyana herself/

(2) THE EFFECT OF THE COURTSHIP UPON TATYANA WAS

- 2 merely to frighten her to death/and to acquiesce in the courtship for that reason/

Score—18/24, .75

Significance of Symbols. The capital letters used as designations of the readings represent the mode in which the reading is done (pp 126-7.) The Arabic numerals used in connection with the capital letter represent readings 1 and 2, the first and the second respectively during the hour of meeting. The text in capital letters represents the leads given out on the reports; the rest of the text is the answers given by the subjects. The Arabic numerals in parentheses at the left represent the total number of points allowed to the lead beside which they are placed; the numerals not in parentheses are the score given to the answer. The fraction at the bottom of the report represents the total score, which is also given as a decimal. The use of the bar (/) in the answers marks the division into points; they are inserted to indicate the basis of marking off into points

PRELIMINARY DISCUSSION

Constant Factors. The attempt was made in this experiment to keep the conditions as similar as possible to the conditions which prevail in places of public meeting. The typical "audience" was of three, occasionally a fourth being present, and at rare intervals five. Audiences of two were very few in the total number of tests

Thus the social environment of an audience was achieved in all cases. The tests were held in Room 27, Emerson Hall, Harvard University. Except when the hour was the first in the morning and subjects showed a tendency to straggle in as when going to public places, they gathered in the corridor outside the room; they were instructed not to enter until the whole group had gathered, or to take their seats and comport themselves in the manner usual to them in going into a place of public meeting. Then as soon as all were in their places, the experimenter took charge of the meeting and directed the activities of the subjects from the platform.

Instructions. The experimenter then read the following instructions:

1. "Attend as you are in the habit of attending at public gatherings.

2. "At the close of the hours you will pass out without being called upon for a report or discussion of the content of the reading

3. "On the fifth day after the reading, and not before or later, you are to fill out a blank prepared by the experimenter, which will be placed in your hands at the close of the hour.

4. "No feats of memory are sought, and no penalty or reward attaches to the amount you remember; merely set down at the time of reporting what you have retained

5. "Keep the conditions of reporting as uniform as possible; use the same time of day, the same working surroundings, the same place, the same amount of time, the same degree of care, and the same degree of effort to recall."

During the early tests these instructions were repeated at the beginning of each period; later, paraphrases were given carrying the same implications; while still later nothing more was said as to instructions other than to remind the company that the instructions were the same as before. The subjects were repeatedly instructed that they were to listen as they are in the habit of listening when out in a place of public meeting, and that they were not called upon for feats of memory; they were *merely to listen as they do usually*, and to return an honest report written under circumstances uniformly the same.

The Choice of Reading Matter. The choice of reading matter for this kind of experiment offers several nice problems. In the first place, the matter must be unfamiliar to the auditors; secondly, the reading matter must be of a type to hold interest uniformly keen among the whole group of subjects—narration, and narration that is stimulating, with definite type of characters, and written by a writer conceded widely to be a master of style. The higher the degree of uniformity in certain essential particulars, the more valuable is the matter for the present purpose. Uniformity of rhetorical style, strength of characterization, plot structure, descriptive power, and structural strength, are kept at a maximum by adherence to the works of the same writer. Then, again, uniformity of types of people presented in the stories is an aid to general uniformity of type of matter; also similarity of situation, geographical surroundings, the manner of living of people, and national setting

With all these requirements in mind, the works chosen for this experiment were the novels and stories of the Russian writer, Turgenieff.⁵ Inquiry revealed that the auditors assigned for this experiment had read practically none of his writings. From the first tests it became manifest that the element of interest was adequately provided, judging by the attitudes of the listeners during the reading and by their comment afterwards. Some had to be specifically instructed not to read the author's works during the course of the experiment; they had asked permission to read some of his stories by themselves.

Proper Names. The matter of Russian names was handled in the following manner. At the beginning of the meeting, as soon as the audiences had taken their places and the reader had taken the chair, the title of the story was placed on the blackboard before the audience, together with the names of the characters who participated in the story. This was done with a view to reducing to a minimum any confusion over names so unfamiliar to an American audience as are the names of the Russian people. In no way throughout the experiment was any attempt made to require subjects to remember these names; while every effort was exerted to make recognition of them easy. By putting the names upon the blackboard a visual perception was added to an auditory. Always in the reports these names were so presented by the experimenter that the auditor never had to recall the name in order to indicate which of the people of the story he was discussing or reporting on. How this was handled will appear in the transcript of forms of report presented above.

Resumé of Previous Readings. After the names of the characters of the story had been written upon the blackboard, the reader announced, "I am now going to read you part of a story by Turgenieff, entitled....." When the story was to be used for the first time, nothing more than this was said. However, when part of the story had been read to a given group, the reader preceded the test with a brief resumé of the story up to the point at which he proposed to begin. This was done to enable every subject to start out with as full an equipment as possible of the story up to that point, so that those of superior retentiveness would not start with an advantage over those who happened to have retained little from the reading preceding. In this way a source of error was eliminated

⁵ The edition used is the translation by Isabel F. Hapgood, and published in 7 volumes by Charles Scribner & Sons, New York, 1915.

TABLE I: RECORDS OF IMPRESSIVENESS—SERIES I

20-minute Readings; 2 Readings per Session
 Reported after 5-days interval
 Auditors Unadapted to Experiment

Modes of Reading (See pp. 15-21)	Subjects											
	1	11	15	21	22	23	24	25	26	27	Av.	
1	a	b	a	b	a	b	a	b	a	b	a	b
2	80	70	24	04	32	1 00	32	70	92	52	60	63
3	89	65	48	17	70	70	56	61	85	65	89	91
4	94	80	00	31	75	65	00	50	54	58	63	39
5	94	1	00	11	95	96	06	23	44	96	56	68
6	83	88	60	00	93	88	13	53	75	82	78	41
7	81	93	00	14	75	93	19	29	88	64	81	71
8	92	87	00	57	1 00	48	18	35	1 00	87	00	57
9	64	63	00	13	1 00	83	00	19	73	56	00	19
10	1 00	88	00	00	82	82	00	06	45	71	64	35
11	1 00	1 00	38	00	1 00	1 00	38	00	88	83	88	92
	63	60	08	00	21	87	05	00	16	67	16	47
Av.	83	75	37	17	79	18	55	69	66	55	66	55

TABLE II: RECORDS OF IMPRESSIVENESS—SERIES II

TWENTY MINUTE READINGS—TWO READINGS PER SESSION REPORTED AFTER FIVE DAYS INTERVAL. AUDITORS ADAPTED TO EXPERIMENT

Modes of Reading (See pp 15-21)	Subjects										
	1	11	15	21	22	23	24	25	26	27	Av.
1	a 1.00	b 12.29	a 29.76	b 11.48	a 76.52	b 38.00	a 82.86	b 76.76	a 59.86	b 59.76	61.61
2	1.00	.88	.00	.88	.67	.00	.50	.94	.67	.79	49.49
3	1.00	.95	.78	.60	.61	.65	.70	.80	.74	.65	58.58
4	1.00	.84	.87	.82	.70	.63	.70	.82	.91	.87	69.69
5	1.00	.78	.35	.56	.29	.67	.67	.74	.60	.87	48.48
6	1.00	.80	.50	.10	.21	.70	.65	.50	.65	.56	45.45
7	1.00	.94	.10	.17	.40	.89	.46	.85	.65	.58	71.71
10	1.00	.10	.42	.00	.31	.86	.00	.60	.95	.83	43.43
11	.65	.70	.29	.35	.71	.15	.00	1.00	.65	.95	61.61
Av.	.82	.28	.53	.13	.66	.13	.63	.68	.72	.60	.41

GRAPH 2—FROM TABLE II—SERIES II—COMPARATIVE IMPRESSIVENESS OF
VARIOUS MODES OF READING

TWENTY MINUTE PASSAGES, REPORTED AFTER FIVE DAYS

GRAPH 4—FROM TABLES I AND II COMBINED
INDIVIDUAL DIFFERENCES IN IMPRESSION FROM NINE MODES OF READING

DISCUSSION OF RESULTS

The foregoing results will be discussed under the following two heads:

I The Function of Changes in the Use of the Four Attributes of Sound in Oral Reading.

II. Individual Differences in the Responses of Auditors.

Series I and Series II are alike in technique and material; Series II was added in the conviction that this type of experiment needs a large number of cases for validity of results.

I. FUNCTIONS OF VARIATION IN THE USE OF THE FOUR ATTRIBUTES OF SOUND IN ORAL READING

A. *Function of Median Range of Variation*

a) Mode 1, i. e., Median Range of All Four Attributes, holds the median position in relative impressiveness of the modes of reading employed, in Series II and in the total summary for both series. The same is practically the case for the 11 modes of Series I.

B. *Function of Extreme Range of Variation*

a) Extreme variation of Quality, in the only instance in which it was used, Series I, seems to rank high in impressiveness. Extreme Range of Time (Mode 5) gives results that are inconclusive; while Extreme Range of Intensity (Mode 7) is low enough to suggest that for this kind of situation it is not impressive.

b) When extremes of all attributes are used, the impressiveness ranks high; Mode 10 is the highest of all in the final summary, as well as in all other tables and graphs except one. (Graph 2)

c) The one notable exception to the superiority of Extreme Change over No Change is in the matter of Time, Modes 4 and 5. Mode 4, No Change of Time, tends to rank higher than Mode 5, Extreme change of Time. But conclusions based on this condition must not overlook certain characteristics of the audience and of the stimulus.

C. *Function of No Change in Attributes*

a) The three lowest modes are all of the type that eliminates change of one or all attributes of sound. The least impressive of all modes is that which eliminates all change, Mode 11.

D *Functions of Each Attribute Separately Considered*

a) *Pitch.* Mode 2 (Extreme change of Pitch) shows a higher rank than Mode 3 (No change of Pitch) in Series I

and in the total; but not in Series II. In Series I the difference is marked.

b) *Intensity*. Departure from Median Intensity shows low impressiveness (Modes 6 and 7), in the final summary.

c) *Quality*. Quality was isolated only in Series I; yet the results of Series I suggest that the dropping out of changes in Quality makes a pronounced difference in impressiveness; for the gap between Modes 8 and 9 is one of the longest in the whole body of graphs.

d) *Time*. Departures from median range in time makes little, if any, loss of impressiveness. Both No Change of Time (Mode 4) and Extreme Change of Time (Mode 5) show high rankings in the final summary.

II. INDIVIDUAL DIFFERENCES IN AUDITORS

A. *General Divergence*

a) Auditors vary in average total retentiveness between .15 and .87.

b) One subject, No. 1, stands out as markedly superior in retentiveness to all the others.

c) Four subjects, 11, 15, 21, 23, make a distinct class, which is low in retentiveness. The remaining auditors form a middle class of fairly distinct uniformity.

B. *Special Divergences*

a) The two auditors lowest in total reporting response are foreign-born, one a Filipino, No. 21, and the other a Chinese, No. 23. These two auditors respond to only a few modes. They agree so nearly on Mode 4 as to provoke the question whether this is not a mode commonly acceptable in Oriental speech, Uniformity of Time. Changes in Intensity seem to disconcert them (Table I, Modes 6 and 7), as also departures from Median change of Quality (Table I, Modes 8 and 9)

b) Subject 11 is worthy of special note. He reports that he almost never reads stories. Yet the results of a check test, calling for an immediate report, shows that his low record arises not because he does not apprehend the import of what is read; for he retains well under immediate report. In Series II he shows almost a 100% increase in response, due probably to training during the process of the experiment.

c) Subject 15 asserts that he lacks visual imagery. Whether so or not, he also shows learning in the process of the experiment. His earlier records are for the most part blanks; toward the end of Series II his records are relatively full.

d) Subject 1 is an exceptional case. His reports indicate that he is set to apprehend under all circumstances and that he retains well what he apprehends. The latest trials of the experiment indicate that he had become adapted to all modes of reading, no matter how foreign to his previous experience.

e) All women subjects—numbers 22, 24, 26, 27—rank well up in the total average.

f) The chief divergences in ability to report are shown by the male subjects, ranging as they do from .15 to .82.

Conclusions

1. There is a presumption in favor of using an extreme degree of change in all four of the attributes of sound during speech, especially for the purpose of securing retentiveness over an extended time.

2. The four attributes of sound differ in their effect upon the responses to oral reading

3. Individuals differ widely in their responses to a given combination of change activities.

4. Auditors tend to become adjusted to unconventional modes of reading

Subsidiary conclusions are:

a) In intellectual impression (such as this type is) regulation of Pitch changes is significant: a wide range is preferable to no change.

b) An even rate is superior to a rate excessively broken.

c) Interference with normal degree of change in Intensity reduces apprehension, retentiveness, or both.

d) Elimination of changes in Quality (Timbre) is greatly inferior to a wide degree of change.

General Conclusion as to Type of Experimentation. As to whether this method offers promise of valid results for further use, the following evidence is offered. (1) A judgment practically unanimous among students of oral expression is that changes in Pitch are always significant, that absence of all change is detrimental to intellectual impressiveness, and that the most effective reading is with an abundant, even extreme, range of change in all four elements of sound. This study brings results precisely in accord with these judgments. (2) Among authorities in elocution there seems to be no unified opinion as to the effect of changes in Time; and this study leaves that issue with results that are inconclusive, calling for refinement of method or more data. (3) Interference with changes in Intensity so as to affect accentuation, could be

assumed empirically to be detrimental to impressiveness; and the experiment reveals just such a result. (4) Changes in quality are commonly assumed to represent changes in emotion, mood, total attitude, and hence highly impressive. This study strongly confirms this judgment

Hence it is a justifiable conclusion that a method which brings results that conform with generally accepted judgments on matters of widespread experience, will prove useful in deciding ultimately such issues in this field on which opinion is not as yet in agreement.

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