THE INFLUENCE OF THE GROUP UPON THE STUTTERER'S SPEED IN FREE ASSOCIATION

By LEE EDWARD TRAVIS
UNIVERSITY OF IOWA

THE majority of stutterers can talk with little or no difficulty when alone. This fact has been widely noted and the author has recently studied twenty-five stutterers and found that twelve of them have very little trouble in speaking when alone, twelve have no difficulty at all, while one has as much difficulty when alone as in a social situation. With the exception of the one case, these findings fall in line with the general observation that stuttering occurs primarily in the presence of others. From this point of view the disorder seems to be linked up very closely with what can be called a morbid social attitude. It is not to be implied that any causal sequence exists. Whether social morbidity is the cause of stuttering or stuttering the cause of social morbidity or whether the two are dependent upon a third common factor need not enter into this study. That the two form a vicious circle is a phenomenon open to common observation and this fact is all that is necessary from our present standpoint.

If a social situation operates to markedly interfere with vocal expression in the case of the stutterer it would be interesting and instructive to learn whether or not such a situation would operate to interfere with, break up, or slow down the stutterer's mental processes or thought.[1]

This short paper deals with the effect of the group upon the quantity of so-called mental work done in a certain period of time by a stutterer. The experiment was the more readily undertaken since Allport [2] has already determined the influence of the group upon certain mental processes of non-stutterers,[3] who can act as a control group with which to compare stutterers. The chain association experiment of Allport was chosen to give the basis of comparison. No attention, however, was given to the qualitative

[1] If thinking is "subvocal talking" as the behaviorists maintain, then we should expect to find a high correlation between interference with talking and interference with thinking caused by a group.

[2] Allport, F. H. The Influence of the Group Upon Association and Thought *J. of Exper. Psychol.*, 1920, 3, 159–182.

[3] I have Professor Allport's statement that to the best of his recollection none of the subjects in his experiment were stutterers

aspect of the associations. In order to compare our findings with Allport's, his method was followed with the greatest possible care. It is briefly as follows:

For group work the subjects were arranged in two groups, each group containing five persons. Two individuals sat at one side of the table while a single individual sat at the other side, and at each of the two ends. The same seats were retained by subjects throughout the course of an experiment. Conditions, such as type of table, light, air, heat, seating of subjects, type and length of pencil, papers, etc., of the experiment on solitary work were the same as those where the subjects worked as a group.

"The free associations which were to be written were started by a stimulus word, for example 'building' or 'laboratory' written at the top of a sheet of paper given to each subject. The same stimulus words were employed in two conditions, T and A.[4] It was also emphasized in group work that the same stimulus word was given to all."[5] In all experiments "constant intervals of time were given, in the group by spoken signal, and alone by buzzers placed in each room and timed down to inobtrusive intensity".

That rivalry might be reduced to its natural minimum, "the subjects were instructed not to regard their work as competitive; overt comparisons between individuals were also prohibited. The time given for the tests was constant, hence no one subject finished before the others." "Each subject, however, was instructed to acquire the attitude of doing his best in both the group and solitary work."

"The papers were placed before the subjects face down." At the proper signal, spoken word in group work and the buzzer in solitary work, they were reversed and the subjects glanced at the word at the top of the page and proceeded to write their free associations. Our procedure at this point is slightly different from Allport's. His subjects wrote one word below the other. Our observers wrote along on a horizontal line to the edge of the paper then dropped down and proceeded to fill another line. This makes comparison between the number of associations of our subjects and the number of associations of Allport's observers unreliable but such comparisons were not deemed of value in this experiment. Our method was thought preferable because of the reduction of the effects of the mere mechanics of writing which it brings about.

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[4] *I.e.*, "Together" and "alone".

[5] Quotation marks will always mean, unless otherwise stated, that we are quoting from Allport.

"The writing of the successive words of sentences or phrases was prohibited as was also the serial association of numbers."

The work of each test was divided into three periods of one minute each. "After one minute of the time had elapsed the experimenter (in the groups) directed 'draw line' whereupon each subject quickly made a line" in front of the word he was then writing or had just written and then immediately continued with his work. "This was repeated at the expiration of the second minute. When the subjects worked alone these signals for the divisions were given by short strokes of the buzzer."

In order to equalize the effects of practice, frequent alternations of the condition T and A were used. One group underwent two alterations, T A T A, on the same day. The other group did four tests of one condition on one day and four tests of the other condition on another day. The sequence would be T T T T for one day and A A A A for another day. "If the tests of a certain day began with T and ended with A, those of the following day would begin with A and end with T."

"The *time* was the constant factor and the *number of words written* was the measure of the association process. A short rest period was allowed between tests."

"Practice effects at the beginning which appeared in the individual records have been eliminated from the averages by the following rule. In the first day's work all tests which are lower than every single score in tests on later days are ruled out."

In this paper only the summarized statements of Allport's findings will be given. Those wishing to consult his tables should see his article referred to above.

Table I presents the individual averages for stutterers. Table II shows the average number of associations, alone and together, for each observer, and the per cent of gain under the condition to which the gain belongs. It is noted that 80 per cent (8 out of 10) of the stutterers produced more associations alone than in the group. Allport found that 93 per cent (14 out of 15) of his subjects (non-stutterers) produced more associations in the group than they did alone. The average number of associations produced by all of the stutterers alone is greater than their average together (68.1 to 65.3). Allport's non-stutterers just reversed this situation (63.6 to 60.3) in favor of the average together.

The mean variation (Table II) for the stutterers is greater in solitary than in group work (11.3 to 9.1) while for the non-stutterers of Allport just the opposite is true.

TABLE I. INDIVIDUAL AVERAGES OF ASSOCIATIONS FOR STUTTERERS

Subject	No. of Trials * A	No. of Trials * T	Alone: No. Assoc. per Min. 1st Min.	Alone: No. Assoc. per Min. 2d Min.	Alone: No. Assoc. per Min. 3d Min.	Alone: Total No. Assoc	Together: No. Assoc. per Min. 1st Min.	Together: No. Assoc. per Min. 2d Min.	Together: No. Assoc. per Min. 3d Min.	Together: Total No. Assoc.
A	8	12	18 0	13.1	12.6	43.7	17 0	14.6	14 0	45.7
B	12	12	28.4	28.4	30 6	87 4	26 9	26.9	27.7	81 5
C	12	8	20 7	18.6	18 7	58 0	18 2	17 0	17 6	52.8
D	11	7	34.1	29.0	29 3	92 3	32 1	28 0	25 8	86.0
E	12	12	27.2	23.9	23 9	75 2	26 0	23 8	23.3	73 2
F	12	16	21 1	21 1	20 8	63 0	20.9	21 4	20 2	62.5
G	13	10	21 8	21 0	22.0	64 7	19 9	19.6	19 5	59 0
H	12	16	21 3	19.3	18 5	59 2	23 4	19 4	20.2	63.1
I	12	16	23 7	20 8	18 8	63 4	23 2	20 3	19 4	62.9
J	8	12	25 7	24 1	24.1	74.0	23 4	20 8	21 8	66.1
Average . . .	12 2	12 0	24 2	21 9	21 9	68 1	23 1	21.2	20.9	65 3

* Exclusive of the trials eliminated owing to effect of practice.

TABLE II

PERCENTILE GAINS IN AVERAGE NUMBER OF ASSOCIATIONS FOR STUTTERERS

	Ave. No. Associations		Per Cent of Gain	
	Alone	Together	Alone	Together
A	43 75	45.75		4.57
B	87 42	81 58	7 15	
C	58 08	52.86	9.87	
D	92.36	86 00	7.39	
E	75.20	73 20	2.73	
F	63.00	62.50	.80	
G	64 70	59.00	9 66	
H	59 20	63.10		6.58
I	63 40	62.90	.79	
J	74 00	66.08	11.98	
Average	68.1	65 3	6 30	5 57
Mean Variation	11.3	9.1	3 6	1 00

Number of subjects having higher average number of association alone 8
Number of subjects having higher average number of associations together..... 2
Number of subjects having equal average number of associations alone and together 0

Table III gives the results according to minute periods. For the first minute 13 out of 15 of Allport's observers (non-stutterers) did better in the group than alone while 9 out of 10 of our stutterers did better alone than in the group. For the second and third minutes there is not, with either group of observers, such a clear preponderance in favor of work in one or the other of the two conditions. But still with the non-stutterers the majority do better in the social situation while the stutterers do better alone. In Allport's study, "the averages of all subjects alone (20.8, 19.5 and 19.8) indicate a drop in the second minute, followed by a slight rise (probably an end spurt) in the last minute. The averages together, on the other hand (22.2, 20.8, and 20.5), form a steady decrease to the end. This result suggests that the effect of the group is at first a stimulating and later a steadying one" In the case of our stutterers this fact seems to be upheld. The averages alone were 24.2, 21.9 and 21.9 while together they were 23.1, 21.2 and 20.9. In the last minute of the A-situation there is no spurt, but the work level of the second minute was maintained. In the T-situation, there was a steady decrease to the end just as Allport found with his observers.

TABLE III

RESULTS OF MINUTE PERIODS FOR STUTTERERS

	1st Min.	2d Min.	3d Min.
No. of subjects having greater number of associations *together*	1	3	3
No. of subjects having greater number of associations *alone*....	9	7	7
No. of subjects having an equal number of associations for T and A.....	0	0	0
Amount of excess of Alone over Together.	1 1	.7	1.0
Per cent of excess of Alone over Together..	4.76	.33	4.78

Table IV gives a summary of the findings of the two studies.

Allport found a low inverse correlation (—.12) between the rank of individuals in speed of association and their rank in regard to the favorableness of the group influence on their work. This is in harmony with the results of other investigators. We found a correlation between rank of individuals in speed of asso-

TABLE IV

SUMMARY OF FINDINGS ON NON-STUTTERERS AND STUTTERERS

Kind of Observers	No of O's having higher average No of Assoc in three minutes for T	No of O's having higher average No of Assoc in three minutes for A	No of O's having higher average No of Assoc according to minute periods for T			No of O's having higher average No of Assoc according to minute periods for A			No of O's having equal average No of Assoc. according to minute periods for T and A			Total Number of Observers
			1st	2d	3d	1st	2d	3d	1st	2d	3d	
Non-stutterers	14	1	13	12	9	1	3	6	1	0	0	15
Stutterers	2	8	1	3	3	9	7	7	0	0	0	10

ciations and their rank in regard to favorableness of solitude on their work of +.65 and a correlation between rank of individuals in speed of associations and their rank in regard to degree of hindrance of the group on their work of —.67. In other words, the better the stutterer was in regard to free association the more the condition of solitude helped or the more the social group hindered while the poorer he was the less solitude aided and the less the group interfered. As a matter of fact the two exceptions to the rule that the stutterers worked better alone, ranked 8 and 10 in speed of associations and 10 and 9 in regard to favorableness of solitude or degree of hindrance of the group on their work.

The observed difference (2.8) between the average number of associations for T (68.1) and for A (65.3) is so small and its probable error (3.3) so large that little if any significance may be assigned to it. However there is another way of looking at the data.

Inasmuch as no subject gave an average number of associations for the three minute periods with the group equal to the average number of associations for the three minute periods while working alone, it seems that there are only two possibilities in regard to the effect of the group. Either it will operate to hinder or help, *i.e.*, to increase or decrease the average number of associations produced in isolation. It will be permissible then, to consider the results in terms of the chance probability equation, $(p+q)^n$, where

p=probability of increase
q=probability of decrease
p=q
p+q=1
p=½=q=½
$(½+½)^n$ chance probability.

In the case of the stutterers, 8 out of 10 did better alone than with the group. This 8 against 2 relationship makes it necessary to take the third term of the binomial equation which is

$$\frac{n\ (n-1)}{2}(½)^{n-2}\ (½)^2$$

By substituting and clearing we get 1/22.75 which means that if no factors other than chance were operating we could expect this 8 to 2 relationship to occur once in 22.75 times.

In the case of the normal speakers 14 out of 15 did better with the group than alone. This 14 to 1 relationship makes it necessary to take the second term of the binomial equation, which is

$$n\ (½)^{n-1}\ ½$$

By substituting and clearing we get 1/2163 which means that if no factors other than chance were operating to bring about this 14 to 1 relationship we could expect it to occur once in 2163 times. Further we could expect 8 out of 10 stutterers to display greater facility in free association when alone than with the group and 14 out of 15 normal speakers to have greater speed in the presence of others than in isolation to occur once in 49,213 times the product of the two separate probabilities (1/22.75×1/2163) of the two mutually independent events.

Allport's main conclusion in regard to his normal speakers is that *"the presence of a co-working group is distinctly favorable to the speed of the process of free association."* The principal conclusion of this study with stutterers is just the opposite, namely, that they show a superiority in number of associations when they are working alone.

Our results with stutterers contradict those with Allport's non-stutterers in another instance. He found that his observers had a greater variability in output in the group work. We found that the stutterers had a greater variability of output when working in solitude.

Thus in the case of the stutterer it seems that there is a high correspondence between the effect of a social situation upon vocal expression and upon output of free associations. In both instances the group operates to decrease or to interfere with the activity.