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**THE EFFECTS OF MANIFEST
ANXIETY ON STUTTERING ADAPTATION**

**A Thesis
Presented to
the Faculty of Western
Michigan University**

**In Partial Fulfillment
of the Requirements for the Degree
Master of Science**

by

Joseph Agnello

July, 1958

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THE EFFECTS OF MANIFEST ANXIETY ON STUTTERING ADAPTATION

I. INTRODUCTION

When stuttering behavior is viewed as a problem in learning, the phenomenon of adaptation frequently receives attention. A standard adaptation experiment consists of having the person who stutters re-read the same passage, or a passage of equal difficulty, a specified number of times. Under these conditions a relative reduction¹ in stuttering frequency usually occurs. Experimentalists and clinicians alike have long been puzzled as to why this decrement takes place, since stuttering is generally considered by many writers^{2,3} as a self-reinforcing disorder;

¹Johnson, Wendell and Leutenegger, Ralph R. (ed.), Stuttering in Children and Adults. Minneapolis: University of Minnesota Press, 1955. P. 15.

²Van Riper, Charles, Speech Correction: Principles and Methods. New York: Prentice-Hall, Inc., 1947. P. 287.

³Wischner, George J., "An Experimental Approach to Expectancy and Anxiety in Stuttering Behavior." Journal of Speech and Hearing Disorders, XVII (June 1952) 139-54.

that is, stuttering produces more stuttering.

The present experiment was designed to investigate the effects, if any, of response-defined anxiety or test-defined anxiety in stuttering adaptation.

II. REVIEW OF THE LITERATURE

Adaptation. When adaptation takes place, a decrease in stuttering frequency is observed, usually in the range of 48 to 50 per cent¹ of the initial score. Prior studies^{2,3,4} of adaptation have shown a decrease in the frequency of stuttering between the first and fifth reading of the same material. Dixon's⁵ experiment indicated a sharp reduction between the first and second reading which was significant at the one per cent level of confidence. Leutenegger⁶

¹Johnson, Wendell, op. cit., pp. 15-6.

²Johnson, Wendell and Inness, M., "Studies in the Psychology of Stuttering, XIII. A Statistical Analysis of the Adaptation and Consistency Effects in Relation to Stuttering." Journal of Speech Disorders, IV (March 1939), 85.

³Johnson, Wendell and Knott, J. R., "Studies in the Psychology of Stuttering, I. The Distribution of Moments of Stuttering in Successive Readings of the Same Material." Journal of Speech Disorders, II (September 1937), 17-9.

⁴Maddox, J. "Studies in the Psychology of Stuttering, VIII. The Role of Visual Cues in the Precipitation of Moments of Stuttering." Journal of Speech Disorders, III (September 1938), 93.

⁵Dixon, C. C., "Stuttering Adaptation in Relation to Assumed Level of Anxiety." In Stuttering in Children and Adults, op. cit., pp. 235-6.

⁶Leutenegger, Ralph R., "Adaptation and Recovery in the Oral Reading of Stutterers." Journal of Speech and Hearing Disorders, XXII (June 1957), 277.

examined the raw data of the Harris¹, Shulman², Jamison³, and Yenson⁴ studies with special reference to the reduction of stuttering between the first and second readings. According to Leutenegger⁵, all of the studies he examined showed a decrement significant at the one per cent level of confidence. Van Riper and Hull⁶ did the first quantitative study of stuttering. Their results indicated that the more severe stutterers showed high scores in stuttering frequency on the initial reading with high end plateaus, and a gradual degree of adaptation. The mild stutterers, on the other

¹Harris, W. W., "Studies in the Psychology of Stuttering: XVII. A Study of Transfer of the Adaptation Effect in Stuttering." Journal of Speech Disorders, VII (March 1942), 209-21.

²Shulman, E., "Certain Factors Effecting the Variability of Stuttering." In Stuttering in Children and Adults, op. cit., p. 207.

³Jamison, Dorothy J., "Spontaneous Recovery of the Stuttering Response as a Function of the Time Following Adaptation." In Stuttering in Children and Adults, op. cit., pp. 245-7.

⁴Yenson, E. L., "Stuttering Adaptation and the Role of Cues." In Stuttering in Children and Adults, op. cit., pp. 259-61.

⁵op. cit., p. 277.

⁶Van Riper, C. and Hull, C. J., "The Quantitative Measurement of the Effect of Certain Situations on Stuttering." In Stuttering in Children and Adults, op. cit., p. 205.

hand, showed a low initial score, low end plateaus, and rapid adaptation.

Experimenters have attempted to relate stuttering behavior to reinforcement theory. Reinforcement theory would essentially state that extinction (weakening of the stuttering response) will occur if the experimental arrangement does not reinforce the stuttering response. According to Hilgard¹:

"Extinction is not, in fact, a destruction of the conditioned response, for when the animal is returned to the laboratory after a rest following extinction, the conditioned response is usually found to have reappeared. This return of response strength after extinction, without intervening reinforcement, is called spontaneous recovery. The simple history of a conditioned response is then its strengthening through reinforcement, its recovery with rest."

Frick² designed a study to test the hypothesis that spontaneous recovery of stuttering behavior is an inverse function of the degree of adaptation. Frick's subjects were tested during two experimental conditions spaced forty-eight hours apart. Under the first condition, each subject read a 200 word passage three times in succession, and,

¹Hilgard, Ernest R., Theories of Learning. New York: Appleton-Century-Crofts, Inc., 1948. Pp. 55-6.

²Frick, James V., "Spontaneous Recovery of the Stuttering Response as a Function of the Degree of Adaptation." In Stuttering in Children and Adults, op. cit., p. 262.

following a one-hour interval, the subjects read the same passage five additional times. In the second experimental condition, each subject read a different 200 word passage ten consecutive times, and, following a one-hour interval, the subjects read the passage five more times. During the one-hour interval the subjects were instructed not to do any talking. An analysis of variance revealed that there was not a significant amount of spontaneous recovery after the two degrees of adaptation. The two conditions produced significantly different degrees of adaptation. It was found that the one-hour interval did not interfere with adaptation.

Jones¹ found that adaptation to stuttering persists even after twenty-four hour intervals. However, when his subjects returned to the experimental room at the end of ten days, stuttering reappeared with nearly initial strength.

Leutenegger² attempted to relate stuttering with reinforcement theory. His design consisted essentially of three experimental conditions, each varied according to the length of time interval between successive trials. Each trial consisted of two consecutive readings of the same passage. The

¹Jones, Leroi E., "Explorations of Experimental Extinction and Spontaneous Recovery in Stuttering." In Stuttering in Children and Adults, op. cit., pp. 226-31.

²Leutenegger, R., "Adaptation and Recovery in the Oral Reading of Stutterers." Journal of Speech and Hearing Disorders, XXII (June 1957) 286.

time intervals between successive trials were 20 minutes, 60 minutes, and approximately 24 hours. Each condition consisted of five trials of two readings each, with the trials separated by the appropriate time interval. Analysis of variance revealed significantly different amounts of adaptation and recovery within any given condition. There was evidence to support the original hypothesis that spontaneous recovery would occur.

Anxiety and Adaptation. Dixon¹ experimented with adaptation in relation to assumed levels of anxiety. The purpose of her study was to examine the amount and rate of stuttering adaptation as a function of the level of assumed anxiety. Subjects read a 180-word reading passage five times in three different situations, with one day intervals between successive situations. The situations consisted of reading to the examiner, reading to an audience of five persons and reading over a telephone to a listener. The mean frequency of stuttered words for the audience situations was consistently the highest, the telephone situation the second highest and the examiner situation was the lowest. As a group, the subjects showed adaptation in all situations with the greatest adaptation taking place in the audience situation and the least adaptation with the examiner.

¹Dixon, op. cit., pp. 232-6.

Shulman¹ also found that adaptation is more rapid under simple audience conditions than under more complex audience conditions. Greater adaptation was observed when time intervals between readings were of shorter duration.

An investigation conducted by Bearss² on the effect of penalty on the expectancy and frequency of stuttering showed that stuttering varies in frequency with penalty and word fears. Bearss induced anxiety by giving five randomly spaced electric-shocks during ten adaptation readings of the same passage. Bearss divided her sample of stutterers into two groups. One group of ten subjects received random shocks during the last five readings while another group received their shocks during the first five readings. At the end of fourteen days, Bearss switched her two groups and reversed the order of shock. An analysis of variance revealed that adaptation appeared under conditions of both shock and no shock. Both the stutterers' mean expectancy and actual mean frequency of blocks were different under conditions of shock as compared to no shock. Van Riper³ reported the first study with the use

¹Shulman, op. cit., pp. 207-17.

²Bearss, Marjorie L., "An Investigation of the Effect of Penalty on the Expectancy and Frequency of Stuttering." Unpublished master's thesis, Purdue University, Lafayette, Indiana, June, 1951. P. 28.

³Van Riper, C., "Effect of Penalty Upon Frequency of Stuttering Spasms." Journal of Genetic Psychology, L (March 1937), 193-5.

of shock threat for the occurrence of each block that the subjects had during a reading. Threat was introduced after the subject adapted with three readings. This resulted in an average increase of 5.2 stuttered words over the preceding reading. At the end of the fifth reading the subject was told again that he would receive shock for each stuttered word in the following reading. This threat again caused an increase of 1.5 stuttered words over the preceding reading. Goss¹ reported increased in anxiety-expectancy by selecting stimulus words to induce high frequency of stuttering. At 4, 8, 12, 16 and 20 second intervals, words were flashed on a screen and subjects read each word aloud. It was found that stuttering increased in severity as length of time intervals between words increased. Wischner² analyzed and summarized the raw data from the studies done at Iowa. He reports that the stutterer can anticipate the words he will stutter on with a great deal of accuracy. Stutterers tend to be accurate in this anticipation, even after one to seven days have elapsed from the time of anticipation. There is a stronger tendency to stutter on words that have previously been stuttered on.

¹Goss, Albert E., "Stuttering Behavior and Anxiety As a Function of Experimental Training." Journal of Speech and Hearing Disorders, XXI (September 1956), 343-6.

²Wischer, George J., "An Experimental Approach to Expectancy and Anxiety in Stuttering Behavior." Journal of Speech and Hearing Disorders, XVII (June 1952), 139-54.

Van Riper and Milisen¹ have indicated that the stutterer can judge on a qualitative scale the duration of blocks.

To summarize, the studies have shown that the variables that effect adaptation are: time intervals between readings, type of material read, and the nature of anxiety inducer employed (shock, threat of shock, audience) during the experimental situations. Wischner² however has indicated that some individuals who stutter do not show the characteristic adaptation pattern.

The Measurement of Anxiety. In the present experiment, anxiety is defined operationally in terms of the differential responses on the Taylor Scale of Manifest Anxiety (MAS). The purpose of this scale is intimately related to a theory of behavior on which the study is based. Hull³, in 1943, set forth the first principles of this system of behavior. Of critical importance in this system was a motivational construct designated as Generalized Drive (D). In recent years, Taylor⁴

¹Van Riper, C., and Milisen, R. L., "A Study of the Predicted Duration of the Stutterer's Blocks as Related to Their Actual Duration," Journal of Speech Disorders, IV (March 1939) 341.

²Wischner, op. cit., p. 139.

³Hull, Clark L., Principles of Behavior. New York: Appleton-Century-Crofts, Inc., 1943. Pp. 251-8.

⁴Taylor, Janet A., "A Personality Scale of Manifest Anxiety," Journal of Abnormal and Social Psychology, XLVIII (April 1953), 285.

and other investigators¹ have attempted to devise a test or scale of emotionality or anxiety which would serve as a defining operation for the Drive concept in human experiments. The simple assumption was made that subjects obtaining high scores (80th percentile or above) on the MAS have high Drive levels, while subjects obtaining low scores (20th percentile or less) on the MAS have low Drive levels. In the development of the MAS, 200 items from the Minnesota Multiphasic Personality Inventory were submitted to five clinicians, along with Cameron's² definition of chronic anxiety as a "reaction as characterized by the persistent, exaggerated skeletal and visceral tensions of preliminary, unconsummated emotional excitement." According to this definition of chronic anxiety, the clinicians were asked then to designate items indicative of anxiety. Fifty of the items that were chosen for the original MAS had an agreement of 80% or better by the clinicians. After modification, the test was given to 1,971 college students. The scores ranged from low anxiety of 1.0 to a high of 36.0. The median score was 14.0. A retest, conducted

¹Farber, I. E., "Anxiety as a Drive State." In Nebraska Symposium on Motivation. Lincoln, Nebraska: Nebraska University Press, 1954. Pp. 4-6.

²Cameron, Norman and Margaret, Ann, Behavior Pathology. Boston: Houghton Mifflin Co., 1951. P. 305.

three weeks later, for reliability yielded a Pearson product-moment coefficient of .89. The present experiment is primarily restricted to the operational definition of anxiety in terms of the scores obtained.

III. PURPOSE OF THE STUDY

This experiment is specifically centered around a modification of Hull's¹ learning theory as applied to stuttering behavior. The Hullian theory with respect to Drive is formulated as follows:

$$s_r^E = s_1 + s_d \frac{H_r}{\frac{D + D}{D + M_D}}$$

"With the amount of reaction potentiality (s_r^E) in any given primary motivational situation is the product of (1) the effective habit strength (s_1) $s_d H_r$ under the existing conditions of primary drive multiplied by (2) the quotient obtained from dividing the sum of the dominant value of the primary drive (D) plus the aggregate strength of all the non-dominant primary drives (D) active at the time, by the sum of the same non-dominant drives plus the physiological drive maximum (M_D)."

When Hull's theory is abbreviated with special reference to drive it appears thus:

$$D_T = \frac{D_R + D_1}{M_D + D_1} \quad \text{with:}$$

D_T equalling the total drive level for a given situation;
 D_R representing the relevant drive; D_1 representing the

¹Hull, op. cit., pp. 253-4.

irrelevant drive and M_D representing the maximum drive level. In transposing Hull's theory to correspond to our current definition of anxiety and stuttering behavior we get:

$$A_T = \frac{A_S + A_p}{M_A + A_p} \quad \text{with:}$$

A_T representing the total anxiety manifested in any given speaking situation; A_S representing any reactive situational anxiety (assuming A_S is random variable); A_p representing any chronic personal anxiety (Taylor Score); and M_A representing the maximum anxiety level.

If stuttering adaptation could be viewed as a form of extinction, then the prediction from the Hullian Theory would be that the individuals who enter the experimental situation with high Drive (anxiety) would tend to resist adaptation. That is, their high anxiety would reinforce the stuttering behavior.

IV. THE PROBLEM

The purpose of this experiment was to test the hypothesis that subjects with stuttering behavior who rank high in anxiety as measured by the Taylor Scale of Manifest Anxiety would tend to show less adaptation than subjects with stuttering behavior who rank low in manifest anxiety.

Accordingly, it was necessary to test a large number of stutterers in order to select the two groups of subjects who could meet the criterion of high anxiety and low anxiety as measured on the Taylor Scale. After these subjects were selected, they were then required to participate in the standard adaptation testing procedures. Their stuttering frequency scores for each reading were then computed and converted into percentage ratios. Through an appropriate analysis of variance, the hypothesis was then subjected to a statistical test of its validity.

V. METHOD

Subjects. Forty-nine subjects who manifested stuttering behavior were given the Taylor MAS. The High Anxious group consisted of ten white subjects, nine males and one female, whose scores on the scale (21-37) placed them in the upper 20 per cent of scores made by 450 Western Michigan University students¹, while the Low Anxious group was composed of ten white subjects, nine males and one female, whose scores (3-11) fell in the lower 33 per cent. These twenty subjects satisfied the additional criterion of exhibiting, at a minimum, ten blocks during the first reading of the material. This criterion was employed since it was desired to study adaptation and it was therefore necessary that enough instances of stuttering behavior occur during the first trial. Justification for this procedure is found in the study by Leutenegger² who was confronted by the same problem. Other subjects were eliminated from the experiment because they scored above 8 on the Lie (L) Scale which was administered with the MAS. Justification of this procedure

¹Reynolds, William F., and Hurlbut, Barbara, "The Effects of Manifest Anxiety on a Simple Motor Task." Unpublished manuscript, Western Michigan University, Kalamazoo, Michigan, June, 1958.

²Op. cit., p. 276.

is found in another learning study¹ employing the MAS. High L Scores would question the validity of responses made on the questionnaire. The experimental subjects ranged in age from 19 to 35 years. All subjects were undergoing therapy at the time of the experiment. Subjects were chosen from the Speech Clinics at Western Michigan University, Notre Dame University, Michigan State University, and Central Michigan College.

Apparatus and Procedure. The apparatus employed in this experiment was a Revere tape recorder, with a recording speed of 7-1/2 inches per second. A high-fidelity pick-up Electro-Voice, Model 664, unit was employed in this experiment. Five mimeographed copies of the reading passage were used to tally speech blocks for each subject. (This passage is given in Appendix A.) A sound-proof room was used with the subject seated ten feet from the tape recorder so as to reduce any distraction from the operation of the tape recorder. The experimenter operated the tape recorder, tallied the speech blocks, and was in a position to view the profile of the subject. An observer sat directly in front of the subject. An observer was employed in this experiment because it was discovered by the experimenter that some subjects did not have enough stuttering when only one person was present in the experimental

¹Pavlik, William B., Motivational Factors in Individual and Group Productivity. The Ohio State University Research Foundation, Columbus, Ohio, 1956. P. 23.

room. The observer sat directly in front of the subject. All observers were strangers and were not introduced until after the experimental situation. Observers were instructed not to do any talking or excessive moving during the experimental situation. The time interval between each reading was thirty seconds. The following instructions were given to each subject:

Face down in front of you is a typed reading passage. When I signal you, pick up the passage and read it aloud. Speak as you would normally. Don't do any fake stuttering. As soon as you have completed the passage, place it face down. When I again give you the signal, pick up the passage and read it again. There will be a number of such readings. Do you have any questions?

The subjects were asked general questions at the end of the experimental situation to verify that they understood the instructions.

Definition of stuttering. Like the other studies of adaptation previously cited, this experiment used as its units the non-fluencies that occur in the speech of stutterers. A word was considered a block if there was a repetition of a sound, syllable or word, or a fixation of a phonetic posture, or when abnormal accessory vocalizations were used to postpone or initiate speech attempts.

Reliability of measurement. The experimenter's reliability in scoring speech blocks was determined prior to this experiment by the procedure used in a previously cited study by

Leutenegger¹. A trained clinician scored two ten-minute readings (spaced five days apart) of the recorded speech of a person who stuttered. The experimenter also scored the same recorded passages and the reliability was found to be .91 as computed by the following formula:

$$\text{Reliability} = \frac{C}{\sqrt{xy}}$$

where C is equal to the total number of words marked as stuttered on both readings by the clinician, with x equal to the number of words marked by the experimenter on the first day, and y equal to the number of words marked by the experimenter on the fifth day.

A further reliability check was made using the experimental data itself. A Pearson correlation coefficient of +.92 was obtained for the frequency of words marked as stuttered during the experimental readings and the frequency of words marked during playback of the tape-recorded readings. The playback check was conducted approximately five weeks after the experimental situation.

¹Op. cit., p. 278.

VI. RESULTS

Analysis of Frequency of Stuttering. The mean numbers of speech blocks for High and Low Anxious stutterers during the five readings of the material are presented in Table I. It can be seen from the Table that High Anxious subjects exhibited more speech blocks, on the average, than Low Anxious subjects on all five readings. It is also apparent from the Table that much variability of scores for the subjects in the present experiment was noted.

In order to satisfy the assumption of homogeneous variance necessary for the statistical test, the number of speech blocks for each subject was subjected to a square root transformation. A simple "t" test for unrelated measures with equal n's was performed on the means of the transformed measures. With degrees of freedom equal to 18, a "t" ratio of 2.66 was obtained between the means of the High and Low Anxious stutterers. This figure was significant at better than the .05 level of confidence.

It should be noted here that when the distribution of Anxiety Scores obtained by stutterers in the present study was compared with the distribution obtained on 450 Western Michigan University students by Reynolds and Hurlbut,¹ no differences were obtained either in range of Anxiety scores or mean Anxiety Score. The mean Anxiety Score for both stutterers and

¹Op. cit., p. 2.

TABLE I.

MEAN NUMBER OF BLOCKS IN FIVE SUCCESSIVE READING TRIALS

Anxiety Group	N	Trial 1		Trial 2		Trial 3		Trial 4		Trial 5	
		Mean	S.D.	Mean	S.D.	Mean	S. D.	Mean	S.D.	Mean	S.D.
High Anxious	10	51.7	43.3	46.5	50.3	43.2	51.0	44.9	45.7	42.8	48.7
Low Anxious	10	32.2	18.8	27.4	18.0	23.0	18.1	21.1	17.6	18.7	18.7

non-stutterers was approximately 14.

Analysis of Per Cent Adaptation. Adaptation curves for High and Low Anxious stutterers are presented in Figure I. The adaptation data for the graph were determined by the following procedure. Each subject's frequency count of speech blocks during the first reading of the material was taken as 100 per cent for that particular subject. For reading trials two through five, a subject's number of blocks was divided by the number of blocks which that subject exhibited during the first reading. This expresses the degree of adaptation in terms of the per cent of the initial number of speech blocks.

An inspection of Figure I reveals that, with the exception of an inversion in the curves during the second reading, High Anxious subjects tended to adapt less rapidly than Low Anxious subjects. During the fifth reading, High Anxious subjects were functioning at 73 per cent of their initial level, while Low Anxious subjects exhibited 63 per cent as many stuttering blocks as they showed on the first reading.

An analysis of variance was performed on the adaptation scores and the results of this analysis are presented in Table II. It should be noted that adaptation data from trials two through five were considered in the analysis. It may be seen from the Table that the F-ratio for the difference in adaptation

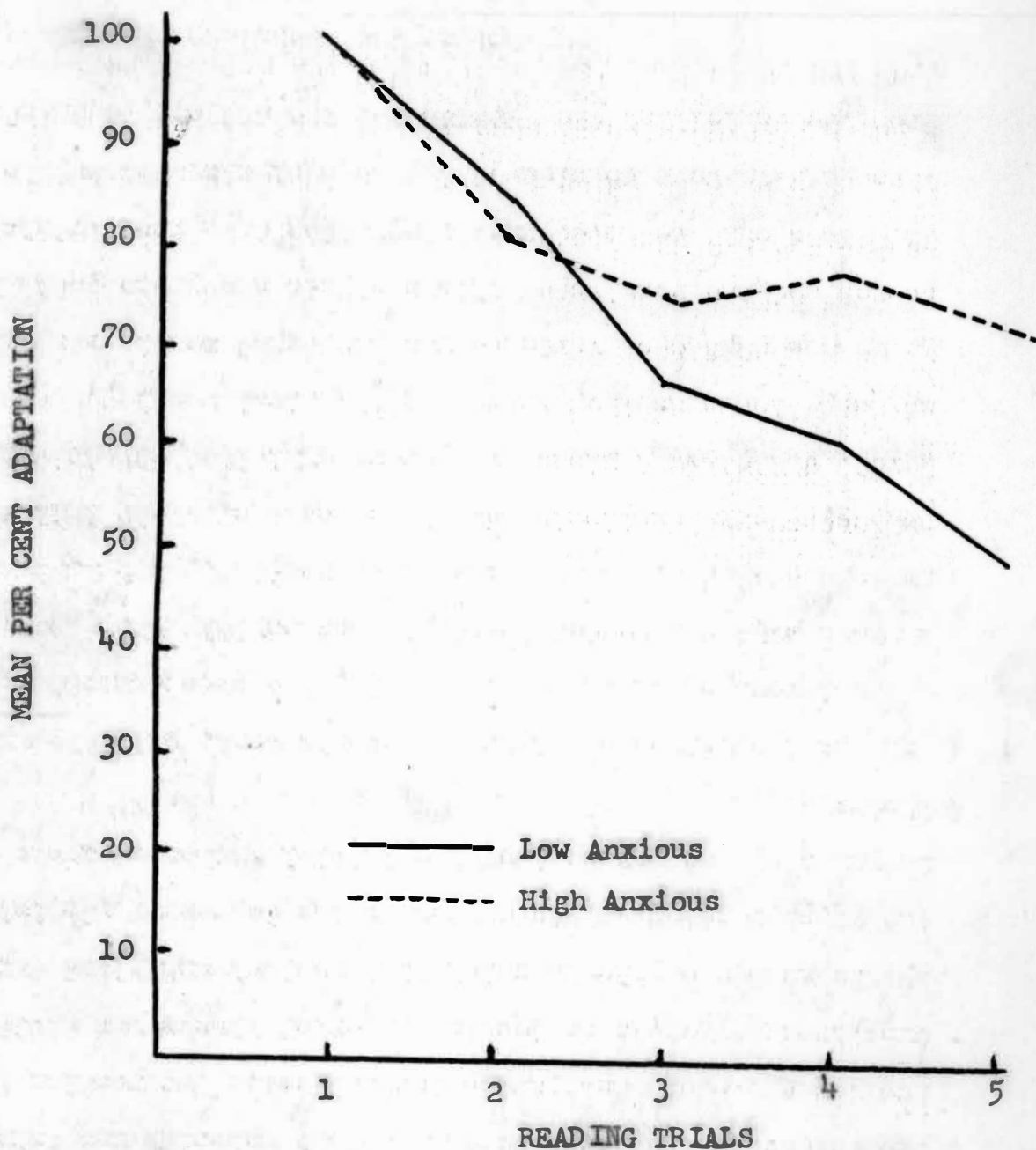


FIGURE I. MEAN ADAPTATION SCORE ON READINGS TWO THROUGH FIVE EXPRESSED AS PER CENT OF INITIAL NUMBER OF BLOCKS.

TABLE II

SUMMARY OF THE ANALYSIS OF VARIANCE CARRIED OUT
ON THE MEAN PER CENT ADAPTATION DURING READINGS
TWO THROUGH FIVE

Source	df	Sums of Squares	Mean Square	F	p
Reading Trials	3	3911	1304	1.19	.20
Anxiety	1	2092	2092	1.91x.10	>.20
Trials X Anxiety	3	1521	507	---	
Within Cells (Error)	72	79011	1097		
Total	79	86535			

between the High and Low Anxious stutterers fell between the .10 and the .20 levels of confidence. Thus, while there was a tendency for High Anxious stutterers to adapt less rapidly than Low Anxious stutterers, this difference did not reach statistical significance. There was no evidence for any interaction between adaptation scores and Reading Trials.

VI. DISCUSSION

The results of the present study show that High Anxious stutterers, as defined on the Taylor Manifest Anxiety Scale, exhibit significantly greater amounts of stuttering behavior than Low Anxious stutterers. It is worth while noting that, if it is assumed that the tendency to stutter is considered the dominant response tendency in a given speech task, the results of the present study are clearly in accord with Hull's Theory. Thus, by the simple multiplicative relationship between Drive level (Anxiety) and Habit Strength (of the tendency to stutter), Hullian Theory would predict that the High Drive subjects would show greater amounts of stuttering behavior.

The mean anxiety score for forty-seven stutterers was 14.7 as compared to the mean score obtained from 450 college students of 14.66. This is also in accord with many of the personality tests research studies recently summarized by Sheehan¹. When stutterers are matched with normal speakers and administered the various personality projective tests (Rorschach, Thematic Apperception Test, Picture-Frustration, Self-Concept and Level of Aspiration) stutterers usually showed no reliable differences from normal speakers; and no consistent

¹Sheehan, Joseph G., "Projective Studies of Stuttering." Journal of Speech and Hearing Disorders, XXIII (February 1958) 18-25.

personality patterns could be found for the stuttering population. The writer is in agreement with Sheehan's¹ statement:

"Perhaps stuttering is a conflict, at many levels, which can be carried by people with many different dynamics. If there are several different dynamic patterns, these may obscure each other in the group studies which statistical control necessitates. Possibly there are several routes or avenues to becoming a stutterer; from this might follow that there are several different kinds of stutterers, psychologically speaking."

This study appears to give indication that High Anxious stutterers function differently in frequency and in adaptation patterns. Clinical implication would indicate that High Anxious stutterers would probably have to be treated differently in therapy than Low Anxious stutterers. Certainly, if their own personal anxiety is one of the reinforcing agents of their stuttering, then any therapy directed at the symptom in early therapy stages would probably be in vain.

With respect to the phenomenon of adaptation, the results of the present study are somewhat less emphatic. While it was true that High Anxious stutterers did not adapt as rapidly as Low Anxious stutterers, the difference fell short of statistical significance. This result may partly be accounted for by the relatively small number of subjects available for use in this study.

It seems likely that certain conclusions may be tentatively

¹Loc. cit., p. 23.

drawn from the results of the present experiment. The Taylor Manifest Anxiety Scale would seem to be a useful tool both for clinical impressions and as an aid in research with stuttering behavior. Furthermore, while the present results are highly suggestive, it is obvious that anxiety is certainly not the only factor operating in the determination of performance of stuttering behavior.

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APPENDIX

APPENDIX A

Reading Passage

One day a long time ago a little boy was sent to town to sell a basket of eggs. His mother said, "Go straight to town and do not stop on the road."

Soon the boy came to a river. Because he did not want to get his feet wet, he sat down on the bank. "What shall I do?" thought the boy. "The river is very wide. I can't jump across, so I will wait for it to pass by."

So he sat down and waited all day for the water to pass by. When it grew almost dark, the little boy became frightened and took the basket and ran home.

"What does this mean?" asked the mother. "Why did you stay so long?" "Why didn't you sell your eggs?"

"I came to a river," said the boy, "I didn't want to get my feet wet. I couldn't jump across. So I sat down to wait until the water has passed by. But it is still running."

"You will never sell your eggs," said his mother, "if you wait until all the water in the river has passed. It will be running long after you and I are dead."

APPENDIX B

Raw Scores for High Anxious Group Expressed in Terms of
MAS Scores and Frequencies of Stuttering on Five Readings
of the Adaptation Passage.

Subject	A	K	L	Frequency of Stutterings				
				1	2	3	4	5
				Readings				
S ₁	21	18	5	35	14	11	14	10
S ₂	22	18	3	14	12	10	6	10
S ₃	28	5	3	35	37	35	35	36
S ₄	37	4	0	165	181	185	164	174
S ₅	31	10	2	18	11	6	6	3
S ₆	26	17	3	42	13	8	7	8
S ₇	36	8	3	16	10	19	20	19
S ₈	26	11	2	51	77	40	84	41
S ₉	32	9	3	90	60	65	66	71
S ₁₀	21	23	6	51	50	53	47	56

A = Anxiety Score

K = Ego-defensiveness Score

L = Lie Score

APPENDIX C

Raw Scores for Low Anxious Group Expressed in Terms of
MAS Scores and Frequencies of Stuttering on Five Readings
of the Adaptation Passage

Subject	A	K	L	1	Frequency of Stutterings				
					2	3	4	5	Readings
S ₁	3	12	5	27	28	18	24	19	
S ₂	11	19	1	18	17	15	14	11	
S ₃	9	17	2	13	11	8	6	4	
S ₄	9	20	2	58	70	67	68	69	
S ₅	9	19	2	68	49	44	23	17	
S ₆	4	21	1	34	27	26	24	21	
S ₇	4	21	2	50	32	23	28	28	
S ₈	4	16	7	20	18	16	13	10	
S ₉	11	16	0	22	15	8	5	4	
S ₁₀	11	21	6	12	7	5	6	4	

A = Anxiety Score

K = Ego-defensiveness Score

L = Lie Score

APPENDIX D

Raw Scores for Eliminated Subjects Expressed in Terms of
MAS Scores and Frequencies of Stuttering on Five Readings
of the Adaptation Passage.

Subject	A	K	L	1	Frequency of Stutterings			
					2	3	4	5
					Readings			

S ₁	5	17	3	0	no stuttering				
S ₂	14	21	6	3	stopped subject				
S ₃	18	9	2	2	stopped subject				
S ₄	10	16	5	4	4	stopped subject			
S ₅	15	18	2	2	stopped subject				
S ₆	17	9	13	11	9	3	6	7	
S ₇	2	24	11	13	9	13	8	7	
S ₈	17	14	2	10	4	4	4	1	
S ₉	13	17	4	6	6	6	8	3	
S ₁₀	14	22	8	8	10	6	11	6	
S ₁₁	13	16	6	7	9	5	4	5	
S ₁₂	6	20	3	6	5	1	5	3	
S ₁₃	11	10	3	5	3	1	4	4	
S ₁₄	23	12	7	5	2	4	2	2	
S ₁₅	13	17	2	19	21	23	20	12	
S ₁₆	12	19	9	36	32	28	27	28	
S ₁₇	12	20	3	75	67	60	53	50	

APPENDIX D (cont.)

Raw Scores for Eliminated Subjects Expressed in Terms of
MAS Scores and Frequencies of Stuttering on Five Readings
of the Adaptation Passage

Subject	A	K	L	Frequency of Stutterings				
				1	2	3	4	5
				Readings				
S ₁₈	12	12	3	45	39	41	31	31
S ₁₉	14	17	0	13	6	7	6	7
S ₂₀	11	21	3	9	2	3	1	1
S ₂₁	7	17	3	3	stopped subject			
S ₂₂	23	15	3	4	stopped subject			
S ₂₃	11	19	4	no reading				
S ₂₄	13	12	4	no reading				
S ₂₅	13	20	5	no reading				
S ₂₆	8	13	4	no reading				
S ₂₇	16	15	3	no reading				
S ₂₈	10	20	4	8	7	5	4	3
S ₂₉	11	22	3	no reading				

A - Anxiety Score

K - Ego-defensiveness Score

L - Lie Score