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THE EFFECTS OF ANXIETY ON SOCIAL FACILITATION

by

George E. Wisneler

A Thesis Submitted to the Faculty of the Graduate School
of Loyola University in Partial Fulfillment of
the Requirements for the Degree of
Master of Arts

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LIFE

George E. Wiemeler was born in Chicago, Illinois, August 5, 1939.

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THE EFFECTS OF ANXIETY ON SOCIAL FACILITATION

George E. Wismeler

According to Floyd Allport (1920) the data of Social Psychology may be subsumed under two headings: (1) the behavior of an individual in direct response to a social stimulus, that is, in cooperation, competition or conjunction with some form of behavior in others, and (2) behavior which is the response to a non-social stimulus, e.g. adding figures, eating food, when such response is modified by the presence and actions of other persons. In the latter situation there is no overt interaction between the individuals who are in the presence of one another.

Allport did several studies of behavior in the second category mentioned above. Among the methods he employed was a comparison of the number of written associations to a single, initial, stimulus word by an individual when alone with the number of his associations ". . . to a similar and equivalent stimulus word when a member of a 'co-working or a co-feeling' group." One of the conclusions of Allport was that susceptibility to the influence of the group upon the task was determined by individual differences and that ". . . one type who are nervous and excitable may succumb to the distracting elements of the group activity and may show either no effect, or else a social decrement" (Allport, 1920). One of the difficulties with this observation by Allport is that he had no objective measure of nervousness in the subjects who experienced no social facilitation in the group situation. The problem in this study then, is to investigate the relationship between anxiety and social facilitation.

The pioneer investigation of social influence by the method of comparing the individual's performance in the group with his performance when working alone was done by Triplett (1897). Triplett tested the influence of the presence of a co-worker on a simple motor task, twining a reel, with directions to turn as rapidly as possible. When pupils worked in combination with one other child they worked more rapidly. Many children performed with hasty unco-ordinated movements which reduced the efficiency of their performance. This latter effect appeared to be the result of uncontrolled competition. Another factor which Triplett seems to have left uncontrolled was the effects of practice. He did not counterbalance the alone and paired conditions.

Mayer (1903) was the first to compare the individual's "mental work" in the group with his performance when working alone. Mayer attempted to determine whether and under what conditions the work of pupils in a group give better results than the work of the isolated individual. He tested the ability of the pupils to work alone or in company with others using dictation, mental arithmetic, memory tests, combination tests and written arithmetic. Mayer did not use any sophisticated statistical techniques, but found by making rough comparisons that the work of the pupils in groups was superior to their work as individuals. This superiority was found both in the decrease of time required, and also in the quality of work done. Mayer, however, did not employ any appropriate controls for the effects of practice or competition when testing the effects of the group on an individual's performance.

Neumann (1904) carried out experiments similar to those of Mayer upon rote memory for words. Four to twelve unit lists of disyllabic words were read aloud. The subjects wrote down all the words they could remember after each list was read. A significant age difference was found in the social increment. Children eight and nine years of age remembered more when tested in the group than when tested alone, while subjects thirteen and fourteen years of age were little affected by the social conditions.

Neumann asked a number of the pupils whether they would prefer to take tests in the class or alone and whether they were disturbed by the noise of the other pupils. Eighty percent of the pupils preferred to do the work in the class; 15 percent gave no definite answer; ". . . an extremely small minority replied that they were disturbed in the class room," Neumann maintained that in most cases the latter group were "sensitive, nervous or weak children, although among them were some individuals of decided talent. . . ."

Later Neumann repeatedly tested seven pupils of the age of thirteen and fourteen with the dynamometer and ergograph (1914). The amount of work of pupils tested individually was always less than when they were tested in the social condition. If the subjects performed in the presence of the teacher alone, the pupils did not do as well as when they were all together with the teacher absent.

In these early studies of the influence of the group, it is difficult to distinguish the effects of incidental social stimulation from those of increased rivalry and competition in the group situation. No attempt was made by the experimenters to control rivalry by appropriate instructions, or by

preventing each of the members of the group from finding out how well the others are doing. In fact, the conditions in each of the experiments seemed to incite some form of competitive behavior. Burnham (1910) on the other hand, had a different explanation: ". . . where activity is involved there is the stimulus to greater exertion which comes from the sight of another performing an act." He compared the presence of a co-working group to the pacer in horse races used to stimulate the runners to greater speed. The difference between such pacing and incitement to competition is not too clear. On the other hand, if competition had been controlled in the series of investigations preceding Allport's work they seemingly would have been classified in Allport's second category of Social Psychology.

Allport was the first to study incidental social stimulation using adult subjects (Allport, 1920;1924). His subjects were male and female graduate students. The tasks in the social condition were performed in groups of four or five seated around a table, while in the individual condition the subjects all worked at the same time, but each in a separate room. Time signals were given by means of buzzers situated in each of the rooms. The two conditions "together" and "alone" were counterbalanced in successive tests in an attempt to eliminate practice, adaptation and fatigue effects. "An attempt was made to eliminate rivalry, or at least to reduce it to its natural minimum, so that the pure effects of social facilitation could be measured." This was done by eliminating comparisons of discussion of achievement; by imposing a constant amount of time for all subjects on each task; and, by emphasizing to the subjects that the test was in no way a form of competition and that the

records of the subjects would not be compared. All were instructed to work at their maximum speed consistent with accuracy. Three types of tasks were used in the experiment; (a) vowel cancellation test; (b) reversible perspective test of attention; and (c) multiplication test.

The results indicated that the presence of a co-working group tends to increase the quantity of work done by the individual members, but leaves the quality practically unaffected. In both vowel crossing and two experiments with reversible perspective 71% of the subjects performed with greater speed in the group, or social, condition. The percentage of subjects with social increment in multiplying was 66%.

It is difficult to determine if the amount of social increment in each of these tasks was statistically significant because Allport did not report the figures. The significance of the percentages quoted is doubtful since Allport used no more than 15 subjects in any one task. In the vowel cancellation task he used only seven subjects. A further drawback of this study is that in the reversible perspective test of attention the data is too subjective. In this task the subjects were to continually reverse their perspective on the same ambiguous object. Their report of the number of reversals per minute was a "measure of the speed factor of attention, corresponding to the amount of mental work done in the given time." If the subject is counting the reversals, since he is the only one who can, his attention is somewhat distracted from the process of reversal. If he is concentrating solely upon the reversal, how can his count of reversals be accurate?

One of the conclusions of this first series of experiments by Allport was that ". . . a few individuals on the contrary are retarded by the social influence. These latter form a distinct type." Allport made no further comment on this "type" in this, his first study, but in a subsequent study (Allport, 1920) he referred to their nervousness, as will be mentioned shortly.

In Allport's investigation of the influence of the group on associations all conditions remained the same as in his previous work. The task, however, was to write down the successive associations to an initial stimulus word as quickly as they came to mind. Allport also reasoned that, since the speed of association is likely to be greater than the speed of writing and therefore to be hampered by the latter, the subjects should, in one part of the experiment, write down only every third, or every fourth word that came to them.

In the various parts of the study, from 66 to 93% of the subjects had social increments. Where every third word was written, 75% worked more rapidly in the group. In the condition where every fourth word only was written, the number of social increments fell to 66% of those affected. Allport concluded that ". . . when the response of individuals is mainly implicit or internal . . . facilitation is at its lowest." In other words, social facilitation is more proportional to the amount of overt observable action through which the co-workers stimulate one another. Allport also concluded that there are individual differences in susceptibility to the influence of the group upon association, and, in further explanation of what was mentioned above, "one type who are nervous and excitable may succumb to the distracting elements of the group activity and may show either no effect, or else a social decrement."

The main drawbacks of this study are that Allport again used a very small number of subjects and his conclusion about the "nervous subjects" is practically meaningless without an objective measure of nervousness or anxiety in the subjects he used.

Since 1920, Allport's basic technique has been used by several others (Sims, 1928; Sengupta & Sinha, 1926; Muderji, 1940). In Sengupta and Sinha's study the subjects worked for five minutes a day at both letter cancellation and letter naming for a period of nine days. After the third day, output rose significantly until it restabilized at a second, higher level. Muderji found that with children doing letter cancellation and letter naming, almost 90% of the individuals had superior outputs in the social setting, but that oscillation in production was greater when performing in groups. That is, when the work period is broken down into equal units of time, there are more fluctuations from segment to segment in the group situation.

Some studies have focused on the effect of the presence of silent spectators upon performance (Gates, 1924; Pessin & Husband, 1933; Wapner & Alper, 1952). Pessin and Husband found that learning in the presence of spectators produced greater variability of performance. In the study by Wapner and Alper, 120 subjects were tested in three varying situations. All were asked to select one of two words which best fit a given phrase. In the first situation only the subject and experimenter were present. In the second situation, the subject was informed that an "unseen" audience was listening to and watching his performance. In the third situation, the subject and experimenter were present with a seen audience. The experimenter split

each group and gave either task-oriented or ego-oriented instructions. In the task-oriented instructions the subjects were told that the task material was being studied. In the ego-oriented instructions the subjects were told that the task was a form of personality test and that they, the subjects, were the ones being evaluated. Warner and Alper found that the time to make a choice was longest in the presence of an "unseen" audience under both forms of instructions. The next longest time was in the presence of a seen audience and the shortest time in making a choice was in the "no audience" condition. The significant differential effects of the audience variable occurred for the first half of the experimental sessions only.

Kelly and Thibaut (1954) reported a study by Wyatt, Frost, and Stock (1934). Their findings indicate that in situations involving work of a highly repetitive nature, social facilitation will bring about closely similar production curves for employees working together. It was found that workers rates or output varied with the output of others in the work group and that this relationship was especially close for workers seated opposite each other. When the individual workers were subsequently isolated, the correspondence between their work and that of the others disappeared.

From the above cited studies two major points can be made. First, social facilitation is greatest or most obvious when the tasks are simple and almost monotonous so that the activity of the co-workers is more overt and observable (Triplet, 1897; Allport, 1920; Allport, 1924; Sims, 1928; Sengupta & Sinha, 1926; Manderji, 1940; Wyatt, Frost & Stock, 1934). Second, under certain conditions the presence of others can bring about a greater

variability, or a decrement in performance as in the case of nervous or tense subjects (Triplett, 1897); Neumann, 1904; Allport, 1920; Allport, 1924; Pessin & Husband, 1933; Mukerji, 1940).

The second point may lead one to speculate that certain subjects may be normally calm when alone, but tense or anxious in a group because their perception of their co-workers is one of threat. The attention of these subjects may be focused so much upon their co-workers that they cannot attend to the task at hand so as to channel their energies in the proper direction. Or, the subject may be chronically nervous, tense or anxious, but still able to function adequately when alone. When he is in the presence of co-workers, however, any threat that other persons might represent becomes imminent and, in terms of Hullian behavior theory, there arises a high drive state and a consequent response interference, because ". . . some drive conditions tend partially to motivate into action habits which have been set up on the basis of different drive conditions." (Hull, 1951; p. 40). Such habits may be quite inappropriate to the task at hand.

Taylor (1959) writes of an alternative hypothesis suggested by Child (1954) which emphasizes the Hullian drive stimulus (S_D) rather than general drive (D). The S_D associated with anxiety, in the present case other persons, is said to arouse task irrelevant responses such as anger, desire to escape, etc. "To the extent that such irrelevant responses are aroused with greater frequency or intensity in high anxiety groups and that the task is one in which the particular irrelevant tendencies interfere with correct response tendencies, the performance of high anxiety S_s would be expected to be in-

ferior to that of low anxiety ss." (Taylor, 1959, p. 6)

To state the problem in the form of hypotheses: a) ss who are highly anxious in the presence of others will not perform as well as subjects who are low in anxiety in social situations (Neumann, 1904; Allport, 1920; Allport, 1924); b) the performance of high anxious subjects will be greater when they are alone than when they are in the group (Allport, 1920; Allport, 1924); c) the performance of low anxious subjects will be greater in the group situation than it will be when they are alone because of social facilitation (Allport, 1920; Allport, 1924).

Since it would be necessary that the high anxiety and the low anxiety group be approximately equal in initial ability, there should be no statistically significant difference in their performance when they are alone. This would be controlled by using simple tasks such as the written association and multiplication tasks used by Allport (1920; 1924). A second means of control of initial ability is the use of a large enough sample so that individual differences would cancel. The next obvious is how to measure anxiety connected with other persons or, as its authors (Walker & Nicolay, 1963) refer to it, anxiety projection upon external objects.

One of the prominent investigators in the area of anxiety measurement (Sarason, 1960) has indicated that most measures of anxiety have been "general indices", for instance, the Taylor Manifest Anxiety Scale or MAS (Taylor, 1953). Sarason indicated that there were many inconsistencies in anxiety studies purportedly using the same dependent variables, but that these inconsistencies might be cleared up if related to more specific types

of anxiety such as is measured by the Test Anxiety Questionnaire (TAQ). This latter instrument was constructed by S. B. Sarason and his associates to measure reactions to actual testing situations (Mandler & Sarason, 1953; Sarason & Gordon, 1953; Sarason & Mandler, 1952; Sarason, Mandler & Craighall, 1952).

Walker and Nicolay (1963) indicate that there has been little interest on the part of Taylor and her associates to work with the reported (Bendig, 1960) subtypes of anxiety inherent in the MAS. One attempt by O'Brien to relate two factors, chronic anxiety and motor tension, to problem solving ability ended with negative results. "Expanding on O'Brien's original work and contributing innovations of their own . . ." Walker and Nicolay (1963) have developed the Personal Reaction Schedule (PRS). The three subtypes of anxiety which the PRS purportedly measures are motor tension (M), object anxiety (O) and personal inadequacy (P). Each of these subscales consists of 29 items. They were pooled and randomized with a fourth scale, the K-scale (Social Desirability) of the MMPI.

The following is the operational definition of type O anxiety.

Type O anxiety is characterized by concern that external demands and perceived expectancies may be overwhelming and one may suffer harm. It represents a projection or rationalisation of one's possible inadequacy. It results in a magnification of personal problems out of proportion to objective reality. The emphasis here is on the external as a source of uncertainty or unrest.

Upon inspection of the items of the O scale, the present writer feels that its definition by Walker and Nicolay is not accurate enough in the description of the type of items it contains. This writer believes that the anxiety measured

by the O scale represents anxiety with regard to interpersonal relationships. Type O anxiety represents a projection of one's personal inadequacies upon other people. The subject rationalizes that other people ". . . make (him) very nervous." Other "people confuse (him) most of the time." "Most of (his) problems stem from his relations with other people." The emphasis here is not only the "external" but on the external "other person(s)" as a source of uncertainty or unrest. In other words, other people represent a source of threat. Of special interest here is that in gathering their normative data, Walker and Nicolay found that the only significant difference in sub-scale scores is measured by t test between males and females was on type O with the males scoring higher than the females. In view of the above explanation, this difference would seem to agree with the popular notion that males are less facile than females in social situations. Women are supposedly less anxious in meeting new people while men tend to withdraw from the scene.

The object of this study then is to determine if the O scale in the PRS is able to differentiate people able to experience social facilitation and those who are not. In the form of hypotheses; a) there will be a significant difference in performance between S_s with high Object anxiety (HO) and S_s with low Object anxiety (LO) in a social facilitation task. S_s with LO will have the greater output if Allport is correct in his observations. b) The performance of HO subjects will be significantly greater when they are performing alone (A) than when they are performing in the social condition (S). c) There will be a statistically significant difference between the A and S of the LO S_s . Due to the effects of social facilitation,

A will be greater than S.

It is essential that there be no statistically significant difference between HO subjects and LO subjects in the alone condition. Such a significant difference would indicate that there are factors other than the immediate presence of others operating on the two groups and hence, any difference between the two groups in the social condition could not be attributed to anxiety due to the presence of others.

Method

Subjects and the PRS

The Ss were 192 male students who participated to fulfill an introductory psychology course requirement at Loyola University. The PRS was administered to them during the first class of the semester as a regular classroom exercise. The subjects were told that the PRS was being administered in an attempt to standardize it.

The Ss were allowed to sign up for the experiment at times convenient to them. Upon arriving at the laboratory, the subjects were assigned to either a four or five person condition. No attempt was made to control the composition of any of the groups with regard to the O scores of its members. E was not aware of S's O score at the time of the latter's participation in the experiment. Of the 100 Ss who participated as members of the five-man group, the data from five Ss was not used because they had failed to follow instructions. For this same reason, the data from four Ss who participated as members of a four-man group was also dropped.

Because of scheduling difficulties, the running of the four man groups was not adequately counterbalanced with the running of the five man groups. For this reason the original plan of combining the two groups in the event that there was no significant difference between them was discarded.

Tasks and conditions

The tasks and conditions were similar to those used by Allport in his studies of social facilitation (1920;1924). There were two task conditions. One, which provided the atmosphere conducive to social facilitation, consisted

of having the SS perform the tasks while together at the same table in the same experimental booth. In the second condition the same SS worked alone in separate booths so that they were uninfluenced by the physical presence of their co-workers. All SS performed in both conditions.

The tasks were: a) listing as many associations to a given stimulus word as possible within a three minute time limit; and, b) multiplying as many two digit numbers by other two digit numbers as possible in two minutes. Comparable forms of each task were used for the two different conditions.

The two association stimulus words were of equal association value as determined by Noble (1952). The multiplication problems were made up with the use of a table of random numbers.

The alone and social conditions, the tasks and the two forms of each task were all counterbalanced.

An attempt was made to control the effects of competition by instructing the SS at the beginning of the experiment that they were not competing with one another and that their work would not be compared with that of the others. Upon completion of the experiment the SS were asked if they had felt they were competing during any part of the experiment. If they did compete, they were to indicate which conditions and tasks. The specific instructions are in Appendix I.

Results

The mean number of associations and correct arithmetic problems in the alone and in the group conditions for the four and five man-groups respectively are contained in Table 1. It can be seen that, disregarding the anxiety scores, there were more written associations when Ss were in the social situation than when they worked alone. Although this was true for both group sizes, the difference was significant ($p .05$, one tail test) only for the five man group.

For the arithmetic task the difference was not entirely in the predicted direction. For the four man groups the mean number of correctly performed problems was greater in the social condition, but for the five man groups the mean was greater in the alone condition. Neither of these differences was statistically significant.

In order to test for the differential effects of anxiety, those 20 Ss scoring highest (HO) and those 20 scoring lowest (LO) on the O scale of the PRS were extracted from the 4- and 5-man groups respectively. (For the 4-man group LO ranged from 1 to 7, HO from 12 to 18. For the 5-man group LO ranged from 2 to 5 and HO from 13 to 20.) For each of these four groups the means and standard deviations (SDs) of the scores on the association and the arithmetic tasks for the alone and the social conditions were computed. These figures are contained in Table 2. The t tests of the hypothesized differences are indicated in Table 3. None of the differences were significant.

TABLE 1

The Mean Number of Associations and Correct Arithmetic Problems in the Alone and Group Conditions for the 4- and 5-Man Groups

Task	Group Size	\bar{X}_{Alone}	\bar{X}_{Social}	S_{diff}	t	p
Association	4-grp*	31.35	31.86	0.93	0.55	.05**
	5-grp*	25.65	27.17	0.91	1.66	.05**
Arithmetic	4-grp*	9.30	9.73	0.31	1.39	.10**
	5-grp*	9.38	9.35	0.28	0.11	.05**

* 4-grp $N=88$
 5-grp $N=95$

** one-tailed test

TABLE 2

The Means and SDs for the High and Low Anxious 4- and 5-man
Groups for Both Tasks and Both Conditions

Task	Group		Alone	Social	
Association	4LO	\bar{X}	31.70	32.35	
		SD	14.17	11.49	
	4HO	\bar{X}	32.15	32.50	
		SD	10.74	12.46	
	Arithmetic	5LO	\bar{X}	29.50	29.85
			SD	13.23	13.22
5HO		\bar{X}	26.40	28.90	
		SD	9.20	12.40	
Arithmetic	4LO	\bar{X}	8.20	9.15	
		SD	3.28	3.73	
	4HO	\bar{X}	9.05	8.75	
		SD	3.47	3.43	
	Arithmetic	5LO	\bar{X}	9.90	9.30
			SD	2.93	3.54
5HO		\bar{X}	9.10	9.10	
		SD	3.02	3.42	

TABLE 3

The t test of the Hypothesized Difference between the High and the Low Anxious Ss and between the two conditions for the 4- and 5-man Groups in both Tasks

Task	Group Size	Test of Significance Between	S_{diff}	t	
		HOA-LOA**	3.97	0.11	n.s.
	4-grp	HOS-LOS**	3.79	0.04	n.s.
		HOA-HOS	2.30	0.19	n.s.
		LOA-LOS	1.70	0.38	n.s.
Association					
		HOA-LOA	3.60	0.86	n.s.
	5-grp	HOS-LOS	4.05	0.23	n.s.
		HOA-HOS	2.88	0.87	n.s.
		LOA-LOS	1.75	0.20	n.s.
		HOA-LOA	1.07	0.79	n.s.
	4-grp	HOS-LOS	1.14	0.35	n.s.
		HOA-HOS	0.64	0.47	n.s.
		LOA-LOS	0.77	1.23	n.s.
Arithmetic					
		HOA-LOA	0.94	0.85	n.s.
	5-grp	HOS-LOS	1.10	0.18	n.s.
		HOA-HOS	0.85	0.00	n.s.
		LOA-LOS	0.43	1.40	n.s.

N=20 in all cases

** A = Alone

S = Social

There was no significant difference between HO alone (HOA) and LO alone (LOA) for either group size for both the association and the arithmetic tasks. This was expected since it indicates that the two different anxiety groups are approximately equal in their association and multiplication output when the hypothesized threat to the HO $\$$ is not present.

In comparing LO social (LOS) with HO social (HOS) it was found that on the association task for the 4-group HOS was slightly greater than LOS which was not consistent with Allport's observations. This difference, however, was not significant, for the 5-group LOS was greater than the HOS on the association task. In the arithmetic task the LOS was greater than HOS for both group sizes. Though these latter three differences were in the predicted direction, none were significant.

When the performance of HOA was compared with HOS, it was found that on the association task HOA was larger than HOS for both group sizes. This is also inconsistent with Allport's observations. The difference was greater for the 5-group than for the 4-group, but neither difference was statistically significant.

In the arithmetic task the HOA was greater than HOS for the 4-group, but the difference again was not significant. For the 5-group there was no difference between HOA and HOS.

An LOA-LOS comparison demonstrated that on the association task there was a predicted greater B than A, but the difference was slight and not statistically significant. For the arithmetic task LOS was greater than LOA for the 4-group, but for the 5-group LOA was greater than LOS. The first

of these was in the predicted direction. Again neither difference was statistically significant.

A test was made of the number who felt competition during each of two conditions for the two tasks for both group sizes and anxiety levels. In a 4×4 chi square table there was a significantly greater number who felt competition in the group condition of the arithmetic task (chi square = 54.80 at 9 df, p .01). There was no significant difference in subjectively reported competition between the two anxiety levels for the two group sizes (chi square = 1.69 at 3 df, p .05).

Discussion

The results of the present study lend very little, if any, support to the social facilitation hypothesis. In comparing the performance of the two group sizes in the two experimental conditions without regard to the anxiety scores of the Ss, only one out of four differences was significant and that by a very small margin.

Since the hypothesized effects of level of anxiety were so dependent upon there being a significant social facilitative effect for both group sizes and for both tasks, and since three of these four situations showed no significant effect, the only legitimate tests for the effects of anxiety would be in the one difference that was significant, the association task with the 5-man group. It was found that in this instance there were no significant differential effects due to S's level of anxiety. There are three possible conclusions from these results.

The first conclusion which might be drawn is that Allport was incorrect in his observation that nervous or anxious people experience a decrement in performance in the social situation. A second alternative is that the O sub-scale of the PRS does not measure the specific types of anxiety which Allport observed. The third alternative is that there may be some factors in the experimental variables. This seems most likely in view of the fact that there was so little social facilitation.

The results of this study do not agree with the results of a pilot study in which essentially the same method was used (Wiensler, 1963). In this pilot

study there was a significant social facilitation effect for the LO Ss and a significant social decrement for the HO Ss on the arithmetic task. On the association task HO Ss performed at the same level in both the alone and social condition, but since the LO Ss had a significant social increment, the difference between the LO and HO Ss in the social condition was significant. There were some differences between the pilot study and the present one which might possibly have brought about the different results.

The first difference which seems to be of great importance is that in the pilot study the Ss were singled out because of their high or low score on the O scale. A list of those who were chosen on this basis was sent to the classrooms to be circulated among the students. A note was attached which requested those students whose names were listed to sign up for the experiment at the designated times. When some of them did not respond E had to coax some of them into participating in order to get a sufficient number of Ss. In the present study, Ss were allowed to participate at times convenient to them. No attempt was made to coax a person with a given O score to participate. It is possible that in the pilot study the experience of being specifically chosen to participate in the experiment might have been anxiety arousing, at least more so than if one was allowed his own choice in the matter. In addition, there is less likelihood that a chosen S would be able to participate with his friends. In the present study there was a greater opportunity for S to participate with his friends. It would seem more likely that anxiety would be more readily aroused by, and projected onto, strangers. It also seems that anxiety might be alleviated by participation in the experiment with familiar

persons. These notions would have to be tested.

The second important difference between the pilot study and the present one is that the pilot study was completed within two weeks time at the end of the second semester 1962-63 while the present study was run over a period of about eight weeks during the middle of the semester. The present study was more vulnerable to the effects of prior knowledge of the experiment. It was found by E that in spite of his cautioning the Ss not to let anyone else know about the experiment, some of them did tell others about it. One S after participating in the experiment, told E that certain individuals heard about the experiment and were going to try to do the opposite of what they thought E expected to get in his results.

Finally, a factor which seems to have entered the experiment in spite of attempts to control it was competition. More Ss reported that they were competing in the social condition of the arithmetic task than in any other task condition. It is difficult to determine if the Ss actually experienced competitiveness in this task condition, or if they were trying to "second guess" the purposes of E. If S did actually compete, then it is highly possible that this factor disrupted the facilitative effect of the co-working group in much the same way that it did in the above mentioned study by Triplett. It would be advantageous to do a study similar to the present one in which E would purposely incite the Ss to competition in order to test its effects.

Summary

The present study was an investigation of the effects of high and low anxiety on social facilitation. Ss performed written association and multiplication tasks while alone and while a member of a four-or-five-man group. There were twenty, 5-man groups and eighteen 4-man groups. The mean performance on each of the tasks for the twenty Ss scoring highest and the twenty scoring lowest on the O subscale of the Nicolay-Walker PRS for each group size was computed. The hypotheses were that there would be no significant difference in mean performance while in the alone condition, but in the social condition, the high anxious subjects would experience a significant decrement, while the low anxious Ss would experience a significant increment in performance. The hypotheses were not supported. The interpretation of the lack of experimental support for the hypotheses was that the conditions were possibly not favorable to the arousal of anxiety.

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APPENDIX

Instructions

Before we begin, I want to emphasize that this experiment does not involve any form of competition; your work will not be compared with that of anyone here or with anyone else who might participate in this experiment at some other time. So, to repeat, do not worry about competing with the others.

For the association task:

"Your first (next) task now is a free association task. When I give you the signal, you are to turn over the paper that is in front of you and look at the word that is at the top of the page. You are to write down immediately your successive free associations starting with that word. You are to continue writing your associations for a period of three minutes. There are two restrictions, however: a) do not write down the successive words of sentences or phrases; b) do not write down the serial associations of numbers. In other words, when I give you the signal, turn over the paper that is in front of you and look at the word at the top of the page. That word will remind you of another word; write the word down. Then continue writing all the words that come to your mind during the allotted three minutes. However, do not write out complete sentences or phrases. Also, do not write out the serial association of numbers. For instance, if you should happen to think of the number six, write out the word six, but then do not write out seven, eight, nine, etc.

Are there any questions?

Is there anyone who is not ready?

You may turn over your papers and begin.

. . . after three minutes have elapsed.

Stop! While we have a three minute rest, please write down your name and this task identification code on the back of your paper.

For the arithmetic task:

For the next (first) task you are to perform a series of simple multiplication problems. You are going to multiply a two digit number by a second two digit number. Perform all the work in the space provided for each problem. Work the problems by the row, starting at the top and working across the page like this. . . After finishing the first row, move on to the second and third and so on until I tell you to stop after two minutes. Work at your maximum speed consistent with accuracy.

Are there any questions?

Is there anyone who is not ready?

Turn your papers over and begin.

. . . after two minutes have elapsed.

Stop! Again I would like you to place your name and this task identification code on the back of your data sheet.

APPROVAL SHEET

This thesis submitted by George E. Wismeler has been read and approved by three members of the Department of Psychology.

The final copies have been examined by the director of the thesis, and the signature which appears below verifies the fact that any necessary changes have been incorporated, and that the thesis is now given final approval with reference to content, form, and mechanical accuracy.

The thesis is therefore accepted in partial fulfillment of the requirements for the degree of Master of Arts.

7/10/50
Date

George E. Wismeler
Signature of Advisor