

EFFECTS OF ANXIETY PRODUCING  
//  
AND NON-ANXIETY PRODUCING INSTRUCTIONS  
ON TASK PERFORMANCE

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A Thesis  
Submitted to the Faculty  
of  
Appalachian State University

In Partial Fulfillment  
of the Requirements for the Degree  
Master of Arts

by  
Michael D. Smith  
//  
August 1973

EFFECTS OF BOTH ANXIETY PRODUCING  
AND NON-ANXIETY PRODUCING INSTRUCTIONS  
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by

Michael D. Smith

Approved by

R. H. Lewis  
Chairman, Thesis Committee

R. S. Man  
Major Professor

W. D. Brown  
Minor Professor

W. J. Simpson  
Chairman, Department of Psychology

Ernest Williams  
Dean of the Graduate School

## Acknowledgments

I would like to thank my thesis committee, Dr. Richard Levin, Dr. William Moss, and Dr. Robert Maris for their guidance and support during my graduate program. Also, further thanks should go to the Psychology Department at Appalachian State University for supplying me with the proper instruments as well as Dr. Willard Brigner and Dr. Moss for offering their students as subjects in this research. A special thanks should go to Mr. Dick Bracy, a fellow student, who dilligently worked with me in compiling the data. My wife, Marianna, should be thanked for helping me do the math in this study in hopes that it will help her be more efficient in balancing the check-book.

## Abstract

The present study was designed to measure the effects of anxiety on task performance when Ss are told they are being compared against either the same or opposite sex.

The Sarason Test Anxiety Scale (TAS), an unstandardized achievement test, and a maze were used on 48 students from Appalachian State University. Bogus norms and scores were used in either anxiety producing (AP) or non-anxiety producing (NAP) instructions.

It was predicted that LA Ss would perform better than HA Ss, especially under AP conditions. The Null Hypothesis would suggest no significant difference between the comparative groups, same (S) and opposite (O) sex.

The results of a 2 x 2 x 2 factor analysis of variance showed that: (a) Ss who performed under NAP instructions made significantly ( $p < .01$ ) less errors than Ss performing under AP instructions, (b) Ss performing under the S condition made significantly ( $p < .001$ ) more errors than Ss performing under the O condition, (c) the effects of anxiety and instructions are interactive ( $p < .001$ ).

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The present study was designed to assess the effects of both anxiety producing and non-anxiety producing instructions on task performance when the subjects are told that their task performance is being compared against other members of either the same or opposite sex. An achievement test was used to produce anxiety while a maze was used as a measure of performance, an effect of anxiety.

Other studies have been produced which effectively deal with and control anxiety in an academic setting (McClelland, Clark, Roby, and Atkinson, 1960; McClelland, Atkinson, Clark, and Lowell, 1953).

In a more specific study, Atkinson and Litwin (1960) when testing need achievement and test anxiety, found that when students are motivated to achieve, that is, make an "A" on the final examination, the result is always an acceptable grade. However, when the motive to avoid failure is stronger, that is, fear of an "F", the result is always bad.

When other variables, such as task performance, are applied to need achievement in relation to expectation of success or failure, similar findings are reported to substantiate Atkinson's studies (Feather, 1961). SS were differentiated by the Mandler-Sarason Test Anxiety Questionnaire according to either low or high anxiety. They were then given either AP or NAP instructions before their task performance which consisted of a series of puzzles. Their persistence at task performance was measured in relation to how long they worked on one puzzle before going to



the next. Some puzzles could be solved while others could not. The Ss had a choice of attempting another puzzle before completing the one on which they were working. The results revealed, (a) a better performance by LA Ss, (b) Ss in NAP conditions performed better than AP conditions, (c) when the motive to achieve success is high, persistence at task performance is stronger. Conversely, when the motive to avoid failure is evident, persistence at task performance will be low.

Phares, Ritchie, and Davis (1968) found basic differences between groups in both the amount of recall and the amount of positive and negative material retained when they were given bogus results from a series of personality tests. The two groups were called either internal or external controls. The former refers to the individual who feels that he has control over the reinforcements that occur relative to his behavior, while the latter refers to the individual who tends to believe that outside forces such as chance or fate determine the occurrence of reinforcements. While no specific differences were found between the two groups in reference to anxiety, the externals recalled significantly more negative material from their test results than did the internals. The externals were also superior in the amount of total recall while all other studies in this area have found the internals to be superior in the amount of recall. However, this difference may be related to the threatening nature of this study which was in contrast to other studies because of their nonthreatening nature. The fact that this dif-



ference occurred in the context of threat, suggests the role of anxiety.

Two components of test anxiety, such as worry (W) and emotionality (E), have been studied and have shown a definite affect on cognitive performance (Doctor and Altman, 1969). The results were contiguous with the hypothesis that W was more highly correlated with expectancy of success ratings than E. High W Ss evidenced significant decrements from pre- to post-examination assessments of W scores, suggesting the effects of perceived aversiveness of the test taking situation. The W component of test anxiety was more highly associated with actual performance on the final than E. Other studies also support hypotheses that E scores represented fear of failure, which is anxiety producing and found in high anxious persons. (Liebert and Morris, 1967).

## Method

### Subjects

The subjects were 48 (14 males and 34 females) chosen out of a population of 97 students (37 males and 50 females) enrolled in a sophomore level psychology course at Appalachian State University in the spring of 1972.

### Apparatus

The Ss were initially given the Sarason Test Anxiety Scale (TAS) in order to differentiate between high anxious (HA) and low anxious (LA) individuals. A dicotomy was established by using scores 1-5 as LA levels and scores 9-16 as HA levels. The interim scores, 6-8, were not used.

An unstandardized multiple choice test of general informational knowledge, falsely defined as a mental abilities test was used as a basis for producing anxiety (see appendix).

Bogus norms and scores were used to produce either high or low anxiety depending on the appropriate group. The tests were run during a period of one day and a time was set up during the last two hours of that day when the Ss could be notified of their results. Although there were still Ss taking the test during this time, they were kept in a different room so that they could not be told about the experiment by a friend who had already been dehoaxed. These last students were notified directly after they participated in the study and were not allowed to go back into the pre-examination room.

The task performance was the dependent variable in this

study. It was a simple maze with an attached stylus and counter. The Ss were informed that they would be working under a limited time interval but were not informed that the length of the interval was five seconds. Pilot data was run to establish the efficiency of using the five second interval which suggested that the maze could not be completed.

### Procedure

There were two fundamentally different conditions under which the tests were given. In the first AP instructions were used. The test administrators were introduced to the S as graduate students conducting experiments related to their thesis. Then immediately before giving the performance task, the S was provided with the instructions. Included were the bogus norms and bogus scores to produce the desired level of anxiety. These instructions were similar to those used by McClelland and his associates (1960), and were given exactly as follows (example scores were used).

As you know, the second test you took was a test of mental ability. You scored a 3 on that test while the mean score for your class was 9.2. You really blew the bottom out of that test; it was the worst score we had. The test you will take today is also a test which has been shown to correlate very highly with the second test as a measure of mental ability. Scores on the second and this the third test, are being compared within and across sexes. In your particular case, your scores will be compared with all of the males (or females) in your class.

You are to take the stylus and beginning in the start box here (show where), trace the maze as quickly but as carefully as possible to the goal box here. You may have a practice trial.

Now this trial will be timed. You are to go as quickly but as carefully as possible starting when I say go. Please stop immediately when I say stop and no matter where you are in the maze, remove your stylus. Remember to go as quickly but as carefully as possible.

In the second condition, NAP instructions were used. The test administrators were introduced in the same manner, while bogus norms and scores were also used. However, this time the bogus norms and scores were used in a positive way to suggest high mental ability. The following is an example of NAP instructions.

As you know, the second test you took was a test of mental ability. You scored a 13 on that test while the mean for your class was 6.8. You really did great; one of the best scores we've seen so far.

(From this point on, the instructions are identical with the AP condition starting with the sentence: "The test you will take today...").

Six Ss were randomly assigned to each of eight experimental groups. The Ss were randomly assigned from the data collection sheet which was composed of sex of the S, anxiety level, and performance on the achievement test. Six groups contained two males and four females, and two groups contained one male and five females. These last two groups, HA/AP/S and LA/AP/S, were matched so that the groups would be more balanced. Table 1 shows the eight different conditions.



Table 1  
Conceptual Formation of Group Conditions

	<u>Anxiety</u>	<u>Instructions</u>	<u>Comparative Groups</u>
Group 1	HA	AP	S
Group 2	HA	AP	O
Group 3	HA	NAP	S
Group 4	HA	NAP	O
Group 5	LA	AP	S
Group 6	LA	AP	O
Group 7	LA	NAP	S
Group 8	LA	NAP	O

## Results

Using a 2 x 2 x 2 analysis of variance, the results summarized in Table 2 show that Ss under NAP conditions made significantly ( $F=7.95$ ,  $p<.01$  for 1 and 40 df) less errors than Ss performing under AP conditions. 110.5 mean errors were found for the NAP condition as compared to 129.75 mean errors for the AP condition.

The condition, Same (S) versus Opposite (O) comparison groups, showed that Ss performing under the O condition produced significantly ( $F=14.23$ ,  $p<.001$  for 1 and 40 df) less errors than Ss performing under the S condition. 133 mean errors were found for the S condition as compared to 107.25 mean errors for the O condition.

An interactive effect showed a significant difference ( $F=19.64$ ,  $p<.001$  for 1 and 40 df) between the anxiety level and instructions (see Figure 1).



Table 2  
Summary Table for the Analysis of Variance

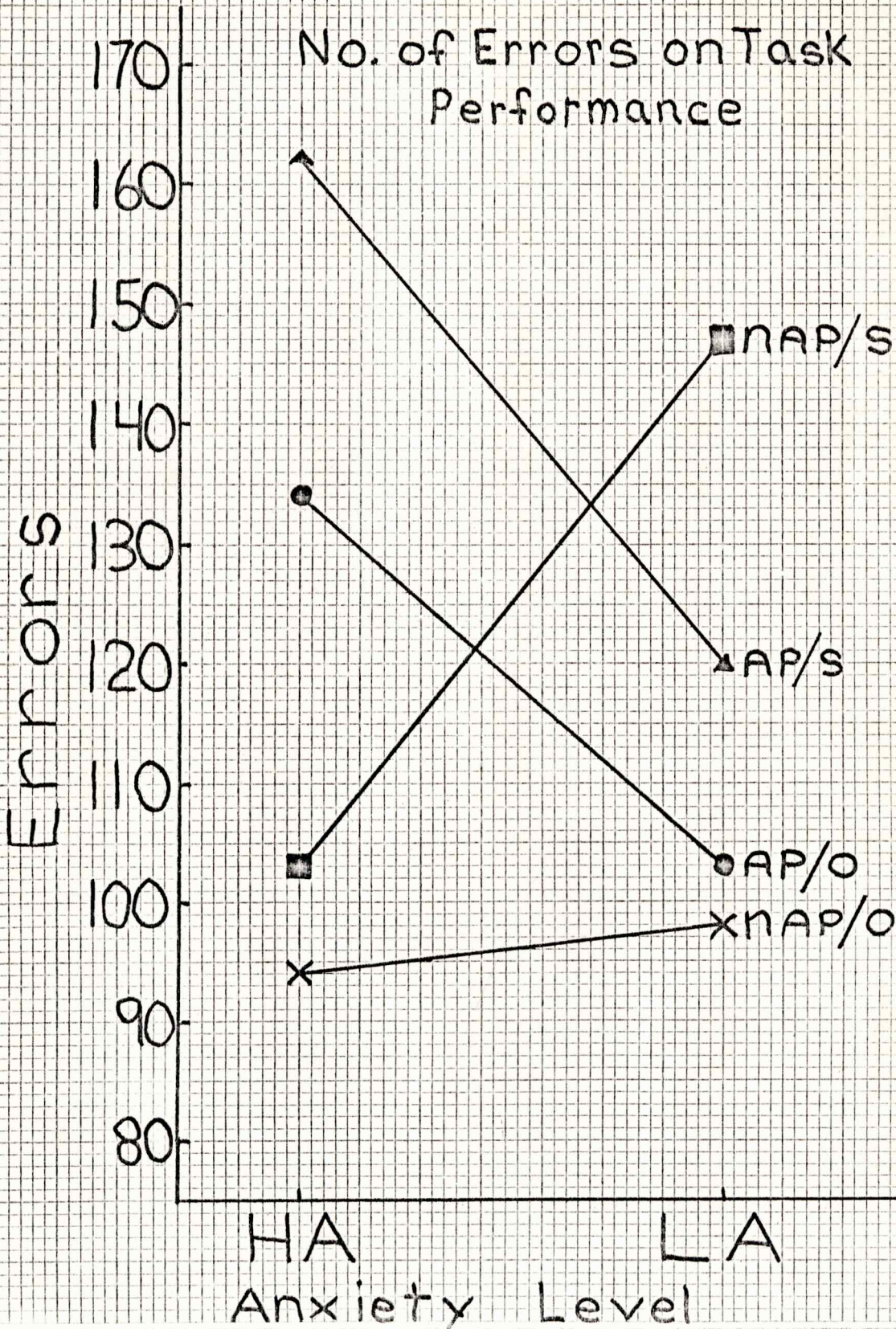
Source	df	MS	F
Total	47		
Anxiety (A)	1	13.02	.84
Instructions (B)	1	123.52	7.95*
Comparative Groups (C)	1	221.02	14.23**
A x B	1	305.02	19.64**
A x C	1	17.52	1.13
B x C	1	3.52	.23
A x B x C	1	54.19	3.55
Error	40	15.53	

\*p .01\*

\*\*p .001\*\*



# Figure 1



Instruction/Comparison Groups



### Discussion

The success of using AP and NAP instructions were found in this investigation with the NAP condition yielding significantly ( $p < .01$ ) less errors than the AP condition. This does indicate the role of anxiety on task performance and shows that nonthreatening approaches by the E to the S can cause decrements in the amount of errors produced. This was not unexpected and is consistent with other studies of test anxiety which show decrements in performance in relation to the amount of anxiety present (Atkinson and Litwin, 1960).

During this investigation, the examiner noticed several actions of the Ss which may be attributed to anxiety. The most noticeable were statements by the Ss such as, "I know I'll fail this one too," or "I really get uptight when I take tests," etc. A common nonverbal sign was nervousness when the S was handed the stylus to perform on the task. The effects of the comparative groups showed that Ss performing under the S condition made significantly ( $p < .001$ ) more errors than Ss performing under the O condition. These results suggest the role of competition on performance. Although the role of competition is evident between sexes, the role of anxiety appears to be a variable in direct competition within the sexes. This indicates that both sexes are more concerned, therefore more competitive within the sex. It may be further stated that people are possibly more effective in rationalizing their performance when they

perform badly in relation to the other sex. Whereas, they have more difficulty in finding excuses when they perform badly in relation to the same sex because society tends to stereotype people and their qualifications within sexes (ex.-nurses, secretaries, physicians, professional sports, etc.).

Anxiety and instruction yielded the only significant difference ( $p < .001$ ) in interactive effects. This may be largely attributed to the performance of HA Ss under AP and NAP conditions. A mean score of 148 errors per group were found for the AP condition as compared to 98.5 mean errors for the NAP group. The LA condition produced 122.5 mean errors for the NAP group, and 111.5 mean errors for the AP groups.

Another factor which was surprisingly insignificant was the difference in performance between the LA and HA group. The difference was 124.5 mean errors for the HA groups and 117 mean errors for the LA groups (498 and 468 total errors for each condition respectively). Mandler and Sarason (1952) have viewed the behavior of Ss having low test anxiety as less conflicted and more task oriented, therefore contending that LA Ss tend to perform better on tasks than HA Ss.

While the results of this study have answered some basic questions of task performance with comparative groups, many more questions have been raised. Other studies could be initiated to test the effects of sex in comparative groups on task performance. For instance, this study could be replicated

using either all males or all females, or a parametric study using an equal amount of male and female Ss. A comparative analysis could then be used with the present investigation to study the difference between a parametric-nonparametric relationship.

Other populations could be used to test the effects of comparative groups on task performance. These possibilities may include high school students, elementary school students, or even different socioeconomic levels. The results of these inquiries may eventually lead to preventative methods in helping students master their test anxiety in classroom situations.

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This is a test of your general mental ability. Each problem is followed by several answers. Write the letter of the correct answer in the space provided.

1. The composer of "An American in Paris" was:  
(a) Bernstein (b) Stokowsky (c) Garshwin (d) Kelly
2. The 1812 Overture was written about:  
(a) Commodore Perry (b) Lone Ranger (c) Napoleon (d) Andrew Jackson
3. The formula  $C_{12}H_{22}O_{11}$  stands for :  
(a) Carbonic Acid (b) Alcohol (c) Sugar (d) Quinine
4. The distance between the bases in baseball is :  
(a) 75 feet (b) 90 feet (c) 100 feet (d) 150 feet
5. The Fourteenth Amendment to the U.S. Constitution was passed under:  
(a) Lincoln (b) Washington (c) Jefferson (d) McKinley
6. "Arrowsmith" was written by:  
(a) Babbit (b) Lewis (c) Hawthorn (d) James
7. "Leaves if Grass" was written by :  
(a) Whittier (b) Sandburg (c) Whitman (d) Thoreau
8. World War II is to Hitler as World War I is to:  
(a) Bismarck (b) Roosevelt (c) Wilhelm (d) Churchill
9. Heart is to aorta as pump is to:  
(a) Valve (b) Ventricle (c) Chamber (d) Pipeline
10. Straight line is to curve as  $4x + 3y = 10$  is to :  
(a)  $4x + 8 = 12$  (b)  $x^2 = 8$  (c)  $3x^2 + 12y = 8$  (d)  $x = y = 9$
11. Redundant means the same as :  
(a) Loud (b) Superfluous (c) Ignorant (d) Devious
12. Ramification means the same as :  
(a) Break (b) Vilify (c) Redolent (d) Consequence
13. Epistle means the same as:  
(a) Saint (b) Letter (c) Plant (d) Religion

14. KPZBLQRTVWN

How many of the following sets of letters are exactly like the above example?

KPZBLQRTVWN

KPZLBQRTVWN

KPZBLQRTVWN

KPZBQRTVWN

KPZBLQTRVWN

KPZBLQRTVWN

KPZBLQRTVWN

(a) One (b) Two (c) Three (d) Four

15. Which of the following numbers belongs with these numbers 9, 9, 27, 81?

(a) 400 (b) 327 (c) 57 (d) 729

16. Which of the following numbers completes the series 1, 2, 5, 26?

(a) 37 (b) 47 (c) 97 (d) 677

17. What does the following stand for?

CCCP