

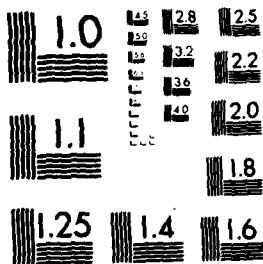
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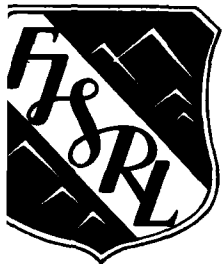
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**FJSRL TECHNICAL REPORT  
80-0021**

**DECEMBER 1980**

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**BRIEF TREATMENT OF TEST ANXIETY  
WITH COGNITIVE MODIFICATION**

**MAJOR RICHARD L. HUGHES  
CAPTAIN LARRY L. WHEELER**

**PROJECT 2303**

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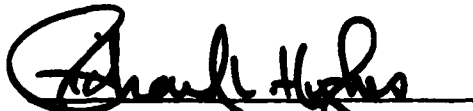
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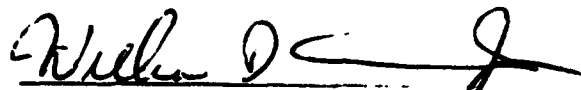
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| 1. REPORT NUMBER<br>FJSRL-TR-80-0021                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 2. GOVT ACCESSION NO.<br>ADA AD-A014 449 | 3. RECIPIENT'S CATALOG NUMBER                                                     |
| 4. TITLE (and Subtitle)<br>Brief Treatment of Test Anxiety with Cognitive Modification.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                          | 5. TYPE OF REPORT & PERIOD COVERED<br>Final Rept. October 1979-December 1980      |
| 7. AUTHOR(s)<br>Richard L. Hughes, Major, USAF<br>Larry L. Wheeler, Captain, USAF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                          | 6. PERFORMING ORG. REPORT NUMBER                                                  |
| 9. PERFORMING ORGANIZATION NAME AND ADDRESS<br>Department of Behavioral Sciences and Leadership<br>U.S. Air Force Academy, Colorado 80840                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                          | 8. CONTRACT OR GRANT NUMBER(s)<br>(S) 23.6                                        |
| 11. CONTROLLING OFFICE NAME AND ADDRESS<br>Frank J. Seiler Research Laboratory (AFSC)<br>U.S. Air Force Academy, Colorado 80840                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                          | 10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS<br>2303 F1-52 (17) F1 |
| 14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)<br>(11) L-20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                          | 12. REPORT DATE                                                                   |
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| 16. DISTRIBUTION STATEMENT (of this Report)<br>Approved for public release; distribution unlimited.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                          |                                                                                   |
| 17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                          |                                                                                   |
| 18. SUPPLEMENTARY NOTES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                          |                                                                                   |
| 19. KEY WORDS (Continue on reverse side if necessary and identify by block number)<br>test anxiety<br>cognitive modification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                          |                                                                                   |
| 20. ABSTRACT (Continue on reverse side if necessary and identify by block number)<br>- Cognitive modification has become a popular treatment for test anxiety. Unlike other treatments, it has led to improvements in academic performance as well as to decreases in test anxiety. The present study evaluated a brief cognitive modification treatment of test anxiety which was approximately one-half as long as previous effective treatments. This four session treatment led to significant decreases in test anxiety relative to a relaxation control group and a no treatment control group but not to improvement on the WAIS Digit Symbol sub-test. Neither was there any improvement in treatment groups in GPA after |                                          |                                                                                   |

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## Brief Treatment of Test Anxiety with Cognitive Modification

### Abstract

Cognitive modification has become a popular treatment for test anxiety. Unlike other treatments, it has led to improvements in academic performance as well as to decreases in test anxiety. The present study evaluated a brief cognitive modification treatment of test anxiety which was approximately one-half as long as previous effective treatments. This four session treatment led to significant decreases in test anxiety relative to a relaxation control group and a no treatment control group but not to improvement on the WAIS Digit Symbol sub-test. Neither was there any improvement in treatment groups in GPA after treatment or one year later. There was improvement in GPA in the no treatment control group.

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## Brief Treatment of Test Anxiety with Cognitive Modification

Richard L. Hughes and Larry L. Wheeler

For many years the primary treatment for test anxiety has been systematic desensitization. In terms of Liebert and Morris's (1967) distinction between the cognitive and emotional components of test anxiety, the effort for a long time has been directed toward modifying emotionality, or physiological overarousal. The assumption behind desensitization is that anxiety is primarily a problem of physiological overarousal. Anxiety can be reduced presumably if lowered physiological arousal can be achieved in the testing situation.

This approach has been partially successful in that systematic desensitization is rather consistently effective in reducing self-reported test anxiety (Spielberger, Anton, and Bedell, 1976). However, evidence is accumulating which suggests that treatments designed to reduce emotionality may not be effective in improving academic performance (Spielberger et al; Hughes, 1979).

An approach that appears more promising is directed toward the cognitive component of test anxiety. Wine (1971) argued persuasively that test anxiety is not so much a problem of overarousal as it is one of dysfunctional attentional processes during academic evaluations. For example, test-anxious individuals frequently engage in task-irrelevant distractive behaviors such as self-criticism. Wine developed an attentional training program for treating test anxiety and she reported improvement on two standardized performance measures among participants in her program. Meichenbaum (1972) developed a cognitive modification approach which was successful in improving the grade point average of test anxious persons. Holroyd (1976) developed a cognitive treatment derived largely from rational-emotive therapy which was significantly more effective than desensitization in improving performance on several measures.

Dissatisfaction with treatments designed to reduce emotionality is also growing because of evidence that seems to contradict their basic premise. Such treatments are based on the premise that test-anxious persons are physiologically overaroused relative to others in stressful situations. Yet, the results of at least two recent studies refute that view. Holroyd, Westbrook, Wolf and Radhorn (1978) investigated whether there are differences in physiological response between high and low test-anxious individuals in testing situations. The groups showed virtually identical changes in electrodermal activity and heart rate, a finding inconsistent with the view that test-anxious persons are physiologically overaroused. Also, Hughes (1979) demonstrated that the frontalis muscle tension of test-anxious individuals was no greater during imagined evaluative experiences than were those of persons low in test anxiety. This finding supports the view that test anxiety is more a matter of self-labeling than physiological overactivity.

It should be noted that various studies have reported results either supportive of the "emotionality" view or inconsistent with the "cognitive" view. Bronzaft and Stuart (1971) reported differences in GSR reactivity between high and low test-anxious persons. Finger and Galassi (1977) failed to obtain performance improvement following a cognitive treatment. Likewise, Parker (1980) failed to obtain performance improvements with test anxious subjects following a cognitive treatment using similar procedures as Holroyd. Nevertheless, the overall evidence suggests that treatments which emphasize the modification of cognitive and attentional responses during test-taking may be more efficacious than those which emphasize the modification of emotional responses.

Because of the number of persons who experience test anxiety, which may be fifteen percent of all college students, it is important to develop effective yet brief treatments for it. Since cognitive modification has been relatively successful in improving performance,

this study evaluated the effectiveness of a brief cognitive modification program. Holroyd reported performance changes following a spaced, seven hour treatment program; the present study evaluated a program approximately one-half that long.

#### METHOD

Subjects. Twenty-four freshmen at the Air Force Academy participated in this study. They were selected on the basis of high scores on the Test Anxiety Inventory (Spielberger, Gonzalez, Taylor, Algaze, and Anton, 1978), which had been administered to all students in an introductory psychology class. The average TAI score for these subjects was 57.1. The mean for all freshmen was 35.6 (S.D. = 10.8). Ss were assigned to three groups: a cognitive modification group, a relaxation control group, and a no treatment control group.

Treatments. Ss participated in one pretesting session, four training sessions and one posttesting session. The no treatment control subjects were only contacted at pretesting and posttesting. The training sessions each lasted forty-five minutes and they were spaced over a two and one-half week period. At the testing sessions Ss completed the WAIS Digit Symbol sub-test, which has been used as a performance measure in previous studies of test anxiety (Finger and Galassi, 1977). At posttesting Ss were readministered the TAI. Grade point average provided an unobtrusive performance measure.

Ss in the cognitive modification group received lecturettes on the attentional control of behavior and self-defeating cognitions during tests. Ss practiced attentional control and became more aware of their distractibility during various exercises. Ss spent approximately one-half of their treatment time visualizing testing scenarios and covertly rehearsing constructive coping behaviors (e.g. what to say to yourself as tests are being passed out; what to say to yourself when you cannot decide between various multiple-choice alternatives).

Ss in the relaxation control group practiced deep relaxation while

listening to several commercially available audio cassettes which included progressive relaxation and autogenic training elements. Ss were advised that training in deep relaxation would remedy test anxiety.

#### RESULTS

Results are summarized in Tables 1 - 3. Test anxiety decreased in the cognitive modification and relaxation groups although somewhat more so in the former. Performance on the Digit Symbol sub-test improved in all groups by a consistent but nominal amount suggesting practice effects. The grade point averages refer to mid-term grades just prior to study, the final semester grades are for that same semester (after the study), and semester grades one year later. They clearly indicate that GPA did not improve in either treatment group. However, improvement did occur in the no-treatment control group.

|                  | Before<br>Treatment |      | After<br>Treatment |      |
|------------------|---------------------|------|--------------------|------|
|                  | $\bar{X}$           | S.D. | $\bar{X}$          | S.D. |
| Cog-modification | 57.2                | 8.4  | 38.2               | 8.53 |
| Relaxation       | 54.1                | 4.2  | 41.7               | 13.0 |
| No treatment     | 60.0                | 5.2  | 57.0               | 8.2  |

Table 1. Means and standard deviations on the Test Anxiety Inventory before and after treatment.

|                  | Before<br>Treatment |      | After<br>Treatment |      |
|------------------|---------------------|------|--------------------|------|
|                  | $\bar{X}$           | S.D. | $\bar{X}$          | S.D. |
| Cog-modification | 68.2                | 13.6 | 71.1               | 14.3 |
| Relaxation       | 69.4                | 11.4 | 75.1               | 8.3  |
| No treatment     | 67.3                | 9.7  | 72.0               | 11.2 |

Table 2. Means and standard deviations on the Digit Symbol test before and after treatment.

|                  | Before<br>Treatment |      | After<br>Treatment |      | One-year<br>Follow-up |      |
|------------------|---------------------|------|--------------------|------|-----------------------|------|
|                  | $\bar{X}$           | S.D. | $\bar{X}$          | S.D. | $\bar{X}$             | S.D. |
| Cog-modification | 2.13                | .25  | 2.14               | .37  | 2.02                  | .78  |
| Relaxation       | 2.60                | .38  | 2.61               | .63  | 2.54                  | .55  |
| No treatment     | 2.35                | .73  | 2.59               | .55  |                       |      |

Table 3. Means and standard deviations of GPA before and after treatment (GPA on a 4-point system).

### DISCUSSION

As in numerous previous studies, treatments for test anxiety had differential effects upon self-report and performance measures. Ss from both the cognitive modification and relaxation control groups reported significant decreases in test anxiety yet neither group demonstrated improvement in academic performance. Furthermore, it is not likely that the failure to detect any improvement in GPA following treatment was due to any latency period in the manifestation of improvement; a one-year follow-up still did not reflect improvement in GPA in the treatment groups. The greater decreases in test anxiety in the cognitive modification group should be attributed to the greater interaction with E which Ss in this group experienced.

The absence of performance improvement was unanticipated in the cognitive modification group since that type of treatment previously had been reasonably effective in improving performance. Two factors may account for this negative finding. It may have been the shortened treatment in the present study which was responsible. The purpose of this study was to determine whether brief treatments are viable in the cognitive modification of test anxiety and perhaps four sessions are too few to obtain performance effects. However, it is not likely that just this factor accounted for the results. Finger and Galassi did not observe any performance improvement with cognitive procedures and their treatment involved eight sessions as did Parker's. Parker

concluded that cognitive modification, as with systematic desensitization, may only reliably show effects on self-reported test anxiety. Improvements in academic performance may only be likely through other avenues such as study skills counseling. The results of the present study certainly add to the increasing pessimism (e.g. in Spielberger et al, 1976) about the efficacy of treatment programs.

A word should be added about the unanticipated improvement in GPA in the no treatment control group. While its significance should not be exaggerated, this change is interesting in that unlike the other groups, not a single student in this group declined in GPA. Perhaps Ss in this group received some other kind of assistance during the same time period, an assistance which may have seemed impractical or unnecessary to subjects in the treatment groups. Maybe some treatments for test anxiety not only are ineffective in improving academic performance but may actually discourage the pursuit of different potentially fruitful avenues of help.

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