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Effects of suggestion of difficulty on the fluency and rate of speech of children during oral reading

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THE EFFECTS OF SUGGESTION OF DIFFICULTY ON THE FLUENCY AND RATE OF SPEECH OF CHILDREN DURING ORAL READING

By

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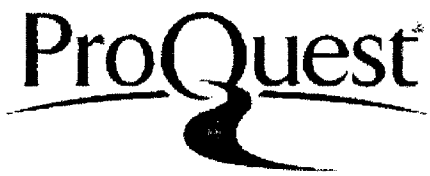

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CHAPTER I

INTRODUCTION

This study was concerned with the effect of the suggestion of difficulty on the fluency and rate of speaking of elementary school children during oral reading. Past research has dealt with disfluencies as they relate to: the problem of "stuttering," their occurrence in oral reading, and the effect of the speaker's perception of the situation on disfluencies. Johnson (1961) summarized much of the research as follows:

> The varying degrees of overlapping of the distributions of disfluency measures for the subjects classified as stutterers and those not so classified imply that the problem called stuttering is not adequately identified or defined solely by reference to speech disfluency, as such. It is suggested that variables associated with the frequencies and forms of disfluency of the speaker are to be included in an adequately comprehensive and systematic consideration of the problem called stuttering.

Johnson (1961) makes the points that there is no clear dichotomy between the disfluencies of "stutterers" and "nonstutterers" and, in addition, that perceptual reactions do have a role in the problem of stuttering. In view of the importance of these considerations, a study looking at the fluency behavior of nonstutterers, as it is influenced by the suggestion of difficulty, does have significance for the field of Speech Pathology.

Much of the literature which has been generated on the topic of speaker disfluencies or on the behaviors which are often called "stuttering" have dealt with the questions of etiology and maintenance of these behaviors.

Johnson and others have suggested that disfluencies are a part of normal speech development and always precede stuttering.

Johnson's diagnosogenic theory of stuttering contends that a normal speaker has disfluencies, and that sometimes these disfluencies are perceived as not normal by listeners important to the child. The main theme of this theory involves the notion of perceptual or judgmental reactions of listeners and of the speaker. In discussing disfluencies as a part of normal speech development, Johnson (1959) states that from the very beginning of the disfluency "problem," there is an interaction between at least two different persons, the listener and the speaker. He says the essential interactions between these two persons is one in which the listener evaluates something done by the speaker as an "abnormal" disfluency. A second interaction occurs when the speaker reacts to the listener's reaction; this process tends to become cyclic when the listener, in turn, reacts to the ways in which the speaker responds to the listener's reactions. And finally, Johnson describes a third interaction "between the perceptual and evaluative reactions of the speaker to his own speech, on the one hand, and what he does in a motor and neuromuscular sense on the other."

As the result of much research and speculation, several theories have been developed which attempt to explain onset and maintenance of disfluency phenomenon in their entirety. Current authorities contend that there probably is no one source or cause of all disfluency behaviors, but rather differing sources among individuals and more than one source for a single individual.

Early attempts at answering the onset and maintenance questions of disfluency have resulted in several major global theories,according to Bloodstein (1969). More recently, explanations advanced by learning theorists explain the onset and maintenance of disfluency behaviors in a stimulus-response framework (Van Riper, 1971). These theories have several aspects in common. Several of these theories contain elements which lead to the present concern about the effect of suggested difficulty on fluency. The relevant attempts to answer the question of why a person is disfluent and elements which are pertinent to this study are summarized below.

The Breakdown hypothesis describes a momentary failure of the complicated coordinations involved in the speech process. This hypothesis contains more than a description of the breakdown in the speech process in that it hypothesizes environmental pressure to be a precipitating agent. Proponents of this theory as the cause of disfluency feel the breakdown is the effect of emotional or psychosocial stress, including speech anxiety on the rapid, smooth, complex neuromuscular adjustments necessary for speech (Bloodstein, 1965). Such environmental pressure as the fluency standards set by parents and competitive speaking situations are often given as examples of the precipitating agents in the Breakdown theory. The current study focuses on a similar kind of environmental pressure, suggestion of difficulty, as a precipitating agent.

The Anticipatory Struggle hypothesis states that a person is disfluent because he believes in the difficulty of speech, anticipates failure, and struggles to avoid it. It is felt by supporters of this theory that it is the person's very effort

to avoid disfluency that leads directly to the production of disfluency (Bloodstein, 1969). In some cases, the anticipation of failure may evolve from the oral reading situation. This study is related to the anticipatory struggle hypothesis since it suggests to the subject that he should expect some difficulty.

The Two Factor theory of disfluency was developed by one group of stimulus-response learning theorists. They have hypothesized a number of external and internal stimuli for communication which produces a learned response. The first factor states that if there are any changes in the stimulus there are changes in the internal response or emotional response; and if this response is positive or neutral, the spoken response will be fluent. But, if the response is negative, the spoken response will be disfluent. They feel that the fluent or disfluent response is the beginning of the second factor or stimulus. Within the second factor, they hypothesize that a negative feeling, associated with a disfluent response, serves as a stimulus for coping behavior (Brutten, 1972). The first factor in this theory is especially relevant to this study since it is assumed that the suggestion of difficulty would be a stimulus for negative feelings. The speaker's feelings, either positive or negative, could have an effect on his fluency behavior in this situation.

The preceding discussion provides a theoretical support for the experimenter's research hypotheses. Further support may be found in specific research on disfluencies and rate. While much of the research has been conducted with a population of "stutterers," this research does apply to those speakers who are "non-stutterers" if disfluencies are viewed as existing on a continuum as indicated by Johnson and others (1961).

The following summary of research is drawn from both studies of "stutterers" and "nonstutterers."

Barnard (1961) told subjects they would be given a "test" following an interview. He concluded that one of the major sources of interference in the general performance of certain verbal tasks was the compelling nature of anxiety itself, such that the individual experiencing "anxiety" is less able to attend to the external stimuli relevant to the task at hand. By suggesting that a subject would have difficulty with a passage, it was expected that the subject would be preoccupied with the expectancy of difficulty.

On the basis of a study of oral reading performance where cue words were identified for the speaker, Johnson felt that there were certain cues resident in speaking situations which may precipitate the moment of stuttering. Cues related to past "stuttering" experiences which were introduced into previously "nondifficult" situations resulted in a statistically significant increase in the frequency of disfluency. He concluded that both general cues, not previously associated with specific words, and specific cues, associated with specific words, may be related to the precipitation of the moment of stuttering (Johnson, 1937). The present study contained specific cues suggesting difficulty and the mention of "hard words."

Kools (1971) summarized previous findings of past studies comparing the incidence of "stuttering" between males and females. Male stutterers are more frequent than females by a ratio of somewhere between 2.3 and 4 male "stutterers" to each female "stutterer." Kools found no significant difference in the frequency of disfluencies in first grade "nonstutterers." However, Glass (1959) found that

first and third grade males were significantly more disfluent than first and third grade females. The present study was interested in any differences between males and females with regard to disfluency.

Some practical applications for the present study are found in the research of Brenner (1965) and Sheehan (1967).

Brenner (1965) found that by producing a situation which suggested a "test" with nonstuttering elementary school children, there was more "speech disruption" than in a "nontest" situation. While the present study was not designed to be a "test" situation, the speaker's perception of the situation as a "test" situation may have produced more speech disruption.

Operating under the premise that persons occupying positions of power or status are likely to be perceived as imposing and potentially threatening, Sheehan (1967) found that more disfluencies occurred in the presence of an "authority" listener than in the presence of peer listeners. He also found that there was a more rapid decrease in the frequency of occurrence of disfluencies with peer listeners. Sheehan felt this was due to the speaker's perceptions of less penalty with peer listeners. A listener was not present in the testing room in this study. Sheehan discussed the fact that penalty was associated with poor performance in the presence of an authority figure. Penalty seemed to have relevance to the present study since teachers are often considered authority figures who dispense penalty on some occasions.

The present study also looked at reading rate. Findings of Bloodstein (1944) in a study relating oral reading rate and severity of stuttering found that

"stutterers" tended to read slower than adult "nonstutterers." He felt that the "stutterers" may have tended to evaluate the reading situation as a test of speech adequacy, and that possibly this perception of a test situation may have resulted in an attitude of generalized anxiety and extreme caution. These feelings may have been responsible for the reduction of reading rate. Further discussion by Bloodstein stated that a more plausible explanation, based on studies by Johnson and others, would strongly indicate that the speech of stutterers is characterized in a general sense by "anxious" anticipation of stuttering which might reasonably be expected to retard the speaking and reading rate. If the suggestion of difficulty created "anxious anticipation" in "nonstuttering" children, they may tend to proceed slowly and cautiously through the reading passages labeled difficult.

The above research indicates that the suggestion of difficulty with oral reading may have an effect of the frequency of disfluencies or on the length of time required to read the passage. If there is an effect on the frequency of disfluencies, or on the amount of time required to read the passages, there are implications not only for speech pathologists, but for elementary school teachers and parents as well.

Statement of the Problem

On the basis of past research on the topic of disfluencies and keeping in mind Johnson's discussion of the importance of perceptual and evaluative judgments in generating disfluencies, this experimenter attempted to answer the following questions: What effect does the suggestion of difficulty have on the frequency of disfluencies of young speakers during oral reading? What effect does the suggestion

of difficulty of an oral reading passage have on the amount of time required to read that passage aloud?

It was hypothesized that there would be a significant increase in the frequency of disfluencies and a significant increase in the length of time taken by elementary school boys and girls to read an oral reading passage as a function of having been told that the specific oral reading task was difficult. A significant increase in the total frequency of disfluencies and/or a significantly longer time with the reading would lead to a rejection of the experimenter's null hypotheses of no differences in disfluencies or no changes in overall rate.

CHAPTER II

PROCEDURES

In this study, twenty-four third grade pupils, twelve males and twelve females, read aloud four one-hundred word passages. The four passages were as follows: the first passage (FROGS) and the last passage (WHALES) were used as placebos to reduce situational anxiety on the first passage and to give the subject a positive or neutral conclusion to his participation in the experiment; the two intermediate passages concerning SNAKES and SPORES were used as the experimental passages: "neutral" and "difficult." All subjects received both experimental and placebo instructions which had been previously recorded on a Uher (Model 400) Report L auditory tape recorder and played to the subjects on a Sony TC 230 auditory tape recorder. The experimenter tape recorded each subjects' oral reading on a Magnavox auditory tape recorder (Model IK 8874) for later analysis.

Definitions of the Experimental Variables

The experimenter measured the dependent variables of frequency of the disfluencies (See Appendix A) and overall oral reading time of a speaker on a 100-word reading passage. The independent variables used by the experimenter were the directions to the subject: one set of instructions suggested some difficulty with a reading passage while the neutral and placebo sets of instructions contained only instructions to read the appropriate passage.

Dependent Variables

Disfluencies. Any interruption in the speaker's oral reading pattern as characterized by sounds, syllable and word repetitions; sound and word revisions; prolongations of sounds and interjections (see Appendix A). Disfluencies were not analyzed by type but rather by total number of disfluencies per 100 printed words.

Reading Time. The amount of time required to read a 100-word reading passage.

Independent Variables

Placebo Instructions. The experimenter indicated the number of the card the subject was to pick up and read. No mention of difficulty level was included (see Appendix B for specific wording). These instructions were used with the first and final placebo passages as well as with the practice trial passage.

Experimental Instructions

Neutral Condition. The experimenter used the same instructions as in the placebo conditions.

Difficult Condition. The experimenter told the subject that a passage was more difficult than the other/others he had just finished reading. The subject was told that this passage had been selected on the basis of its more difficult content and harder words. The experimenter told the subject that even though this was a very difficult passage, he was to try to do his best. The subject was then instructed to pick up the card and begin reading (see Appendix B for specific wording.

Subjects

The twenty-four subjects were originally selected randomly from the third grade of a Missoula elementary school (Rattlesnake Elementary School).[1] Those subjects who were receiving speech therapy or were considered to be abnormally disfluent by their teachers were excluded from this investigation. Reading abilities of the subjects were disregarded since each child served as his own control.

Reading Passages

Four one-hundred-word passages were selected on the basis of a comparable level of difficulty (see Appendix D). These passages, selected from an elementary school science text, were equated using the Fry Readability Graph (Fry, 1965) to assure a third grade level of difficulty (see Appendix C for graph). The Fry Readability Graph is based on the number of syllables and sentences per one-hundred words. One two-sentence passage was chosen from this same text and used in a training trial. The four passages were randomly assigned as either placebos or experimental passages and retained this assigned status for all subjects. The placebo passage on FROGS was first for all subjects; the placebo passage on WHALES was always last; while order and instructions for the two experimental passages, SNAKES and SPORES, were counterbalanced throughout the investigation.

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[1] One of the twenty-four subjects was lost due to equipment failure and was replaced by a third grader from a different elementary school (St. Anthony's).

Apparatus

The apparatus consisted of a sound-treated, air-conditioned, well-lighted carpeted testing room (7' x 11') in a mobile van (Figure 1). There was an observation room adjacent to the testing room with a one-way observation mirror which enabled the experimenter to observe the actions of the subject. The subject was seated at a small trapezoid-shaped table located at the end of the room nearest the observation mirror, facing a Sony speaker and the observation mirror. The experimenter controlled the tape recorders from the observation room.

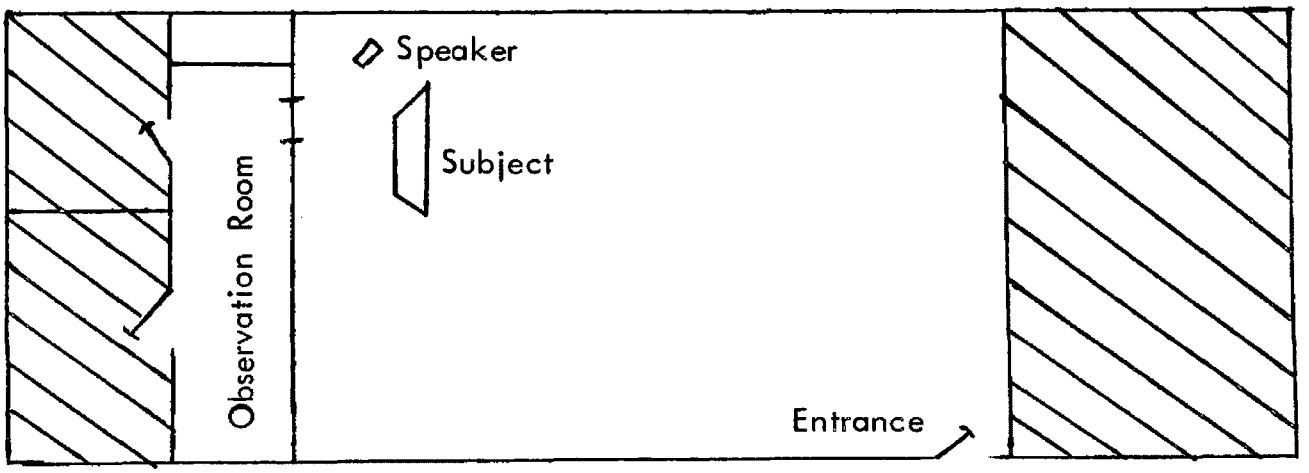

Figure 1

The Experimental Apparatus

Experimental Procedures

The subjects were welcomed to the testing site by the experimenter. Each subject was told that he was not being tested, but that the experimenter just wanted to see how he reads. Each subject was then told that he would be asked to read aloud some short passages about different topics. The experimenter explained to

the subject that he would hear all of his instructions from the speaker in front of him and that these instructions would be played on a tape recorder. The subject was seated at the table with five numbered cards containing the reading passages stacked printed side down. The experimenter explained what he wanted the subject to do and how he was to handle the cards so as not to look at the printed side before he was told to do so. The subject was told that he would be told which card to read and when to begin reading. The experimenter then administered a practice trial to insure the subject's understanding of the instructions, using the two-sentence passage selected for this purpose.

The subject was then told that the experimenter would be in the next room and if he had any questions he could talk to the experimenter through the microphone. The experimenter stressed the importance of following the instructions carefully. The experimenter told the subject that he could talk to the experimenter at any time except after he started reading. The subject was told that if he was unsure of a word to just take a guess. The experimenter asked the subject if he had any questions and if there were none, the experimenter told the subject that he would go into the next room and they would get started.

Prior to the data collection, the volume level of the Sony tape recorder was set at between 60 and 70 dB sound pressure level, using a General Radio Company Sound Level Meter (Type 1565-A) at the subject's chair, located approximately three feet from the Sony speaker. This presentation level was maintained throughout presentation of all instructions. The subject listened and responded to the instructions (as described above) which were played on the Sony TC 230

auditory tape recorder. The experimenter taped each oral reading passage on a Magnavox (Model IK 8874) auditory tape recorder.

After the subject completed the four oral readings, the experimenter entered the test room, thanked the subject for his participation and told him that he had been a great help in the experimenter's study. The subject was asked not to discuss what had happened with the other children in the class.

Experimental Conditions

Each subject read five passages, one placebo, two experimental passages and a second placebo passage. The placebo passages (FROGS first and WHALES last) were the same for all subjects. The experimental instructions "neutral" and "difficult" were counterbalanced for order within each experimental condition. Each sex was subdivided into four groups to counterbalance order for instructions and passage in the following way:

Group I	Order I	Order II
Males (n=3) Females (n=3)	SNAKES - neutral	SPORES - difficult
Group II		
Males (N=3) Females (n=3)	SNAKES - difficult	SPORES - neutral
Group III		
Males (n=3) Females (n=3)	SPORES - neutral	SNAKES - difficult
Group IV		
Males (n=3) Females (n=3)	SPORES - difficult	SNAKES - neutral

Thus, the twelve males were divided into four groups, with three in each group, on the basis of the order of the experimental passage and instructions. The same grouping procedures were applied to the female subjects.

Judging the Tapes

After the experiment had been completed, the experimenter trained another graduate student in Speech Pathology and Audiology to judge the tapes for disfluencies according to the classification system cited by Johnson, Darley and Spriesterbach (Appendix A). This was done for the first placebo passage for each subject. His scoring was correlated with that of the experimenter. A Pearson Product-Moment correlation of .90 or above was considered sufficient reliability for the experimenter to proceed with judging the remainder of the data.

Analysis of the Data

In order to investigate the validity of the Fry Readability Graph for equalizing difficulty for the two experimental passages, the experimenter used a t-test for related measures to determine if there were statistical differences in the disfluencies for either passage.

To determine if any differences between the mean number of disfluencies for the experimental conditions were statistically significant, the experimenter utilized a Lindquist (1953) Type IV mixed experimental design. A like design was used for evaluating differences in rate. This isolated the variance due to instructions, the order of presentation of the instructions, sex, and the various interactions of these variables.

Of secondary interest to the experimenter was the question of adaptation across all four readings. A Lindquist Type I mixed experimental design was used, with the readings order, sex, and their interactions isolated.

In addition, mean scores for both disfluencies and rate were graphed to visually explore any other trends in the data for leads which may suggest further hypotheses for subsequent research. Variables which were looked at visually by this graphing procedure were: instructions, order of passage, sex, effects of the distance of the difficult passage instructions on the final placebo passage, and the content of the passages.

The coefficient of risk for this study was set at the .05 level.

CHAPTER III

RESULTS

It was hypothesized that there would be a significant increase in the frequencies of disfluencies and a significant increase in the amount of time required to read a one-hundred-word passage as a function of having been told that a particular passage was difficult.

A Pearson (product-moment) correlation of .94 was obtained after comparing the judgments of disfluency made by the experimenter with those of another graduate student on the first placebo passage. This correlation met the experimenter's criterion of .90 for reliability.

The data for this study consisted of disfluency counts for each of four oral reading passages (two placebos and two experimentals) for each subject and the time required to read each passage. The raw data for this study is found in Appendices E and F.

Differences in the number of disfluencies for the two experimental passages (SNAKES mean = 6.00 and SPORES mean = 5.70) were analyzed using a t-test for related measures. The obtained t of .347 with 23 degrees of freedom was not significant, indicating that the Fry Readability Graph was adequate for equalizing the level of difficulty in terms of fluency for this study.

The mean number of disfluencies for each experimental passage for each sex are summarized in Table 1.

Table 1

Mean Number of Disfluencies for Each Experimental Passage for Each Sex

	Neutral	Difficult	Total
Males	9.25	7.75	8.50
Females	3.00	3.41	3.20
Total	5.12	5.58	

Results of a three-variable (instructions, order, and sex) factorial analysis of variance (Lindquist Type III, 1953) for disfluencies are given in Table 2. There were no significant interactive effects and the differences between first and second order means (order 1 = 6.50, order 2 = 5.20) was not statistically significant. There was a statistically significant difference between the sexes, but not for instructions. Thus, the null hypothesis of no differences between instructions was not rejected.

The mean length of time required in seconds required to read each passage for each sex are summarized in Table 3.

Table 2

Summary of Analysis of Variance for Mean Number of Disfluencies for Males and Females Responding to Neutral and Difficult Instructions in either First or Second Order

Source	Sum of Squares	Mean Square	Degrees of Freedom	F	p
Between Subjects	1650.48		23		
Sex (S)	336.02	336.02	1	5.13	.05
IO	2.53	2.53	1	.03	ns
IOS	12.01	12.01	1	.18	ns
Error (b)	1308.42	65.42	20		
Within Subjects	267.50		24		
Instructions (I)	3.51	3.51	5	.30	ns
Order (O)	20.02	20.02	1	1.71	ns
IS	11.03	11.03	1	.94	ns
OS	.08	.08	1	.006	ns
Error (w)	232.86	11.64	20		
Total	1917.98		47		

Table 3

Mean Number of Seconds Required to Read Each Experimental Passage for Each Sex

	Neutral	Difficult	Total
Males	86.50	79.83	83.16
Females	44.66	43.48	44.25
Total	65.58	61.83	

Results of a three-variable (instructions, order, sex) factorial analysis of variance (Lindquist Type IV, 1953) number of seconds required to read the experimental passages are given in Table 4. There were no significant interactive effects and the differences between first and second order means (order 1 = 62.00, order 2 = 65.41) were not statistically significant. There were no statistical significant differences for sex or instructions and the null hypotheses of no differences could not be rejected.

Table 4

Summary of Analysis of Variance for Mean Number of Seconds Required To Read an Oral Reading Passage for Males and Females Responding To Neutral and Difficult Instructions in Either First or Second Order

Source	Sum of Squares	Mean Square	Degrees of Freedom	F	p
Between Subjects	169,800.92		23	2.48	ns
Sex (S)	18,174.08	18,174.08	1		
IO	3,502.08	3,502.08	1	.47	ns
IOS	2,106.75	2,106.75	1	.28	ns
Error (b)	146,018.01	7,300.90	20		
Within Subjects	3,051.00		24		
Instructions (I)	168.75	168.75	1	1.48	ns
Order (O)	140.08	140.08	1	1.23	ns
IS	102.08	102.08	1	.81	ns
OS	374.09	374.09	1	3.30	ns
Error (w)	2,266.00	113.30	20		
Total	172,851.92		47		

Of secondary interest was adaptation across all four orders of presentation (first placebo, two experimentals, and a second placebo passage). The mean number of disfluencies for first, second, third, and fourth orders of presentations were 5.00, 6.50, 5.20, and 5.16, respectively. The difference between these means was evaluated by a two-variable (order of presentation and sex) factorial analysis of variance (Lindquist Type I, 1953) and found to be nonsignificant. See Table 5 for a summary of this analysis.

Table 5

Summary of Analysis of Variance for Mean Number of Disfluencies for Males and Females in the Four Orders of Presentation: First, Second, Third and Fourth

Source	Sum of Squares	Mean Square	Degrees of Freedom	F	p
Between Subjects	1783.66		23		
Sex (S)	404.26	404.26	1	6.44	.05
Error (b)	1379.40	62.70	22		
Within Subjects	836.25		72		
Order (O)	34.61	11.53	3	.99	ns
OS	36.11	12.03	3	1.03	ns
Error (w)	735.53	11.59	66		
Total	2619.91		92		

Placebo four contained a typographical error, and it was felt that this may have produced more disfluencies in the oral reading of this passage. This last passage was rejudged and disfluencies caused by this error were not tallied into the

total for this passage. The new mean was plotted on a graph (Figure 2) in order to further check for possible adaptation trends. As can be seen by Figure 2, there was only slight adaptation in two groups of subjects, but the conditions under which it occurred were dissimilar. Therefore, it did not appear that there was a consistent nor significant adaptation effect.

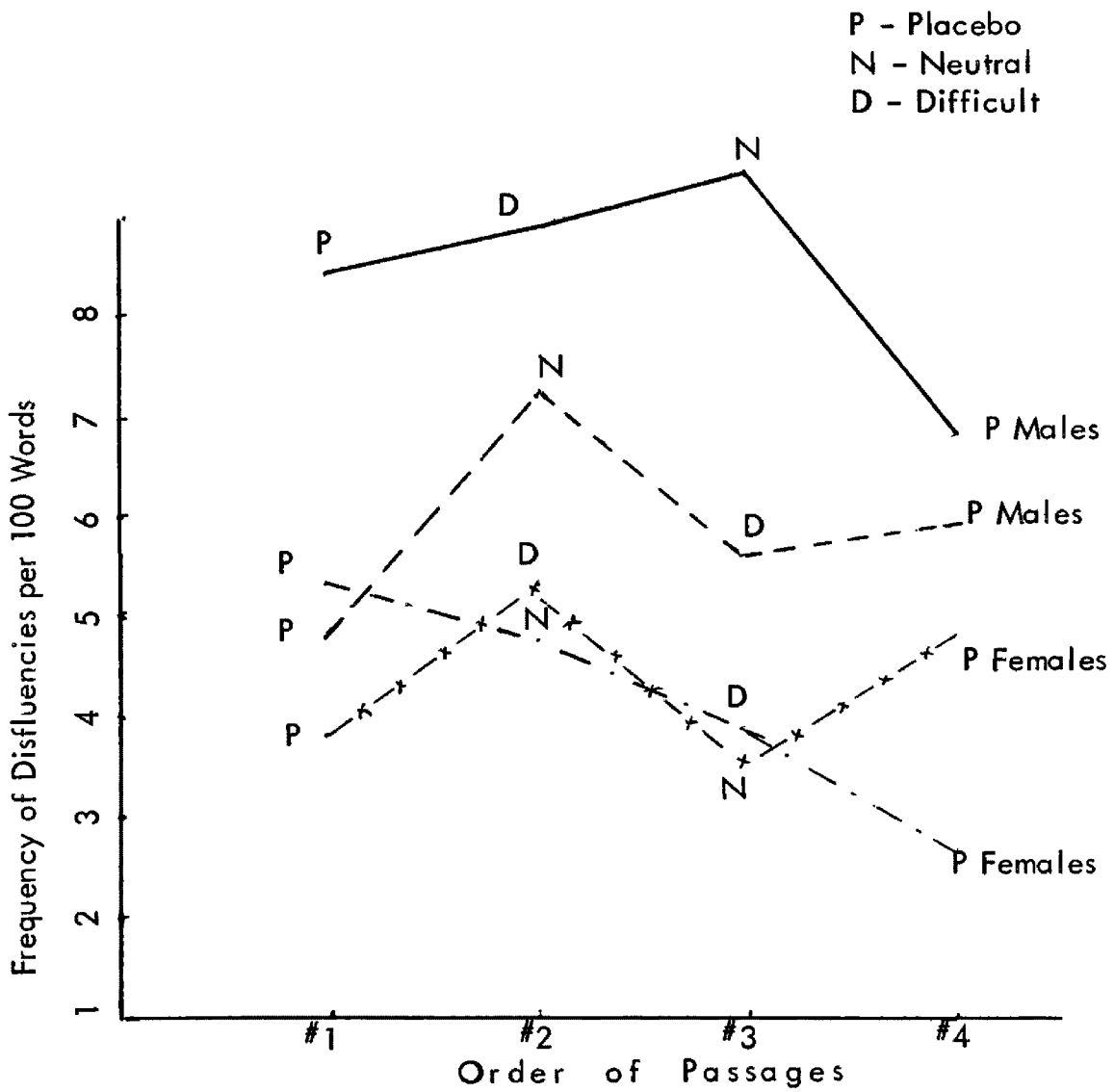

Figure 2

Mean Number of Disfluencies for Order of Passages 1 Through 4
For Males and Females by Subgroups With
One Deviant Male Omitted

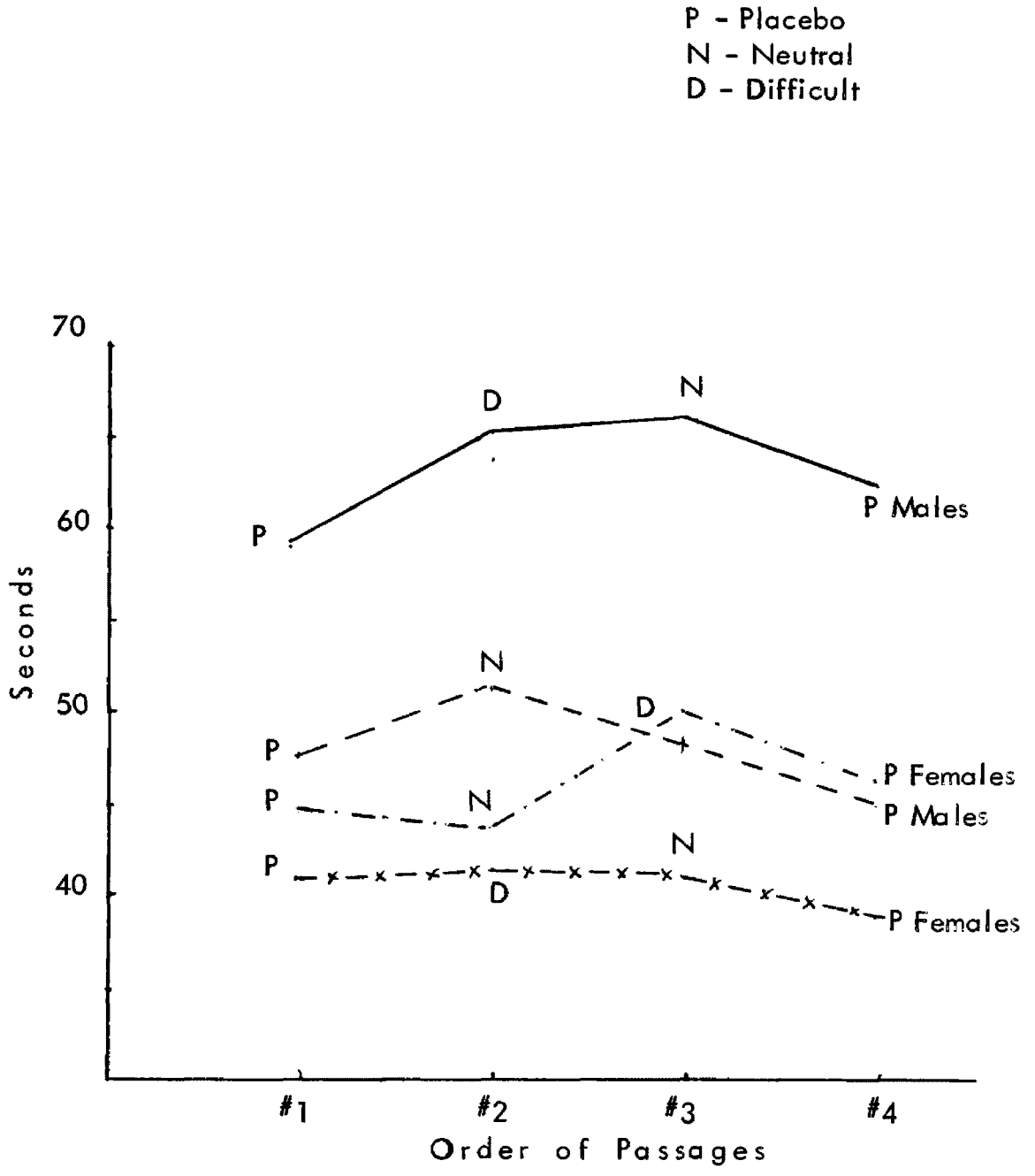

Figure 3

Mean Number of Seconds Required to Read Each Passage 1 Through 4
For Males and Females by Subgroups With
One Deviant Male Omitted

CHAPTER IV

DISCUSSION

The purpose of this study was twofold in nature. It attempted to determine the effect of the suggestion of difficulty on the speech of "nonstuttering" third grade male and female pupils by measuring the frequency of disfluencies and the length of time required to complete an oral reading task. It was hypothesized that instructions suggesting difficulty would increase the frequency of disfluencies and increase the amount of time required to read a passage compared to the frequency of disfluency and reading time of a passage following instruction not suggesting difficulty.

The obtained results did not support these hypotheses. There were significant differences between males and females with regard to disfluencies. Females were significantly less disfluent than males throughout all oral readings. While differences in rate between males and females were not significant, the females in this study did not take as long to read the passages as the males. Table 3 in Chapter III shows that males took almost twice as long as females to complete the reading tasks. The graphing of the means for males and females, excluding the one male subject who differed greatly from the group of males, did not show such wide differences, but females were still the faster readers. While this sample was quite small, this data and other research on male-female language skills differences suggest that females are perhaps more efficient in their oral reading, that is, speaking

slightly faster and with fewer disfluencies. It also supported the findings of Glass (1959) and did not support the findings of Kool (1971).

Past research has indicated that there are differences in the speech and language abilities of males and females. These differences are consistently in favor of the females. The Fry Readability Graph was used to equate the level of difficulty of each passage to a third grade level. This formula is based on a ratio of the number of syllables to the number of sentences per one-hundred words. Since there were no significant differences in the number of disfluencies for the experimental passages, and sex differences were consistent with previous research, the experimenter felt that this particular formula was adequate for selecting the passages. It did not appear that the difficulty of the passages was a variable which led to the experimenter's being unable to reject his null hypothesis.

In considering why the instructions which suggested difficulty were not successful in creating more disfluencies, it would seem that there may have been several variables in the situation which require some discussion.

Johnson (1959) has hypothesized as a condition for "stuttering" that there be a minimum of two persons, a speaker and a listener, and that breakdowns in the fluent patterns were the result of various interactions between these two persons. In this study, the listener was not present in the same room with the speaker. By removing the listener from the situation, the speaker may not have felt the pressure of evaluation, and, consequently, may not have felt so anxious about his speech. Previously cited research by Barnard (1965) stated that there seemed to be greater

effects of anxiety in "test" or interview situations. Sheehan (1967) found that there were more disfluencies in the presence of an "authority" listener.

Another factor within the situation may have been the fact that the experimenter was unknown to the subjects. Since none of the subjects had ever seen the experimenter before, there may have been a lack of credibility to his instructions. The presence of the person giving the instructions by live voice may have added some credibility to the instructions.

Considering the above situational variables, it would seem reasonable that further research involve the use of a significant other as both the presenter of the instructions and the listener in the reading situation, that is, teacher, parent, or older sibling. A study involving these variables may prove to be of a more functional value than presentation of difficult instructions in a seemingly neutral situation.

A third and important situational factor was the initial level of anxiety aroused by the situation. It may be that fluency only breaks down significantly when a certain level or threshold of anxiety is met. The experimenter felt that the initial level of anxiety was not very high, and, consequently, the instructions suggesting difficulty were not sufficient to cause fluency breakdown by themselves. The experimenter felt that a low level of anxiety would be favorable to isolating the effect of the instructions. By compounding the situation for the speaker, such as: adding listeners, reading in a classroom, taking instructions from the child's teacher, or by making the introductory remarks less friendly, the experimenter may have been able to raise the initial anxiety to a point nearer the threshold for

fluency breakdown. As it was, there was probably a very low level of anxiety, which produced a very relaxed subject.

In general, it seemed that the situational factors mentioned above may have been related to the level of anxiety felt by the speaker employed in this study. Absence of a listener, being told the task was not a test, absence of an authority figure, lack of credibility in the instructions all may have produced small amounts of anxiety in the subjects. Perhaps if one or more of these variables were introduced into the experimental situation, the difficult instructions may have had more effect on the fluency and rate of the subjects.

Another important variable, not directly related to the situational variables, was the population employed in this study.

It may be that receptiveness to suggestion of difficulty may be a function of age. Third grade subjects were chosen since it was felt that oral reading in class may be a precipitating agent in the labeling of disfluency behaviors as deviant by a listener. Perhaps there is a critical age at which the child is more susceptible to the suggestion of difficulty and should be the subject of a longitudinal study.

The subjects in this study were not selected because they were considered to be disfluent, but because they were considered to be fluent speakers. Those speakers who have been classified as "stutterers" because of "excessive" disfluency may have perceived the situation differently, and reacted differently to the entire situation.

An additional variable to consider is the fact that the subjects were not screened for reading ability beforehand. In looking at the data, it was apparent that the one male subject who took longer in completing the reading task and who demonstrated more disfluencies than the other male subjects, was a poor reader. If reading abilities are not controlled for in future research, the error within subjects may be quite large and reduce the amount of precision.

Variables of age, fluency, and reading ability should be further investigated.

The comment was made earlier in this discussion that perhaps females are more efficient speakers (based on oral reading in this study) than males. In looking at the data, this seems reasonable since this sample of males took longer to read the passages and were significantly more disfluent than the sample of females. While the experimenter did not record disfluencies by type, some possible trends in the disfluency data suggest that males tend to repeat the revise which increases the amount of time taken to read a passage. Future research could probe the variables of sex differences, types of disfluencies, and rate to see if males produce more repetition with revisions which increases the amount of time required to read the passage.

It can be seen from the above discussion that situational and population variables were probably instrumental in the experimenter being unable to reject his null hypotheses. It was also apparent that there were differences between males and females with regard to disfluencies and rate which were consistent with previous

research in these areas, suggesting the adequacy of the other procedure used in testing the hypotheses.

Recommendations

Because of the overall neutrality of the test situation, the practical applications of this study may have been severely limited. In this study, the conditions surrounding the independent variable were held quite neutral. The classroom or therapy room should not be mistaken as the same controlled experimental environment where all variables may be assessed. By compounding the child's speaking situation with evaluations, superiors, peer reactions, etc., the situation is changed dramatically and the child's anxiety levels may approach the critical limits of fluency breakdown.

Therefore, it is recommended that continued care be exercised in labeling situations as difficult for a child until it can be stated that there is no effect caused by suggestion of difficulty on the speech performance of children.

It is recommended that future research in the area of disfluencies be pursued, isolating more variables than in this study.

For the most part, results of this study were inconclusive with the exception of sex differences. Few questions have been answered and more have been raised for future research. This study has suggested that, by itself, the suggestion of difficulty has no effect on the fluency or rate of elementary school pupils.

CHAPTER V

SUMMARY AND CONCLUSIONS

This study was concerned with the effect of suggestion of difficulty on the fluency and rate of an elementary school age child's speech during an oral reading.

In this study, twenty-four third grade pupils (twelve males and twelve females) read aloud four one-hundred-word passages. The subjects each read four passages in the experimental condition: one placebo, two experimentals, and a second placebo passage. The placebo passages were the same for all subjects. The experimental instructions "neutral" and "difficult" were counterbalanced for order and the two experimental passages were counterbalanced for order within the experimental condition. All oral readings were tape recorded for analysis. Disfluencies (interjections of sounds, syllables, words or phrases; part-word, word and phrase repetitions; revisions; incomplete phrases; broken words; and prolonged sounds) were tallied for each passage resulting in the frequency of disfluency per one hundred words. Each passage was timed for the number of seconds required to read the passage.

A three-variable (instructions, order, sex) factorial analysis of variance for disfluencies revealed no significant interactive effects. The difference between the mean number of disfluencies for the experimental passages, neutral (6.12) and difficult (5.58) was not significant. Difference between the mean of the males

(8.50) and the mean of the females (3.20) was significant at the .05 level (df = 20). A like analysis was employed to evaluate differences in rate. Difference between the mean length of time required to read the neutral (65.58) and the experimental (61.83) passages was nonsignificant. Difference between the sexes was not significant with regard to rate. The means of the groups were plotted to visually look for trends in the data. No trends were apparent.

Possible reasons for the inability to reject the null hypothesis with regard to instructions were discussed and implications for future research were suggested.

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APPENDIX A

A System of Classification and Disfluencies

(Johnson, Darley, and Spriestersbach, 1953)

1. Interjections of Sounds, Syllables, Words, or Phrases: This category includes extraneous sounds such as, "uh," "er," and "hmmm" and extraneous words such as "well" which are distinct from sounds and words associated with the fluent text or with phenomena included in other categories. An instance of interjection may include one or more units of repetition of the interjected material; for example, "uh" and "uh uh uh" are each counted as one instance of interjection. (The number of times the interjection is repeated--that is, the number of units of repetition--within each instance may also be noted; "uh uh" is an example of an interjection repeated once and "uh uh uh" is an example of an interjection repeated twice.)

2. Part-Word Repetitions: Repetitions of parts of words--that is, syllables and sounds--are placed in this category. (Within each instance of repetition, the number of times the sound or syllable is repeated may be counted; "buh-boy" involves one unit of repetition and "guh-guh-girl" involves two units.) No attempt is made to draw a distinction between sound and syllable repetitions. "Ruh-ruh-run," "cuh-come," "ba-ba-baby," and "abou-about" are examples of part-word repetitions.

3. Word Repetitions: Repetitions of whole words, including words of one syllable, are included in this category. (The number of repetition units within each instance

may be counted. "I-I-I," "was-was," and "going-going" are samples of instances of word repetition; the first involves two units of repetition and each of the other two involves one unit.) A word repeated for emphasis as in: "very, very clean" is not counted as a disfluency. A part-word repetition, or an interjection, does not nullify a word repetition; for example, "going uh going" or "guh-going going" is classified as a word repetition. In any such case, the interjected or associated disfluency is also tabulated in the appropriate category.

4. Phrase Repetitions: Repetitions of two or more words are included in this category. "I was I was going" is an example of this type of disfluency. (Again, if desired, the number of units of repetition within each instance of repetition may be separately noted.)

5. Revisions: Instances in which the content of a phrase is modified, or in which there is grammatical modification, are classified as revisions. Change in the pronunciation of a word is also counted as a revision. "I was-I am going" is an example in this category.

6. Incomplete Phrases: An incomplete phrase is one in which the thought or content is not completed and which is not an instance of phrase repetition or of a revision. "She was-and after she got there he came" contains an example of an incomplete phrase.

7. Broken Words: This category is typified by words which are not classifiable in any other category, or in which the normal rhythm of the word is broken in a way that definitely interferes with the smooth flow of speech. "I was g- (pause) -oing home" is an example of a broken word.

8. Prolonged Sounds: Sounds or parts of words that are judged to be unduly prolonged are included in this category. It is usually the initial sound of a word that is prolonged.

APPENDIX B

Experimental Instructions

Placebo 1 Instructions: "Please pick up card number one. Now, when you hear the bell, turn the card over and begin reading."

Neutral Instructions: "Please pick up card number _____ (two or three). Now when you hear the bell, turn the card over and begin reading."

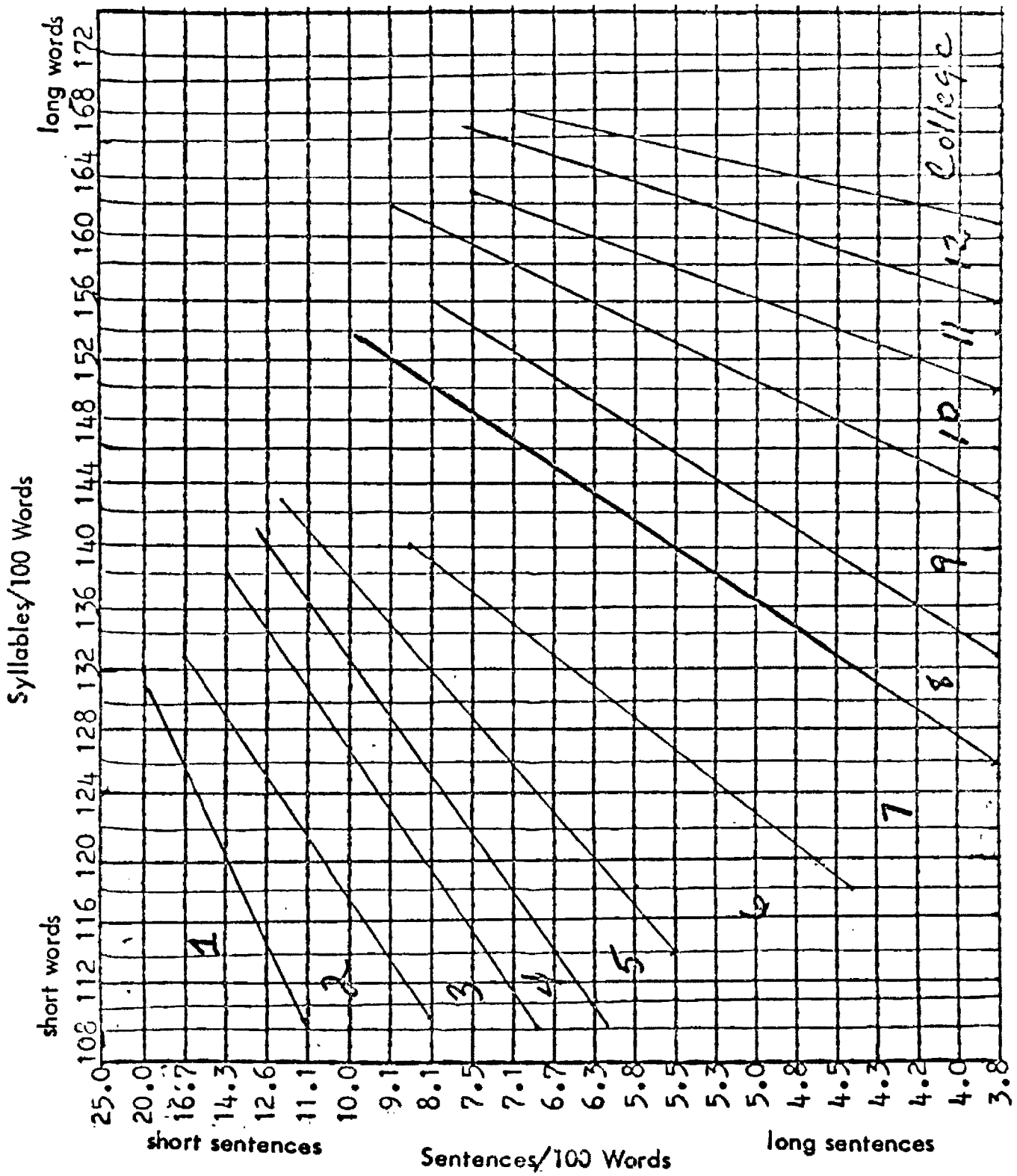
Difficult Instructions: "This passage is a very hard one. I picked this because it is more difficult than the others. I would like to see how you do on it. It has more hard words and is much more difficult than the other one (ones) you have just read. Even though this is a hard one to read, and you will probably have difficulty with it, I want you to just try and do your best."

"Please pick up card number _____ (two or three). Now when you hear the bell, turn the card over and begin reading."

Placebo 2 Instructions: "Please pick up card number four. Now, when you hear the bell, turn the card over and begin reading."

APPENDIX C

The Fry Readability Graph
(Fry, 1965)



APPENDIX D

FISH

Trial Passage

When a fish needs to stop suddenly, it spreads out its fins. The fins push against the water and slow the fish down, just as the cardboards slowed you down.

FROGS

Placebo 1

Now you see it, now you don't. You can easily see a frog when it jumps or swims, but not when it sits quietly on a green lily pad. A green frog can sit and catch insects with its long tongue. A bird flying overhead, looking for a frog lunch, cannot easily see it. But look at the underside of the frog. It's almost all white. White underneath and green on top are good frog colors for living in the water. Some other water animals, too, are dark on above and light below. This really helps them.

APPENDIX D - continued

SNAKES

Experimental

The desert snake won't need supper that night because it can get along for many days without eating. A desert is a good place for desert snakes to be born. Some kinds of desert snakes are born alive ard some are hatched from eggs. The mother snake lays the eggs in the warm sand. The sand keeps the eggs warm. When the eggs are ready they hatch out. A snake's skin is the right skin for a desert animal. It is hard like your fingernail. When the snake crawls along, the sand and rocks do not hurt its skin.

SPORES

Experimental

Spores are something like seeds. When the spores are ripe they fall out. If a wind catches them, they are carried away until they fall somewhere. These spores are too tiny to see, but the air is full of them. If spores from bread mold fall on bread or something like bread, they begin to grow. Then the food has been spoiled by the mold. Mold plants are not the only plants that can cause food to spoil. You can see mold easily, but the other plants that spoil food are too tiny to see even with a magnifying glass.

WHALES

Placebo 2

The biggest animal on land or sea is the whale. Whales have to come to the top to breathe. They have to do this because they are not fish, but mammals. A fish can get air from the water. But a mammal must come to the top to breathe. A mammal cannot get air in the water. Perhaps you found this out when you tried swim underwater. You could stay under a little while, but then you had to come up to fill your lungs with fresh air. Your lungs can't hold enough air for you.

APPENDIX E

Table 1-A

Total Number of Disfluencies Per One Hundred Words for Four Oral Reading Passages for Males and Females for Twenty-Four Subjects

Subject No.	Placebo 1	Neutral	Difficult	Placebo 2
Males				
1	9	15	7	12
2	8	3	9	3
3	3	4	12	7
4	11	12	12	12
5	0	5	2	2
6	2	12	1	2
7	3	4	1	3
8	6	5	5	6
9	5	2	1	4
10	14	18	18	11
11	10	32	23	6
12	4	9	2	14
Females				
1	8	2	0	1
2	8	6	3	10
3	5	2	3	5
4	2	1	3	1
5	2	4	2	4
6	1	0	2	4
7	6	8	6	5
8	5	3	8	8
9	1	1	3	0
10	3	3	4	2
11	4	5	2	2
12	0	1	5	3

APPENDIX F

Table 2-A

Total Number of Seconds Required to Read Each of Four One-Hundred-Word Passages for Males and Females for Twenty-four Subjects

Subject No.	Placebo 1	Neutral	Difficult	Placebo 2
Males				
1	64	83	60	54
2	54	59	52	42
3	53	56	64	54
4	76	120	90	109
5	36	43	38	34
6	40	46	42	44
7	45	50	41	40
8	54	57	58	50
9	39	38	38	35
10	81	117	74	74
11	210	313	356	178
12	46	56	45	58
Females				
1	45	37	42	38
2	44	48	43	48
3	40	46	42	50
4	39	36	34	30
5	35	38	39	36
6	32	33	32	31
7	78	91	73	66
8	50	53	52	45
9	34	31	35	30
10	45	46	58	46
11	43	43	37	42
12	34	34	39	31