

**A COMPARISON OF TWO METHODS OF
REDUCING TEST ANXIETY IN COLLEGE STUDENTS**

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A COMPARISON OF TWO METHODS OF REDUCING
TEST ANXIETY IN COLLEGE STUDENTS

An Abstract

Presented to
the Graduate Council of
Austin Peay State University

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

by
Jack Arthur Watts

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ABSTRACT

The major purposes of this study were to determine (1) if treatment for anxiety in a group situation would result in less anxiety, and (2) if a shorter treatment procedure (structured Group Interaction), as far as time involvement was concerned, would be as effective as a longer treatment procedure (Systematic Desensitization) in reducing test anxiety.

Sarason's Test Anxiety Scale (TAS) was used as a measure of the students' level of test anxiety. Before the experimental study began it was necessary to establish normative data on the TAS. The norms were established on 556 students registered for sophomore Psychology and Art courses at Austin Peay State University during the Winter Quarter. Based on the normative data accumulated, a score above 22, or .5 standard deviations above the mean, on the TAS was considered to be indicative of high test anxiety.

Subjects for the study were female students registered for sophomore Psychology and Art courses. Sixteen subjects participated in the study. They were assigned to three groups: Systematic Desensitization (Group A), Structured Group Interaction (Group B, and a no-treatment control group (Group C).

The hypotheses tested by the study were:

1. There is no statistically significant difference between Procedure A and Procedure C in terms of reducing test anxiety as measured by the TAS.

2. There is no statistically significant difference between Procedure B and Procedure C in terms of reducing test anxiety as measured by the TAS.

3. There is no statistically significant difference between Procedure A and Procedure B in terms of reducing test anxiety as measured by the TAS.

The results of the pre- and posttest were analyzed employing analysis of variance and Duncan's Multiple-Range Test. The .05 level of significance was the criteria for determining significance.

A statistical analysis of the data allowed the following conclusions to be drawn:

1. There was significant difference between the Systematic Desensitization procedure and a no-treatment procedure in terms of reducing test anxiety.

2. There was a significant difference between the Structured Group Interaction procedure and a no-treatment procedure in terms of reducing test anxiety.

3. There was no significant difference between the Systematic Desensitization procedure and the Structured Group Interaction procedure in terms of reducing test anxiety.

The conclusions of this study indicate that the two experimental procedures were statistically more significant in reducing test anxiety than the no-treatment procedure. Further conclusions indicate that the Structured Group Interaction procedure is as effective as the Systematic Desensitization procedure in terms of reducing test anxiety. Since the Structured Group Interaction procedure requires only five hours of therapy time as opposed to a minimum of ten hours for the Systematic Desensitization procedure, counselors and therapists should be able to treat more students by using the former procedure.

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

by
Jack Arthur Watts
August 1971

To the Graduate Council:

I am submitting herewith a Thesis written by Jack Arthur Watts entitled "A Comparison of Two Methods of Reducing Test Anxiety in College Students." I recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Arts, with a major in Psychology.

Elizabeth A. Stokes
Major Professor

We have read this thesis and
recommend its acceptance:

Garland E. Blair
Minor Professor

John Minetos
Third Committee Member

Accepted for the Council:

Wayne E. Stanger
Dean of the Graduate School

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Grateful acknowledgement is expressed to the students who participated in the experiment. It is hoped that those students who were members of the experimental groups will continue to benefit from the respective therapeutic procedures employed.

To Deborah Langford goes my appreciation for her help in keeping the materials used in this study organized. Appreciation is felt for Smoke, who was a continual source of amusement during the late hours spent composing this

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CHAPTER I

INTRODUCTION

Anxiety is one of the most extensively discussed, but perhaps one of the least understood, psychological reactions. The concept of anxiety assumes a central position in most theories of behavior and/or personality. Chaplin (1968) defines anxiety as a "feeling of mingled dread and apprehension about the future without specific cause for the fear." Most persons have had the feeling of being anxious about future events or circumstances without really understanding why. Anxiety often manifests itself in hyperactivity and is mildly unpleasant. But, at times, anxiety can impair normal psychological performance, and, if prolonged, can lead to other behavioral disorders. Overeating, oversleeping, smoking and alcoholism are a few of the symptoms that may be caused by excessive anxiety (Horney, 1937). Defenses mustered to cope with anxiety may run the entire gamut of abnormal behavior (Coleman, 1964).

Anxiety may be viewed as either a general or a specific factor. One specific type of anxiety that has been investigated is that of test anxiety. Numerous studies have provided evidence that test anxiety is a specific measurable factor, and it has an interfering influence on test

performance (Alpert and Haber, 1960; Baldry and Sarason, 1967; Chambers, 1968).

Many college students have fears relating to test performance. One or more reasons may be responsible for their fears. Success or failure in their course work is usually dependent on test results. The self concept is often threatened by examinations. Grades on examinations may have an effect on how a student sees himself, as well as how others see him.

Examination results can also have a more far reaching effect. A student may view an examination as measuring his potential for success in future courses, a future occupation, and even his future happiness in the social environment. There is also evidence to support the hypothesis that specific anxiety has a generalizing effect over a period of time, causing anxiety in other related areas (Jacobson, 1970).

Considering the significance of anxiety in personality disorders, it is understandable that many theoreticians and clinicians have concerned themselves with the reduction of anxiety through psychotherapy. More specifically, test anxiety has been the concern of numerous studies searching for effective methods of reducing specific anxiety.

One such method that has been widely and effectively

applied is that of Systematic Desensitization, first reported by Wolpe (1952). Subsequent studies have found that desensitization is an effective technique in reducing anxiety (Donner, 1969; Johnson and Sechrest, 1968; Mitchell and Ingham, 1970).

Even though Systematic Desensitization has been supported as an effective method, the busy schedules of students, professors, and counselors cause this method to be impractical to apply in handling the large number of students suffering from test anxiety. Attempts have been made to reduce the amount of time required of the counselor by utilizing group sessions rather than individual desensitization therapy sessions (Kondas, 1967). A standardized anxiety hierarchy has also been effective in reducing the time required for the desensitization procedure (Emery, 1967). The use of group meetings and the use of a standardized hierarchy were found to be as effective as individual therapy and the individualized hierarchy in reducing test anxiety (Ihli, 1969; Emery and Krumboltz, 1967). Systematic Desensitization usually requires a minimum of ten hours of therapy, averaging approximately sixteen sessions per treatment per group. The student must spend at least the same amount of time in group sessions as in individual sessions, so the group technique

does not reduce time involvement for the student, but does afford an opportunity for the counselor to offer treatment to a larger number of persons suffering from anxiety.

A method which requires significantly less time for both counselor and student is Structured Group Interaction (Weinstein, 1968). Weinstein derived this method from experimental studies on the psychological functioning of the extrovert (Eysenck and Rachman, 1965; Peters, 1966; Pavlov, 1957), and applied it to a group of students with extroverted personalities. Her treatment involved only five hours of group meetings. The results indicate that Structured Group Interaction was as effective in reducing test anxiety as was Systematic Desensitization. However, Weinstein applied this method to only a small group (four) of extroverted students.

There appears to be a need for an effective treatment procedure which would reduce the time involvement for both the student and the counselor. Weinstein (1968) has demonstrated the efficiency of a shorter time period with specially selected students, but there is a need to determine if the method has wider applicability to those suffering from test anxiety.

Purpose of the Study

The major purposes of this study were to:

1. compare the effectiveness of a group Systematic Desensitization procedure involving ten hours of treatment (hereafter referred to as Procedure A) to a no-treatment control group (Procedure C);
2. compare the effectiveness of a Structured Group Interaction procedure (Procedure B) to a no-treatment control group (Procedure C);
3. compare the effectiveness of Procedure A to Procedure B.

Sarason's TAS was used as a pre- and posttest.

Hypotheses

1. There is no statistically significant difference between Procedure A and Procedure C in terms of reducing test anxiety as measured by the Test Anxiety Scale.
2. There is no statistically significant difference between Procedure B and Procedure C in terms of reducing test anxiety as measured by the Test Anxiety Scale.
3. There is no statistically significant difference between Procedure A and Procedure B in terms of reducing test anxiety as measured by the Test Anxiety Scale.

Analysis of variance using the five percent level of

significance was employed to reject the null hypotheses.

Definition of Terms

For the purpose of this study, the following definitions were used:

1. Procedure A: The therapy procedure of Systematic Desensitization in group sessions.
2. Group A: The group receiving Procedure A.
3. Procedure B: The therapy procedure of Structured Group Interaction.
4. Group B: The group receiving Procedure B.
5. Procedure C: The no-treatment control procedure.
6. Group C: The no-treatment control group.
7. High test anxiety: Test anxiety which is .5 standard deviations or more above the mean as measured by the Test Anxiety Scale.
8. TAS: The Test Anxiety Scale by I. G. Sarason (1971).

Limitations of the Study

1. The study was confined to students enrolled in sophomore Psychology and Art courses at Austin Peay State University.
2. All subjects who volunteered were female students.

3. No attempt was made to assess the intellectual abilities, levels of aspiration, or any other personality factors of the subjects.

4. The anxiety scale used in the study was a self-report inventory and is subject to the limitations inherent in any self-report inventory.

Review of Related Literature

For some students, test anxiety causes impaired test-taking performance, as well as unpleasantness during test preparation. Results of a study by Mandler and Sarason (1952) implied that high anxiety interfered with test performance, while low anxiety appeared to prove helpful. Alpert and Haber (1960) produced a different type of scale in which they attempted to differentiate between facilitating (helpful) anxiety and debilitating (crippling) anxiety. Results of their study suggested that scores on the facilitating scale were positively correlated with actual grade-point averages, while scores on the debilitating scale were negatively correlated with grade-point averages. A more recent study by Walsh, Engbretson and O'Brien (1968) supported the conclusions of Alpert and Haber, but suggested that female subjects contribute the most to correlations between test anxiety and test-taking performance. Dember,

Navine and Miller (1963), however, reported contradictory results. Their findings suggested that male subjects contributed significantly more to correlations between test anxiety and test-taking performance than did female subjects.

Sarason (1957) found that subjects who scored extremely high on the Test Anxiety questionnaire performed at a significantly lower level on course grades than did subjects who scored low on the questionnaire. In a more recent study, Sarason (1959) states that there was a significant tendency for TAS scores to correlate negatively with intellectual measures, whereas there was no correlations of intellectual measures with Taylor's Manifest Anxiety Scale. Sarason infers that this is due to the TAS measuring specific anxiety related to intellectual testing performance. In an experiment relating the TAS to threatening and non-threatening instructions, it was found that subjects with high test anxiety performed lower on a difficult task under threatening instructions than did subjects with low TAS scores. Under nonthreatening instructions the reverse was true, with high test anxiety subjects showing a superior performance on a difficult task as compared to low test anxiety subjects (Sarason, 1961).

The major purpose in reducing test anxiety is improved

examination performance. Sieber (1969) conducted a study which indicated that test anxiety impairs short-term memory. She concludes that impaired short-term memory makes it difficult to engage in trial and error problem solving. When highly anxious subjects were provided with memory support, their performance improved. Lee (1966) also concludes that anxiety interferes with problem-solving performance. Katahn, Strenger and Cherry (1966) found that highly anxious students produced significantly higher GPA's after reduction of test anxiety, relative to their prior performance.

Systematic Desensitization has been extensively employed in research studies as a method of reducing anxiety (Mann and Rosenthal, 1969; Lazarus, 1961). Jacobson (1938) devised a method of progressive relaxation as a procedure for reducing anxiety. He stated that an anxiety state and a relaxed state cannot exist at the same time and, therefore, anxiety can be reduced by practicing progressive relaxation over a period of time.

Wolpe (1958) first reported on the method of Systematic Desensitization. He shortened Jacobson's relaxation technique and applied the principle of reciprocal inhibition using a systematic anxiety hierarchy. Wolpe reported that this method was shorter, more effective and easier to use

than Jacobson's lengthy relaxation method. Johnson and Sechrest (1968), in a study comparing Systematic Desensitization and progressive relaxation, found that Systematic Desensitization was significantly more effective in reducing test anxiety and improving GPA's.

In the study by Katahn, Strenger and Cherry (1966), a combined treatment of group discussion and Systematic Desensitization was employed. Subjects felt that the discussions played a more important part in reduced anxiety and improved GPA's. In a study by Cohen (1969), subjects who were given the opportunity to interact reported significantly greater anxiety reduction than subjects not given the opportunity.

Numerous studies have been conducted applying Systematic Desensitization and variations of group interaction. Prior studies have not dealt exclusively with comparing a shorter (five hour) Group Interaction Procedure with a longer (ten hours) Systematic Desensitization procedure.

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CHAPTER II

DESCRIPTION AND APPLICATION OF THE MEASURING INSTRUMENT, SELECTION AND CLASSIFICATION OF THE SAMPLE, AND THE EXPERIMENTAL PROCEDURE

Description of the Instrument

Sarason's (1971) Test Anxiety Scale (TAS) was employed as the measuring instrument for the pre- and posttest. The TAS is a true-false questionnaire consisting of thirty-seven items. Ralphelson (1957) found a correlation of .53 between the Manifest Anxiety Scale and the TAQ (Mandler and Sarason, 1952), which was an earlier and shorter form of the TAS. In a study comparing TAQ scores with skin conductance, it was found that subjects with high scores had significantly (.05 level) higher skin conductance (Martin and McGowan, 1955). Blair (1970) found a correlation of .47 on a comparison of selected items from the TAQ with physiological tension as measured by a galvanometer.

In a reliability study on the TAQ, Mandler and Cowen (1958) found a test-retest reliability coefficient of .91 (N = 70) and a split-half reliability coefficient of .91 (N = 100). Using the Kuder-Richardson coefficient formula, the investigator found a reliability coefficient of .73 on the TAS (N = 453).

Procedure for Establishing Norms on the Measuring Instrument

Since normative data were not available for the TAS, it was necessary to establish norms before proceeding with the study. During the week before final examinations of the Winter Quarter, permission was granted by the Chairmen of the Art and Psychology Departments at Austin Peay State University to administer the TAS to several classes in each department. The instrument was administered to each class during the last week of the course. Instructions were printed at the top of each questionnaire in an attempt to maintain uniform procedure in each class. In an effort to recruit subjects for the study, instructions were printed at the bottom of each questionnaire to fill in the name, P. O. Box number, and phone number if interested in participating in a group formed for the purpose of reducing test anxiety. A complete copy of the questionnaire with both sets of instructions can be found in the appendix, along with the scoring criteria.

The TAS was administered to 556 students. It was decided before the data were analyzed that scores over a half standard deviation above the mean would be considered as indicative of high test anxiety. The use of .5 S.D. above the mean was decided upon due to a personal communication with I. G. Sarason (1971). Sarason suggested that

a score of 21 or 22 was indicative of high test anxiety. In an analysis of the data, a score of 22 was found to be .5 S.D. above the mean. Table 1 shows the results of the analysis.

TABLE 1
Normative Data on the Test Anxiety Scale

| Total Number of Subjects | Mean Score | Standard Deviation | .5 SD Above the Mean |
|-----------------------------|------------|-----------------------|-------------------------|
| 556 | 18.13 | 8.26 | 22.26 |

Selection of Subjects

There were sixty-five students who signed their name to the questionnaire who obtained a score above 22. All of those students were mailed a letter stating that their score on the TAS indicated that they had more than the average amount of test anxiety. Also, the letter announced two organizational meetings at the first of the Spring Quarter for those still interested in participating. For students unable to attend either meeting, a form asking for daily schedules was enclosed along with an envelope addressed to the investigator. From the sixty-five letters mailed, there were only nine favorable responses.

Since the proposal specified seven subjects in each of three groups, additional recruitment was necessary. Permission was obtained from Psychology professors teaching sophomore courses to secure subjects from their classes during regularly scheduled class periods.

The TAS was administered during the class period. Those who earned scores above 22 were contacted by phone or personal interview and offered an opportunity to participate in the program. Twelve students were selected from these classes for inclusion in the experiment to secure a total of twenty-one participants.

Assignment of Subjects to Groups

Due to conflicting schedules of the subjects, it was impossible to make random assignments to groups. Each subject was assigned to a group according to his schedule. Seven subjects were assigned to each group.

Experimental Procedure for Group A

Group A was scheduled to meet for one hour on Monday and on Wednesday for a period of five weeks, thus involving a total of ten hours for the entire treatment period. The sessions were held in a classroom with tables and chairs arranged in a circle for the group members and the investigator.

Each member of the group was interviewed privately for fifteen minutes prior to the first group meeting. The interview was used to establish rapport and to explain the basic principle of Systematic Desensitization. The importance of attending every group meeting was emphasized. Only five of the subjects were present for the first and second meetings. The absent members were contacted, at which time they expressed the intention to join the group. They continued to be absent, however, even after three personal contacts. The experiment had been in progress for two sessions and it was considered too far advanced to add any additional subjects.

Fifteen minutes of the first meeting were spent explaining the relaxation procedure to be taught during the first three sessions. The next thirty minutes were spent in relaxation training using a pre-recorded tape. All tapes used in relaxation training were pre-recorded by the investigator.

During the second and third sessions the group worked toward establishing an anxiety hierarchy. During the second session each member was asked to describe situations relating to tests which made them feel anxious. A list was then compiled by the investigator from the situations listed by the group members. At the beginning of the third session,

each member was given the list, which included nineteen anxiety situations, and asked to rank them from the most to the least anxiety-provoking situations for him. A final list was then compiled and ranked by the investigator based on the rankings made by the group members. The first ten minutes of the fourth session were spent discussing the anxiety hierarchy, confirming the proper sequence, and explaining how it was to be employed. Between the sixth, and seventh sessions, the anxiety hierarchy underwent some revisions due to an overloading on each end of the continuum in terms of intensity of anxiety provocation. The revised list can be found in the Appendix.

Relaxation training continued during the second and third sessions. The actual desensitization of the hierarchy began during the fourth session. Five to ten minutes were spent relaxing, using the procedure learned in the first three sessions. After the subjects were sufficiently relaxed, they were instructed to imagine as vividly as possible the situation lowest on the anxiety hierarchy. After a period of approximately forty seconds, they were instructed to forget the anxiety situation and relax. When the same situation had been presented several times in this manner, the investigator would ask the members to lift one finger if they still felt any tension or anxiety while

imagining that situation. If no one indicated a feeling of anxiety, the next situation was presented.

The same procedure was followed for the remaining six sessions. At the beginning of each session after the fourth session, the last item covered during the previous session was presented before going on to new items. All items on the hierarchy were introduced and desensitized before the end of the last session. During the tenth and last session, the posttest was administered to all members.

Experimental Procedure for Group B

Group B was scheduled to meet for one hour on Wednesday for a period of five weeks, thus involving a total of five hours for the entire treatment period. The same room and seating arrangement was used as for Group A. As with Group A, each member was interviewed privately for fifteen minutes for the purpose of establishing rapport and explaining the basic principle of the treatment procedure. Again, the importance of attendance was emphasized.

Six of the seven selected subjects kept their appointments and joined the group. Attempts were made to contact the absent subject by telephone and letter in an attempt to get her to participate in the group. These attempts were unsuccessful.

Ten minutes of the first session were utilized for a brief presentation of previous studies of test anxiety. Another five to ten minutes were spent introducing members of the group. For the remainder of the session, members were encouraged to voice their opinions on test anxiety and what it meant to them personally. The major purposes of the discussion were to:

1. provide or encourage catharsis for each member;
2. allow opportunity for every member to participate in a manner similar to that of group interaction therapy (Rogers, 1961);
3. discover problems common to the group;
4. set the stage, in terms of subject matter, for the remaining four sessions.

Even though Group B was termed Structured Group Interaction and patterned after Weinstein's (1968) procedure, the format of the structure was kept flexible. It was felt that a rigid structure for the five sessions would stifle group participation.

Major topics discussed during the first session were:

1. professors who were considered to be unfair in testing and grading practices;
2. difficulties experienced in studying for tests;
3. anxieties experienced before tests;

4. anxieties experienced during tests.

A mimeographed hourly schedule form was given to each member for planning study schedules for each course. They were encouraged to use the schedule in combination with self-reward and punishment. If they followed the schedule and practiced good study habits, they were to reward themselves. The reward used by each member was to be decided by the individual. If they failed to follow the schedule, they were to punish themselves by denying themselves the self-promised reward.

The prevailing tone of the second and remaining sessions was one of optimism. For an example, they were told, "You can change your maladaptive behavior patterns toward test-taking if you work at it and apply the principles and practices set forth in each session."

The outline of the third session consisted of:

1. a review of the second session;
2. a discussion of the progress and problems encountered during the previous week in study and scheduling of study time;
3. the administration of a fifteen-minute practice test for the purpose of observing maladaptive test-taking practices;
4. a discussion of maladaptive behaviors during taking

of examinations.

The investigator administered a practice test during the third session, trying to duplicate classroom conditions as nearly as possible. After the practice test, anxiety-producing behavior observed during the test was pointed out to each member by the investigator and discussed. The members were encouraged to make a list of maladaptive behaviors toward tests during the following week. They were also encouraged to continue to practice their scheduling and study skills.

The guide used for the fourth session was:

1. a review of the third session;
2. a discussion of the test behaviors observed by the members during the week since the third session;
3. a discussion of skills in preparing for and taking specific types of examinations;
4. encouragement of need to create a new image in relation to examinations.

The primary emphasis of the fourth session was on creating a new image of the self in preparation for and taking of examinations. It was pointed out that many skills had been learned and many maladaptive behaviors recognized. It was emphasized that each member must create an image of

the self as one who applies these new skills and is free from the old maladaptive behavior patterns that had created test anxiety.

The fifth session was utilized in cementing the gains and discussion of any problems encountered during the previous five weeks. Each member was cautioned about letting down and encouraged to continue applying his new image in the preparation for and taking of tests. Toward the end of the fifth session, the posttest was administered. One of the six members did not attend the last two sessions and was not tested. Her scores were not included in the analysis of the data.

Experimental Procedure for Group C

Members of Group C were contacted by telephone at the time Groups A and B were contacted for their first sessions. They were informed that they were selected to participate in a group and that they would be contacted toward the end of the quarter. During the last week of the therapy sessions for the experimental groups, members of Group C were again contacted by phone and asked to come in to take the test. Only three of the five members attended. It was necessary to contact two other students who had been administered the pre-test during the previous quarter and

had scored high enough to be included in the experiment. These students had signed the test at the first administration, indicating an interest in participating in the experiment. They were asked to take the posttest on the following day, which they did. Their scores were included in the control group scores. Journal of Consulting Psychology,

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CHAPTER III

PRESENTATION AND INTERPRETATION OF DATA

Analysis of Variance on TAS Scores

This chapter is concerned with the presentation and interpretation of the pre- and posttest scores on the TAS. The data were analyzed and the implications will be discussed.

In the final analysis there were fifteen students participating in the experiment: five in each of three groups. Before the experimental procedure began, there were fourteen students selected for the experimental group and seven for the control group. Only eleven students attended the experimental therapy sessions, and one of the eleven subjects stopped attending on the third week. In the control group, only five participated in completing the posttest questionnaire. Table 2 shows the pre- and posttest scores on the TAS of the subjects included in the analysis.

TABLE 2

Pre- and Posttest Scores of the TAS

| Systematic Desensitization | | | Structured Group Interaction | | | No-treatment Control Group | | |
|----------------------------|----------|-------------|------------------------------|----------|-------------|----------------------------|----------|------------|
| Pretest | Posttest | Differences | Pretest | Posttest | Differences | Pretest | Posttest | Difference |
| 27 | 17 | 10 | 25 | 18 | 7 | 31 | 25 | 6 |
| 26 | 17 | 9 | 32 | 17 | 15 | 32 | 28 | 4 |
| 28 | 17 | 11 | 31 | 18 | 13 | 24 | 27 | -3 |
| 35 | 15 | 20 | 23 | 16 | 7 | 29 | 34 | -5 |
| 34 | 15 | 19 | 25 | 18 | 7 | 31 | 28 | 3 |
| TOTAL: | 150 | 81 | 136 | 87 | 49 | 147 | 142 | 5 |
| MEAN: | 30 | 16.2 | 27.2 | 17.4 | 9.8 | 29.4 | 28.4 | 1 |

Analysis of variance was employed to determine if a significant difference existed between any of the group means. The analysis revealed that a difference existed at the .05 level of significance. Table 3 shows the results of the analysis of variance.

TABLE 3
Analysis of Variance on the Pre- and
Posttest Scores of the TAS

| SOURCE | SS | df | MS | F | D |
|----------------|-----|----|-------|------|-----|
| TOTAL | 730 | 14 | --- | --- | --- |
| BETWEEN GROUPS | 428 | 2 | 214 | 8.50 | .05 |
| WITHIN GROUPS | 302 | 12 | 25.17 | --- | --- |

In order to determine which groups differed significantly, Duncan's Multiple-Range Test was employed. It was found that there was a significant difference at the .05 level between Group A and Group C and between Group B and Group C. There was no significant difference between Group A and Group B. Table 4 shows the results of the analysis.

TABLE 4

Results of Duncan's Multiple-Range Test
For Groups A, B, and C

Group A vs. Group C ($R_3 = 7.224$)

$13.8 - 1 = 12.8$ (significant)

Group B vs. Group C ($R_2 = 6.904$)

$9.8 - 1 = 8.8$ (significant)

Group A vs. Group B ($R_2 = 6.904$)

$13.8 - 9.8 = 4.0$ (not significant)

Interpretation of Data

Results of the analysis of the data indicate that both of the experimental therapy methods are significantly more effective than no treatment in terms of reduction of test anxiety. The results also indicate that there was no significant difference in the effectiveness of Groups A and B in terms of reducing test anxiety. However, in a subjective measure (oral questioning by the investigator) of effectiveness of treatment, Group B members expressed greater satisfaction with the benefits of the therapy sessions at the end of the experimental procedure than did Group A members.

CHAPTER IV

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Most persons have had the feeling of mingled dread and apprehension known as anxiety. Some persons experience pervasive anxiety which is not attached to specific objects or situations, known as free-floating anxiety (Chaplin, 1968). Others may experience anxiety related to one or more specific objects. One form of specific anxiety is test anxiety.

Test anxiety is anxiety related to academic examinations. Sieber (1969) states that test anxiety interferes with problem solving performance. A study by Katahn, Strenger and Cherry (1966) indicates that reducing test anxiety results in increases in academic performance as measured by GPA's.

Several methods of reducing test anxiety have been investigated (Sarason, Peterson and Nyman, 1968; Johnson and Sechrest, 1968; Cohen, 1969; Donner and Gurney, 1969). One method that has been extensively researched is that of Systematic Desensitization (Lazarus, 1961). In an effort to reduce the time involvement of the counselor, successful research has been conducted on the application of group therapy using Systematic Desensitization (Suinn, 1968). Even with this innovation, Systematic Desensitization requires a

minimum time involvement of ten hours of therapy.

A method, requiring significantly less time for both the counselor and the student, is that of Structured Group Interaction (Weinstein, 1968). However, Weinstein only applied this method to a small group of specially selected students.

The major purposes of this study were to determine (1) if treatment for anxiety in a group situation would result in less anxiety, and (2) if a shorter treatment procedure (Structured Group Interaction), as far as time involvement was concerned, would be as effective as a longer treatment procedure (Systematic Desensitization) in reducing test anxiety.

Sarason's (1971) Test Anxiety Scale was used as a measure of the students' level of test anxiety. Before the experimental study began it was necessary to establish normative data on the TAS. The norms were established on 556 students registered for sophomore Psychology and Art courses at Austin Peay State University during the Winter Quarter. Based on the normative data accumulated, a score above 22, or .5 S.D. above the mean, on the TAS was considered to be indicative of high test anxiety.

Subjects for the experiment were recruited from students registered for sophomore Psychology and Art courses

during the Winter Quarter and sophomore Psychology courses during the Spring Quarter. Twenty-one subjects were recruited for the study, but when the study began, only sixteen were available for participation. During the course of the study one subject dropped out. The subjects were assigned to three groups: Systematic Desensitization (Group A), Structured Group Interaction (Group B), and a no-treatment control group (Group C).

The therapy procedure for Group A employed relaxation and systematic desensitization of a standardized anxiety hierarchy. The procedure was composed of ten one-hour sessions. The first three sessions were devoted to teaching the relaxation technique and establishing the standardized anxiety hierarchy. The remaining sessions were devoted to desensitization of the nineteen-item anxiety hierarchy.

The therapy procedure for Group B consisted of five one-hour sessions of group discussion and instruction by the investigator. The first session was devoted to establishing group rapport and discussing group feelings toward and opinions of test anxiety. The content of the second session related to improving study habits and developing more positive attitudes toward examinations. During the third session maladaptive test-taking behaviors were

discussed and a practice test was administered so that the investigator could observe the maladaptive patterns of each member. The primary emphasis of the fourth session was on creating a new image of the self in preparation for and taking of examinations. The fifth session was utilized in cementing the gains and discussing any problems encountered during the previous five weeks. Members of both groups were administered the posttest during the last session.

The hypotheses tested by the study were:

1. There is no statistically significant difference between Procedure A and Procedure C in terms of reducing test anxiety as measured by the TAS.
2. There is no statistically significant difference between Procedure B and Procedure C in terms of reducing test anxiety as measured by the TAS.
3. There is no statistically significant difference between Procedure A and Procedure B in terms of reducing test anxiety as measured by the TAS.

Some limitations of the study were:

1. The study was confined to students enrolled in sophomore Psychology and Art courses at Austin Peay State University.
2. All subjects who volunteered were female students.
3. No attempt was made to assess the intellectual

abilities, levels of aspiration, or any other personality factors of the subjects.

4. The anxiety scale used in the study was a self-report inventory and is subject to the limitations inherent in any self-report inventory.

The results of the pre- and posttest were analyzed by employing analysis of variance and Duncan's Multiple-Range Test. The .05 level of significance was the criteria for determining significance.

A statistical analysis of the data allowed the following conclusions to be drawn:

1. There was a significant difference between the Systematic Desensitization procedure and a no-treatment procedure in terms of reducing test anxiety.

2. There was a significant difference between the Structured Group Interaction procedure and a no-treatment procedure in terms of reduction of test anxiety.

3. There was no significant difference between the Systematic Desensitization procedure and the Structured Group Interaction procedure in terms of reduction of test anxiety.

The conclusions of this study indicate that the Structured Group Interaction procedure is as effective as the Systematic Desensitization procedure in terms of reduction

of test anxiety. Since the Structured Group Interaction procedure requires only five hours of therapy time as opposed to a minimum of ten hours for the Systematic Desensitization procedure, counselors and therapists should be able to treat more students by using the former procedure.

Another possible advantage in using Procedure B may be in keeping the students interested. The investigator observed that members of Group B seemed more enthusiastic about attending the therapy sessions than members of Group A. Group B members also expressed greater satisfaction with the benefits of the therapy sessions at the end of the experimental procedure than did Group A members. Most of the subjects spontaneously expressed enthusiasm and pleasure over their freedom from their physically upsetting, emotionally oppressing test anxiety.

Recommendations for Further Study

On the basis of questions which became apparent in the course of this study, the following topics are suggested for further study:

1. Research on the effectiveness of written instructions for college students on how to reduce test anxiety. The findings made concerning test anxiety could be taken from the literature and compiled into suggested courses of

action for the individual in modifying his maladaptive test-taking behavior.

2. Research on the effectiveness of completely automated Systematic Desensitization. Tapes could be pre-recorded with all instructions for the relaxation and desensitization procedures. A standardized anxiety hierarchy would be necessary. The number of presentations of the anxiety items could be increased to better insure the desensitization of each item.

3. Research on personality variables in relation to high test anxiety.

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APPENDIX

March 29, 1971

You have earned on the test anxiety questionnaire a score which indicates that you have more test anxiety than most of test anxiety. Research studies have shown that excessive test anxiety impairs test performance in the lower grades.

As part of my graduate study in the Psychology Department, I am forming a group for the purpose of reducing test anxiety, and improving test-taking performance. You are invited to participate in this group. The group will meet weekly and will require only one to two hours a week.

Group meetings will be held at the following times and dates:

- Monday March 29 -- Room 113, Claxton Building
- Tuesday March 30 -- Room 113, Claxton Building

If you cannot attend either of these meetings, but wish to participate, please indicate this on the questionnaire. Special arrangements can be made with you.

Thank you for your response to the questionnaire and your interest in participating.

Sincerely yours,

John W. Miller

March 29, 1971

Dear

The score you earned on the test anxiety questionnaire places you at a level which indicates that you have more than the average amount of test anxiety. Research studies indicate that excessive test anxiety impairs test performance which leads to lower grades.

As a part of my graduate study in the Psychology Department, I am forming a group for the purpose of reducing test anxiety, and improving test-taking performance. You are invited to participate in this group. The group will meet for five weeks and will require only one to two hours of your time weekly.

Organizational meetings will be held at the following times on the following dates:

2:00 P.M. Monday March 29 -- Room 113, Claxton Building
9:25 A.M. Tuesday March 30 -- Room 113, Claxton Building

If you cannot attend either of these meetings, but would like to participate, please indicate this on the enclosed form so special arrangements can be made with you.

I would appreciate your responding to the questionnaire whether or not you are interested in participating.

Sincerely yours,

Tony Watts

Enc. 1

Name _____ Post Office Box No. _____ Phone _____

Please check the times you would not be available for participating in this group.

Monday, Wed., Fri.

Tuesday and Thursday

| | | | |
|-----------|-------|-----------|-------|
| 8:00 A.M. | _____ | 8:00 A.M. | _____ |
| 9:00 | _____ | 9:25 | _____ |
| 10:00 | _____ | 10:50 | _____ |
| 11:00 | _____ | 12:15 | _____ |
| 12:00 | _____ | 1:40 | _____ |
| 1:00 | _____ | 3:05 | _____ |
| 2:00 | _____ | 4:30 | _____ |
| 3:00 | _____ | 5:55 | _____ |
| 4:00 | _____ | 7:20 | _____ |
| 5:00 | _____ | | |
| 6:00 | _____ | | |
| 7:00 | _____ | | |

Please be sure and check the times you will not be free.

I am interested in participating in the group. _____

I am not interested in participating in the group. _____

THE FOLLOWING QUESTIONNAIRE ON TEST ANXIETY IS BEING USED FOR RESEARCH AND DOES NOT AFFECT YOUR GRADE IN THIS COURSE. YOUR COOPERATION WILL BE APPRECIATED.

CIRCLE EITHER T (TRUE) OR F (FALSE) FOR EACH ITEM.

1. WHILE TAKING AN IMPORTANT EXAM I FIND MYSELF THINKING OF HOW MUCH BRIGHTER THE OTHER STUDENTS ARE THAN I AM. T F
2. IF I WERE TO TAKE AN INTELLIGENCE TEST, I WOULD WORRY A GREAT DEAL BEFORE TAKING IT. T F
3. IF I KNEW I WAS GOING TO TAKE AN INTELLIGENCE TEST, I WOULD FEEL CONFIDENT AND RELAXED BEFOREHAND. T F
4. WHILE TAKING AN IMPORTANT EXAMINATION I PERSPIRE A GREAT DEAL. T F
5. DURING COURSE EXAMINATIONS I FIND MYSELF THINKING OF THINGS UNRELATED TO THE ACTUAL COURSE MATERIAL. T F
6. I GET TO FEEL VERY PANICKY WHEN I HAVE TO TAKE A SURPRISE EXAM. T F
7. DURING TESTS I FIND MYSELF THINKING OF THE CONSEQUENCES OF FAILING. T F
8. AFTER IMPORTANT TESTS I AM FREQUENTLY SO TENSE THAT MY STOMACH GETS UPSET. T F
9. I FREEZE UP ON THINGS LIKE INTELLIGENCE TESTS AND FINAL EXAMS. T F
10. GETTING A GOOD GRADE ON ONE TEST DOESN'T SEEM TO INCREASE MY CONFIDENCE ON THE SECOND. T F
11. I SOMETIMES FEEL MY HEART BEATING VERY FAST DURING IMPORTANT TESTS. T F
12. AFTER TAKING A TEST I ALWAYS FEEL I COULD HAVE DONE BETTER THAN I ACTUALLY DID. T F
13. I USUALLY GET DEPRESSED AFTER TAKING A TEST. T F
14. I HAVE AN UNEASY, UPSET FEELING BEFORE TAKING A FINAL EXAMINATION. T F
15. WHEN TAKING A TEST MY EMOTIONAL FEELINGS DO NOT INTERFERE WITH MY PERFORMANCE. T F
16. DURING A COURSE EXAMINATION I FREQUENTLY GET SO NERVOUS THAT I FORGET FACTS I REALLY KNOW. T F
17. I SEEM TO DEFEAT MYSELF WHILE WORKING ON IMPORTANT TESTS. T F
18. THE HARDER I WORK AT TAKING A TEST OR STUDYING FOR ONE, THE MORE CONFUSED I GET. T F
19. AS SOON AS AN EXAM IS OVER I TRY TO STOP WORRYING ABOUT IT, BUT I JUST CAN'T. T F
20. DURING EXAMS I SOMETIMES WONDER IF I'LL EVER GET THROUGH COLLEGE. T F
21. I WOULD RATHER WRITE A PAPER THAN TAKE AN EXAMINATION FOR MY GRADE IN A COURSE. T F
22. I WISH EXAMINATIONS DID NOT BOTHER ME SO MUCH. T F
23. I THINK I COULD DO MUCH BETTER ON TESTS IF I COULD TAKE THEM ALONE AND NOT FEEL PRESSURED BY A TIME LIMIT. T F

24. THINKING ABOUT THE GRADE I MAY GET IN A COURSE INTERFERES WITH MY STUDYING AND MY PERFORMANCE ON TESTS. T F
25. IF EXAMINATIONS COULD BE DONE AWAY WITH I THINK I WOULD ACTUALLY LEARN MORE. T F
26. ON EXAMS, I TAKE THE ATTITUDE, "IF I DON'T KNOW IT NOW THERE'S NO POINT WORRYING ABOUT IT." T F
27. I REALLY DON'T SEE WHY SOME PEOPLE GET SO UPSET ABOUT TESTS. T F
28. THOUGHTS OF DOING POORLY INTERFERE WITH MY PERFORMANCE ON TESTS. T F
29. I DON'T STUDY ANY HARDER FOR FINAL EXAMS THAN FOR THE REST OF MY COURSE WORK. T F
30. EVEN WHEN I'M WELL PREPARED FOR A TEST, I FEEL VERY ANXIOUS ABOUT IT. T F
31. I DON'T ENJOY EATING BEFORE AN IMPORTANT TEST. T F
32. BEFORE AN IMPORTANT EXAMINATION I FIND MY HANDS OR ARMS TREMBLING. T F
33. I SELDOM FEEL THE NEED FOR 'CRAMMING' BEFORE AN EXAM. T F
34. THE UNIVERSITY OUGHT TO RECOGNIZE THAT SOME STUDENTS ARE MORE NERVOUS THAN OTHERS ABOUT TESTS AND THAT THIS AFFECTS THEIR PERFORMANCE. T F
35. IT SEEMS TO ME THAT EXAMINATION PERIODS OUGHT NOT TO BE MADE THE TENSE SITUATIONS WHICH THEY ARE. T F
36. I START FEELING VERY UNEASY JUST BEFORE GETTING A TEST PAPER BACK. T F
37. I DREAD COURSES WHERE THE PROFESSOR HAS THE HABIT OF GIVING "POP" QUIZZES. T F

IF YOU ARE INTERESTED IN PARTICIPATING IN A GROUP DURING THE SPRING QUARTER FOR THE PURPOSE OF REDUCING TEST ANXIETY: PLEASE FILL OUT THE FOLLOWING:

NAME: _____ P.O. BOX _____ PHONE: _____

ANXIETY HIERARCHY

The anxiety hierarchy is arranged in ascending order, from the least anxiety provoking to the most anxiety provoking.

1. You have missed a regular class and did not get the lecture notes from that class.
2. The professor announces a ten page paper due at the end of the quarter.
3. While taking a test, you are sitting next to someone who is nervously shaking his foot.
4. You have to go to a class immediately prior to a class in which you have a test.
5. You are sitting in your room thinking about a test a week away.
6. You are taking an exam and the professor is walking around the room looking at each paper.
7. You are sitting in your room thinking about a test three days away.
8. The professor reminds the class of a test for the next class period.
9. You are talking to someone who states that the professors tests are very hard.
10. The professor hands out a ten minute quiz at the beginning of class to see if you have read the material.

11. You have more than one test scheduled on the same day.
12. Other students are handing in their tests and you are only half way through.
13. You are taking an essay test and are uncertain of the first answer.
14. You are reviewing on the morning of a test and realize you have forgotten a lot of material.
15. You have done badly on a previous test in the same class in which you have a test coming soon.
16. You are getting ready to go to school, thinking about the test that you are to take that morning.
17. You are cramming for a test the night before, having a lot of material to cover.
18. You are to have a test soon, but you do not know what kind of test it will be.
19. You are sitting in the classroom waiting for the exam to be handed out.