GROUP SYSTEMATIC DESENSITIZATION WITH
TEST-ANXIOUS COLLEGE STUDENTS

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GROUP SYSTEMATIC DESENSITIZATION WITH
TEST-ANXIOUS COLLEGE STUDENTS

DISSERTATION

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By

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CHAPTER I

INTRODUCTION

In the years since the publication in 1958 of Joseph Wolpe's *Psychotherapy by Reciprocal Inhibition* (9), there has been a steady growth of interest in behavioral approaches to counseling and psychotherapy. The mainstay of Wolpe's system is systematic desensitization, a technique which has been utilized widely in the treatment of various anxiety and phobic disorders. Several controlled investigations, for example Paul (5), have demonstrated systematic desensitization to be superior to insight-oriented psychotherapy in bringing about reductions of specific fears and anxieties.

The same period of time which has witnessed the growth of behavior therapy has also given rise to an upsurge of interest in group methods of counseling and psychotherapy. Wrenn (10) refers to the increase in behavioristic and group approaches as "two of the most significant new directions in counseling" (10, p. 1). With the simultaneous growth of interest in systematic desensitization and in group methods, it has occurred to a number of investigators that the two approaches might be combined in the treatment of certain difficulties.

Several recent investigations (2, 3, 8) have attempted to evaluate the effectiveness of group systematic desensitization
procedures. All of these investigations have been successful to some extent in utilizing group desensitization to effect significant reductions in anxiety. However, various methodological and conceptual inadequacies in the completed investigations (which are discussed in Chapter II) have left several questions unanswered regarding the application of systematic desensitization in a group setting.

Statement of the Problem

The problem of the present investigation was to determine the effectiveness of group systematic desensitization procedures in the reduction of test-anxiety among college students.

Purposes of the Study

The purposes of the present investigation were (1) to determine whether systematic desensitization could be administered in a group setting, (2) to evaluate the stability of any reductions in test-anxiety which resulted from group desensitization, and (3) to make recommendations for counseling research and practice which were warranted by the results of the investigation.

Hypotheses

The following hypotheses were advanced in keeping with the problem and purposes of the investigation:

1. Subjects participating in group systematic desensitization for test-anxiety will demonstrate significantly
greater score decreases on the College Form of the Test Anxiety Questionnaire (TAQ) than will either non-participating control subjects or subjects participating in an attention-placebo group.

2. If subjects who participate in group systematic desensitization do demonstrate a significant decrease on Test Anxiety Questionnaire scores, then these decreases will remain stable on a follow-up administration of the Test Anxiety Questionnaire two months after the termination of the group desensitization sessions.

Selection of Test-Anxiety as the Target Behavior

The problem behavior which was chosen as the target for group systematic desensitization was test-anxiety. The choice of this particular anxiety was based upon a number of factors.

First, several investigators (1, 6, 7) have found that a negative correlation exists between scores on test-anxiety scales and various measures of academic performance. If group systematic desensitization proves to be effective in reducing test-anxiety, college counselors may make use of group desensitization in helping students to overcome a serious problem.

Secondly, test-anxiety is a special case of the more general class of difficulties which may be referred to as performance anxieties. If group desensitization is effective in reducing test-anxiety, it may be expected to be useful in reducing other types of performance anxiety.
Third, students who are troubled by excessive test-anxiety should possess high levels of motivation to overcome this difficulty. College students are continually faced with tests and examinations of various sorts. The highly test-anxious student cannot easily deal with this anxiety through avoidance behavior. Therefore, students should be interested in participating in an investigation which offers the possibility of some reduction in test-anxiety.

Finally, there exists a standardized scale for the assessment of test anxiety. The College Form of the Test Anxiety Questionnaire (4) has been used in many previous investigations of test-anxiety. (A description of the Test Anxiety Questionnaire appears in Chapter III.)

Definition of Terms

In the present investigation, test anxiety was operationally defined in terms of a score on the College Form of the Test Anxiety Questionnaire (4). High test-anxiety was defined as a score above the 75th percentile of the distribution of TAQ scores of the student population at El Centro College, Dallas, Texas.

Statistical significance was defined as the .05 level of significance.

Systematic desensitization is a therapeutic technique which was developed by Joseph Wolpe and which is based upon the following general principle:
If a response antagonistic to anxiety can be made to occur in the presence of anxiety-provoking stimuli so that it is accompanied by a complete or partial suppression of the anxiety responses, the bond between the stimuli and the anxiety responses will be weakened (10, p. 71).

The goal of systematic desensitization is to enable the subject to overcome a specific fear, phobia, or anxiety. In systematic desensitization therapy, the subject's problem (anxiety, phobia, etc.) is broken down into its component parts, and these smaller problems are dealt with individually by desensitization.

The basic process begins by training the subject in deep muscle relaxation. Since relaxation and anxiety are antagonistic processes, the response of relaxation can be utilized to effect a partial or complete suppression of anxiety. The first three to five therapy sessions are spent in this relaxation training. This is accomplished by having the subject alternately tense and relax the major muscle groups of the body. The purpose of the tensing and relaxing of the muscles is to help the subject to identify the exact location of the various muscle groups. When the subject can pinpoint the location of a muscle group, his confidence in his ability to control these muscles is enhanced. In the present investigation, the first four sessions were spent in relaxation training.

The second step in the process of desensitization is the construction of an anxiety hierarchy. The anxiety hierarchy is a list of anxiety-provoking situations relevant to the
particular problem. These situations are arranged hierarchically from most to least anxiety-provoking. In the present investigation, each subject developed his own individual hierarchy according to a form which explained the steps involved in hierarchy construction (see Appendix A).

After the subject has been adequately trained in muscle relaxation and an appropriate hierarchy has been constructed, the actual desensitization procedure begins. First, the subject is instructed for three or four minutes in relaxation. After the subject feels relaxed and free of tension, he is asked to imagine the least-anxiety provoking scene from the anxiety hierarchy. The subject is told to signal by raising his right index finger if his thinking about this scene results in any feelings of tension or anxiety. If the subject signals distress, the therapist instructs the subject to stop imagining the scene and to concentrate again upon complete relaxation. After one or two minutes of reestablishing the state of relaxation, the scene is presented to the subject again. If the scene still disturbs the subject, the therapist once again instructs him to stop imagining the scene and to concentrate upon relaxation. This process is continually repeated until the subject can imagine a particular scene without feeling anxious or uncomfortable. As anxiety to a particular situation from the hierarchy is desensitized, the subject moves up the anxiety hierarchy until all of the items have been desensitized.
The focus of the present investigation was group systematic desensitization, and the group administration of desensitization entails some modifications of the individual method. First of all, in group desensitization the entire group moves up the anxiety hierarchy as a unit. There is no advancement from one item to the next until all members of the group have been desensitized to the present item. While this might seem to impose a limitation upon the group administration of desensitization, in the present study it proved to be only a minor problem. The majority of the members of the group were able to tolerate each item from the hierarchy the first time that the item was presented. This meant that only one or two persons would require extra work in relaxation. Whenever one or more group members signaled difficulty with an item, the therapist instructed the entire group to stop thinking about the item and to concentrate upon his words as he talked about relaxation. Care was taken to make certain that the persons who were having difficulties were comfortably relaxed and free of tension before the subsequent presentations of the item which had resulted in anxiety.

A second variation in group as opposed to individual desensitization was that the hierarchy items were presented in written rather than oral form to the subjects. Since the different members of the group had different hierarchies in terms of the arrangement of the items, it was not possible for the therapist to verbally describe the scene to-be-imagined.
get around this difficulty, each subject's hierarchy items were printed upon separate index cards. When the instructions were given to move to the next item, a subject could simply move to the next card in the stack, read the item, and begin to imagine the situation. This method worked quite efficiently and enabled the group to move smoothly as a unit from one item to the next.

Assumptions

The following assumptions of the present investigation should be taken into account in the evaluation of the findings of the investigation:

1. The first assumption concerns the construct validity of the Test Anxiety Questionnaire. It was assumed that TAQ scores provided a valid assessment of test-anxiety and that decreases on TAQ scores reflected reductions in test-anxiety.

2. The sample of subjects from North Texas State University consisted entirely of volunteer subjects who labeled themselves as highly test-anxious. The TAQ was administered to these subjects after they had volunteered to participate in group desensitization for test-anxiety. In the absence of normative data on the TAQ for the North Texas State University student population, it was assumed that these students who labeled themselves as highly test-anxious were, in fact, highly test-anxious as compared to the student population of North Texas State University.
3. No efforts were made to determine whether any of the subjects involved in the present investigation were participating in any counseling activities apart from those of the present study. It was assumed that the significant reductions in test-anxiety as measured by the TAQ were a result of the operations of the present study.

Limitations of the Study

The following factors should be considered as limitations of the present investigation and should be taken into account in the drawing of conclusions from the results:

1. As is the case in any investigation in which a sample of subjects is drawn from a larger population, caution should be utilized in assuming generalization to samples which may be drawn from dissimilar populations.

2. The present investigation utilized volunteer subjects in all treatment groups. No intentional pressure was brought to bear in the procurement of subjects. Systematic desensitization is a therapeutic procedure which requires the active cooperation of the subject. Therefore, caution should be utilized in generalizing from the present results to samples in which the subjects are not actively and cooperatively involved in the desensitization process.

3. The Test Anxiety Questionnaire, which was used in the assessment of test-anxiety, is a self-report device. As is the case with any self-report device, the cooperation and honesty of the subject is a necessary assumption. Such an
assumption must be considered as an additional limitation upon the present study.

4. The present investigation utilized subjects from two different institutions, North Texas State University and El Centro College. In the absence of data demonstrating the similarity of the student populations of these two institutions, the possibility of systematic differences between these two samples must be considered.


CHAPTER II

RELATED RESEARCH

Studies of the Relationship Between Anxiety and Performance

In the Hull-Spence theory of behavior (11), anxiety has been employed as an effective assessment of drive level. The Manifest Anxiety Scale was developed by Taylor (16) in an attempt to devise a method for the quantitative assessment of anxiety and, hence, drive level. The Hull-Spence theory states that in a given situation any habit which may be activated by the stimuli present interacts in a multiplicative manner with drive to determine the probability of occurrence of the habit in question. This probability of occurrence is referred to as excitatory potential.

In a situation which calls for the production of a single, simple response, the higher the level of drive, the greater the excitatory potential of the response. In such a situation, a person with a high level of anxiety would be expected to perform in a manner superior to that of a person with a lower level of anxiety. A complex situation, however, involves more than a single response, and it may actually involve competing responses, each of which is not correct. In such a complex situation, high drive would interact multiplicatively with the competing incorrect response tendencies as well as with the correct response tendency.
In other words, all responses, both correct and incorrect, would have a higher excitatory potential. Therefore, the low-anxiety subject should perform in a manner superior to that of the high-anxiety subject in a complex situation.

The preceding theoretical formulations have been tested as hypotheses in a number of investigations dealing with the relationship between anxiety and the performance of tasks such as classical conditioning (12), maze learning (17), serial learning (7), paired-associates learning (13), reaction time (18), and the solution of discrimination tasks (3). The results of these and other related investigations have been largely confirmatory of the hypotheses derived from the Hull-Spence theory. The general conclusion which has emerged from these studies is that high levels of anxiety (drive) facilitate the performance of relatively simple tasks such as classical eyelid conditioning, but that high anxiety inhibits the performance of complex tasks, such as paired-associates learning in which competing response tendencies are stronger than correct response tendencies.

Two experiments by Spence, Farber, and McFann (13) illustrate the relationship between drive level and the performance of tasks which involve differential response strengths. The paired-associates learning tasks involved the rote memorization of the stimulus-response pairs which are presented in Table I. The pairs in experiment one involved minimal competing response tendencies; stimulus and response words were
TABLE I

WORD LISTS USED IN PAIRED-ASSOCIATES LEARNING TASKS

<table>
<thead>
<tr>
<th>Experiment 1 Noncompetitive</th>
<th>Experiment 2 Competitive and Noncompetitive</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stimulus</strong></td>
<td><strong>Stimulus</strong></td>
</tr>
<tr>
<td><strong>Response</strong></td>
<td><strong>Response</strong></td>
</tr>
<tr>
<td>Adept</td>
<td>Barren*</td>
</tr>
<tr>
<td>Skillful</td>
<td>Fruitless</td>
</tr>
<tr>
<td>Barren</td>
<td>Arid</td>
</tr>
<tr>
<td>Fruitless</td>
<td>Desert</td>
</tr>
<tr>
<td>Complete</td>
<td>Little*</td>
</tr>
<tr>
<td>Thorough</td>
<td>Minute</td>
</tr>
<tr>
<td>Distant</td>
<td>Petite</td>
</tr>
<tr>
<td>Remote</td>
<td>Yonder</td>
</tr>
<tr>
<td>Empty</td>
<td>Undersized</td>
</tr>
<tr>
<td>Vacant</td>
<td>Wholesome</td>
</tr>
<tr>
<td>Frigid</td>
<td>Grouchy</td>
</tr>
<tr>
<td>Arctic</td>
<td>Leading</td>
</tr>
<tr>
<td>Insane</td>
<td>Little*</td>
</tr>
<tr>
<td>Crazy</td>
<td>Minute</td>
</tr>
<tr>
<td>Little</td>
<td>Roving*</td>
</tr>
<tr>
<td>Minute</td>
<td>Nomad</td>
</tr>
<tr>
<td>Mammoth</td>
<td>Gypsy</td>
</tr>
<tr>
<td>Oversized</td>
<td>Opaque</td>
</tr>
<tr>
<td>Pious</td>
<td>Migrant</td>
</tr>
<tr>
<td>Devout</td>
<td>Agile</td>
</tr>
<tr>
<td>Roving</td>
<td>Tranquil*</td>
</tr>
<tr>
<td>Nomad</td>
<td>Placid</td>
</tr>
<tr>
<td>Stubborn</td>
<td>Quiet</td>
</tr>
<tr>
<td>Headstrong</td>
<td>Double</td>
</tr>
<tr>
<td>Tranquil</td>
<td>Serene</td>
</tr>
<tr>
<td>Quiet</td>
<td>Headstrong</td>
</tr>
<tr>
<td>Urgent</td>
<td>Evil</td>
</tr>
<tr>
<td>Pressing</td>
<td></td>
</tr>
<tr>
<td>Wicked</td>
<td></td>
</tr>
</tbody>
</table>

*Pairs with high initial association.

not related to one another. In experiment two, the list involved both competitive and non-competitive response tendencies. Four of the stimulus-response pairs had high association value; the remaining eight pairs had low association value, but in each pair the stimulus word had a high association value with the next stimulus word on the list.

In the first experiment, it was hypothesized that high-anxiety subjects would be superior to low-anxiety subjects in learning the stimulus-response pairs. The results confirmed the hypothesis.
In the second experiment, two hypotheses were advanced. On the four pairs in which the association value between the stimulus and the response was high, high-anxiety subjects were expected to be superior to low-anxiety subjects. On the eight pairs involving low association values between the stimulus and response and high potential competition between succeeding stimulus words, low-anxiety subjects were expected to be superior to high-anxiety subjects. Again, the results confirmed the hypotheses.

Studies of Test-Anxiety and Academic Performance

Inasmuch as the academic setting would constitute a complex task situation, excessive anxiety would be expected to impair academic performance. Consistent with this hypothesis, several investigations have revealed that a negative correlation exists between scores on test-anxiety scales and various measures of academic performance.

Alpert and Haber (1) investigated the relationship between scores on the Test Anxiety Questionnaire (hereafter referred to as the TAQ) and academic performance as reflected by grade point averages. Based upon a sample of 379 college students, these investigators obtained a significant correlation of - .24 between TAQ scores and grade point averages. Alpert and Haber also found a significant correlation of - .18 to exist between test-anxiety scores and the verbal section of the Scholastic Aptitude Test.
Sarason (10) obtained significant negative correlations between scores on a test-anxiety scale and eleven different measures of intellectual achievement and aptitude. Sarason's sample consisted of 412 female and 326 male subjects, all of whom were college students. Although there were some sex differences in terms of which specific measures correlated negatively with test-anxiety scores, there was enough commonality to establish a general negative relationship between academic performance and test-anxiety.

Paul and Eriksen (9) obtained scores from 100 undergraduate female subjects on both the TAQ and the School and College Aptitude Test and discovered a correlation of -.31 between these two variables (significant at the .01 level). The correlation between test-anxiety scores and a course examination was -.19 (significant at the .05 level).

As an additional part of the same study, the investigators arranged for the same subjects to take a special night examination which covered material that they had been tested on earlier in the day. This special examination was administered to small groups of subjects in a location away from the regular classroom. For example, some students met in the student lounge. Persons other than the regular course instructors presided over these night examinations. These special instructors had been given training in how to keep situational stress at a low level, and they were instructed to attempt to minimize anxiety-provoking conditions during
these night examinations. The procedures were apparently successful, for the correlation between TAQ scores and examination scores under these special conditions was not significant. In other words, when students were tested in a regular classroom sitting, there was a weak but significant relationship between performance and test-anxiety scores. When these same students were tested over the same material in a situation designed to minimize anxiety, no significant correlation was found between TAQ scores and examination scores.

This last finding can be explained by reference to alternative theoretical formulations concerning the relationship between drive level and scores on anxiety questionnaires. One hypothesis, the so-called chronic hypothesis, holds that subjects who are high scorers on anxiety scales manifest high levels of drive in all situations. Such subjects are in a chronic state of high drive, regardless of whether or not they are in a stressful situation. The alternative emotional reactivity hypothesis (14) states that subjects who are high scorers on anxiety scales react with higher drive than low-scoring subjects only in stressful situations. The failure to find a significant relationship between test-anxiety and performance under the relaxed conditions of the night examination clearly supports the emotional reactivity hypothesis.
While not specifically concerned with test anxiety, a report by Spielberger (14) underscores the significance of the relationship between anxiety and academic performance. Spielberger followed up two groups of extreme scorers on the Manifest Anxiety Scale. One group of subjects had scored in the top 20 per cent of the distribution, while the other group had scored in the lowest 20 per cent of the distribution of scores. Over a period of three years, over 20 per cent of those students who were high scorers on the Manifest Anxiety Scale withdrew from college as a result of academic deficiencies. Of the low scorers, only 6 per cent withdrew for similar reasons.

Studies of Individual Systematic Desensitization

Much of the published literature dealing with the effectiveness of systematic desensitization and the other behavior therapy techniques has presented unusually high percentages of cases recovered or greatly improved following behavior therapy. Wolpe (19), in assessing the outcome of 210 cases that had been treated by systematic desensitization and other behavioral techniques, reported 89.5 per cent cured or much improved. Lazarus (6), using similar methods of treatment, reported a recovery rate of 78 per cent in 408 cases.

Unfortunately, in both of these previous studies, the therapists both administered the treatment and assessed the
outcome of the treatment, thus contaminating the results with the possibility of bias. Wolpe's results have also been criticized on the grounds that they reflect a screening-out of those persons who were not considered amenable to treatment by behavior therapy techniques. This criticism is not directed at the practice of excluding inappropriate cases from treatment, for it would make little sense to indiscriminately apply methods which are not likely to be effective in dealing with a particular problem. The criticism does, however, suggest that the figure of 89.5 per cent recovery may be spuriously high when compared to the rates reported by investigators who did not screen cases as thoroughly as did Wolpe.

In a very well designed comparison study, Paul (8) compared the effectiveness of individual systematic desensitization with two other treatment procedures in the reduction of public speaking-anxiety. The subjects were college students who were enrolled in introductory speech courses. Pre- and post-treatment measures of anxiety included both self-reports and a behavioral checklist on which the subjects were rated, while giving a speech, on anxiety symptoms such as pacing, trembling knees, flushed face, etc. In addition, an attempt was made at a physiological assessment of anxiety both before and after treatment. This physiological assessment consisted of pulse rate and the Palmar Sweat Index.
Subjects were randomly assigned to one of four conditions: (1) insight-oriented psychotherapy; (2) systematic desensitization; (3) attention-placebo; and (4) no treatment. All of the groups consisted of fifteen subjects, except for the control group which consisted of twenty-two subjects. The treatment of the subjects in the three treatment conditions was administered by five experienced psychologists, all of whom were oriented toward insight psychotherapy rather than behavior therapy. To enable them to administer the desensitization, the five psychologists were given training in the technique of systematic desensitization. Each therapist dealt with a total of nine subjects, three from each of the three treatment conditions. All subjects were seen for a total of five sessions.

The attention-placebo condition was included in order to allow an assessment of the amount of anxiety reduction due to factors such as suggestion, expectancy, warmth of the relationship, etc. The procedure involved the administration of a "fast-acting tranquilizer" (sodium bicarbonate) to the subject, who then performed a stressful task while under the "influence" of the drug. The subject was instructed that the drug would inhibit anxiety, and that by performing a stressful task while free of anxiety, he would develop a general tolerance for stress which would transfer to other situations. The stressful task consisted of listening to tapes of sonar signals and identifying certain disaster signals.
Subjects who demonstrated significant anxiety reduction on all three of the assessment indices were classified as "much improved;" those who showed reduction on two indices were classified as "improved;" those who showed significant reduction on only one index were classified as "slightly improved;" subjects who showed no significant reduction on any of the three indices of anxiety were classified as "unimproved." The results are presented in Table II.

**TABLE II**

CLASSIFICATION OF SUBJECTS BY IMPROVEMENT CATEGORIES*

<table>
<thead>
<tr>
<th>Group</th>
<th>Unimproved</th>
<th>Slightly Improved</th>
<th>Improved</th>
<th>Much Improved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desen.</td>
<td></td>
<td></td>
<td>14%</td>
<td>86%</td>
</tr>
<tr>
<td>Insight</td>
<td>7%</td>
<td>47%</td>
<td>27%</td>
<td>20%</td>
</tr>
<tr>
<td>Placebo</td>
<td>20%</td>
<td>33%</td>
<td>47%</td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>55%</td>
<td>28%</td>
<td>17%</td>
<td></td>
</tr>
</tbody>
</table>

*From Paul (8), p. 39.

These results clearly demonstrate the superiority of systematic desensitization over insight-oriented psychotherapy in reducing public speaking-anxiety. Perhaps the most outstanding feature of Paul's investigation was the fact that the therapists who administered the treatments were not behavior therapists. After brief training in systematic desensitization procedures, these insight-oriented therapists were able to produce results with desensitization which were
superior to the results which they produced by the methods in which they were most experienced and to which they were theoretically committed.

Studies of Group Systematic Desensitization

Lazarus ($) published the first report of group systematic desensitization. The sample of subjects consisted of thirty-five adults, the majority of whom were either claustrophobic or acrophobic. A rather unique behavioral test was administered both before and after treatment in order to assess recovery from the phobia.

Before treatment, acrophobic subjects were required to climb an outdoor fire escape. The experimenter climbed behind each subject and urged him to go as high as he could. Subjects who could climb to a height of between fifteen and twenty-five feet were admitted to the study.

In the cases involving claustrophobia, each subject was required to enter into a cubicle and to sit facing some open windows on one side of the cubicle. Inside of the cubicle was a portable screen which could be moved closer and closer to the subject, thus creating a feeling of constriction on the part of the subject. The experimenter shut the windows and slowly pushed the screen toward the subject. The subject was asked to remain seated in the cubicle for as long as he could endure the feeling of constriction and to open the windows only when he felt the need for air to be unbearable.
None of the claustrophobic subjects were able to remain in the cubicle with the screen at a distance of less than twenty inches.

The same tests, with some modifications, were administered after treatment. In order to be counted as recovered, acrophobic subjects had to climb the fire escape to a height of fifty feet. At this point, they were required to accompany the experimenter to the eighth floor of the building, to go out onto a roof garden, and to look down and count the passing cars for two minutes.

Claustrophobic subjects were considered recovered if they could sit in the cubicle for five minutes with the screen only a few inches away and the windows shut. No credit was given for a partial meeting of the criteria of recovery. All subjects were classified as either recovered or not-recovered.

Three different group methods were employed in an attempt to alleviate the phobic disorders. A total of eighteen subjects underwent systematic desensitization, primarily in groups of either two or three subjects. Nine subjects were treated in groups of three by interpretive group therapy. Finally, two groups of three and five members respectively were treated by interpretive group therapy plus training in relaxation. The purpose of the relaxation training was to determine whether the relaxation portion of the systematic desensitization might be responsible for therapeutic gains.
The results, based upon the behavioral tests, indicated that thirteen of the eighteen desensitization subjects recovered. Two of the eight subjects in the interpretative therapy-plus-relaxation-group recovered. None of the nine subjects in the interpretative therapy groups recovered. At this point in the study, the fifteen unrecovered subjects underwent desensitization, and ten recovered.

At various intervals following the conclusion of treatment, follow-up studies were made by means of a questionnaire. From the data gathered it was determined that there had been relapses in three of the thirteen subjects who had recovered following desensitization and in one of the subjects who had recovered following interpretative therapy plus training in relaxation.

As a pioneering effort to apply systematic desensitization in a group setting, Lazarus' study deserves and has received a large degree of recognition. Nonetheless, there are a number of serious methodological weaknesses in the study which make it very difficult to accept without qualification the results of the study.

The most serious of these difficulties stems from the fact that Lazarus administered the treatment in all three of the conditions. While this fact does not attenuate the finding that systematic desensitization was effective in thirteen of eighteen cases, it does render the study of limited value as a comparison of interpretation versus desensitization,
due to the possibility of experimenter bias. Lazarus recognizes the possibility of bias but dismisses it for two reasons. First, he argues, if a different therapist had conducted the interpretative therapy group, any difference in outcome between the interpretative therapy and desensitization groups might simply reflect different levels of competence of the therapists involved. While this is undoubtedly correct, it does absolutely nothing to mitigate the possibility of bias in Lazarus' investigation. This fact merely points out a difficulty in one of several procedures which Lazarus might have employed.

Secondly, Lazarus argues that the treatment of phobic disorders by interpretative therapy is known to be difficult, while phobias have been treated quite successfully by systematic desensitization. Once again, it is difficult to see how this well-documented statement speaks directly to the problem of experimenter bias. Lazarus concludes by stating:

It is contended, therefore, that the superior results achieved by group desensitization are not a function of the therapist's disproportionate skills (or unconscious prejudices) but a reflection of the intrinsic value of desensitization per se in the treatment of phobic disorders (5, p. 509).

This conclusion is not supported by the procedures employed in the investigation. In any comparative study in which the same experimenter administers both treatments, there is always a possibility of bias.
A second methodological weakness in Lazarus' study is the fact that Lazarus both administered the treatments and assessed the outcome. In the behavioral tests which were used to determine whether a subject was recovered, Lazarus had to decide whether the subjects endured the test situations without apparent distress. Once again, the possibilities of experimenter expectancy and bias cannot be eliminated as contributing factors to the behavior of the subjects in fulfilling the tests. The behavioral test, representing as it does a real-life test of the effectiveness of treatment, is an ingenious method for assessing the outcome, but it should always be administered by someone who has no knowledge as to what sort of treatment a particular subject has undergone.

Finally, as previously noted, most of the desensitization groups consisted of two persons and the therapists, with the largest group containing four subjects. While two persons may fit the formal definition of the word group, in counseling practice a group will nearly always consist of more than two members. A much more valuable contribution would be made by an investigation in which desensitization was administered in groups larger than those employed by Lazarus.

One of the first attempts to deal with the problem of test-anxiety through group systematic desensitization came in a study by Katahn, Strenger, and Cherry (4). In this investigation, a program of group treatment was carried out with
fourteen highly test-anxious college students. The group meetings consisted of a combination of systematic desensitization and directive counseling (suggestion and advice). After eight one-hour sessions, test-anxiety scores for the subjects in the treatment group decreased from a mean of 12.4 (out of a possible high of 15 points) to a mean of 7.1, a decrease which was significant at the .01 level. The corresponding means for twenty-nine no-treatment control subjects were 11.2 and 10.4. These means were not significantly different.

Three methodological deficiencies of the study make it difficult to draw any unequivocal conclusions from the results. First of all, the investigators failed to include a placebo group in order to assess the effects of expectancy, attention, suggestion, and other non-specific therapeutic effects. Secondly, the combining of both systematic desensitization and directive counseling makes it impossible to determine which component of the treatment contributed most to the reduction of test-anxiety scores among subjects in the treatment group. Thirdly, in the statistical analysis of the data, the investigators failed to test the significance of the difference between the treatment group and the control group in terms of mean change. In the absence of such a test it is not possible to determine whether or not the subjects in the treatment group demonstrated a decrease on test-anxiety scores which was significantly greater than that of
the subjects in the control group. The results of the investigation are encouraging, but they do not establish whether or not systematic desensitization can be effectively administered in a group setting.

Emery and Krumboltz (2) reported the results of an investigation in which systematic desensitization was carried out with test-anxious college freshmen in groups of four. The criteria of improvement consisted of decreases on a scale of test-anxiety, self-ratings before and during examination periods, and final examination grades in college history classes. The results indicated that subjects who underwent desensitization rated themselves as significantly less test-anxious than did control subjects. Desensitization subjects also received higher average grades on the common final examination in history, but the difference was not significant.

In spite of these positive results, the Emery and Krumboltz study had a major methodological flaw in that the subjects in the desensitization groups did not all have equal numbers of desensitization sessions. The subjects met for up to eight weeks with two meetings per week, but the procedures as reported indicated that some of the subjects had a greater total number of hours in desensitization sessions than did others. Such a procedure does not negate the results showing desensitization to be effective, but it does make it difficult to determine just how effectively desensitization can be administered in a group setting under standardized procedures.
Suinn (15) utilized a combination of group and individual sessions in administering systematic desensitization to twelve test-anxious subjects. During the group sessions, the rationale of systematic desensitization was explained. The actual desensitization was carried out in individual sessions, with each of the subjects continuing until he had completely worked through his anxiety hierarchy.

The subjects who underwent desensitization demonstrated significantly greater decreases on two separate scales of test-anxiety than did subjects in a no treatment control condition. The fact that the systematic desensitization was administered in individual sessions makes Suinn's investigation basically an evaluation of individual desensitization for test-anxiety. Apparently the underlying rationale of desensitization can be adequately explained in groups, but the question as to whether desensitization can be administered in a group setting remains unanswered by Suinn's study.

In summary, the investigations which were reviewed in this chapter have demonstrated that systematic desensitization can be used effectively to reduce anxiety. None of the studies which were reviewed, however, have demonstrated unequivocally that desensitization can be administered effectively in a group setting according to a standardized plan in which all procedures are carried out in the group. A study which determines whether or not desensitization can be administered effectively in groups promises to be of both practical and theoretical importance.


CHAPTER III

PROCEDURES AND DESCRIPTION
OF THE INSTRUMENT

Source and Selection of Subjects

The subjects were drawn from the student populations of El Centro College, Dallas, Texas and North Texas State University, Denton, Texas. Inasmuch as selection procedures differed from one institution to the other, these selection procedures will be described separately.

El Centro Sample

The College Form of the Test Anxiety Questionnaire (4) was administered to all students who were in attendance at the pre-enrollment orientation sessions at El Centro College. The questionnaires were scored, and all students whose scores fell in the first quarter of the distribution (a score of 218 or higher) and who were not above the age of twenty years were considered to be potential subjects. These procedures resulted in a pool of ninety-six students.

An attempt was made to contact each student for purposes of an interview. Of the ninety-six students, fifty-six were interviewed according to a standard format (see Appendix B) and were given an opportunity to participate in the study. The names and class schedules were taken from those students
who expressed an interest in participation. After all of
the interviews had been conducted, times for the group meet-
ings were arranged in accordance with the schedules of those
students who had expressed a desire to participate in the
group meetings. One group was scheduled to meet on Tuesday
and Thursday mornings at 9:00 a.m. A second group was sched-
uled to meet on Tuesday and Thursday afternoons at 1:00 p.m.

Since the groups were of necessity formed at times which
were convenient for the participants, it was not possible to
randomly assign subjects to the various treatment conditions.
Treatment conditions were, however, randomly assigned to
these intact groups. By the toss of a coin, the 9:00 a.m.
group was designated a desensitization group, and the 1:00 p.m.
group was designated the attention-placebo group. There was
no basis to suspect that subjects who were free at 9:00 a.m.
would differ systematically from those subjects who were free
at 1:00 p.m.

North Texas State University Sample

In order to increase the total number of subjects who
were undergoing desensitization, an additional desensitization
group was drawn from the student population of the North Texas
State University, Denton, Texas. Students in four sections of
introductory psychology classes were given an opportunity to
participate in what was described as "a series of group meet-
ings, designed to help the participants to overcome excessive
anxiety over taking tests." Interested students signed their
names, addresses, and phone numbers on a sheet of paper. A time and place for the first meeting was arranged, and interested students were contacted until a group of eight subjects was formed. The group meetings were scheduled for Tuesday and Thursday evenings at 6:30 p.m.

During the first group meeting, the TAQ was administered to all subjects. The mean TAQ score for the North Texas group was 236.75.

Treatment Conditions

**Systematic Desensitization Groups**

The El Centro group consisted of six female and two male subjects, with an average age of 18.0 years. The North Texas group consisted of five female and three male subjects, with an average age of 19.8 years. Both groups met for eight meetings of approximately forty minutes duration each. The first four meetings were devoted to an explanation of the rationale of systematic desensitization (see Appendix C) and to training in deep muscle relaxation. Meetings number five through eight were spent in systematic desensitization to an anxiety hierarchy of fifteen items.

**Attention-Placebo Group**

The purpose for the inclusion of this group was to allow an evaluation of the extent to which non-specific therapeutic factors such as attention and expectancy might result in a reduction in test-anxiety. The attention-placebo group
consisted of four female and four male subjects, with an average age of 18.0 years. These subjects were all drawn from the El Centro sample.

At the first meeting of the group, the rationale and procedures were explained to the subjects (see Appendix D). In summary, the subjects were told that their anxiety over taking tests was a result of the fact that they had not yet acquired the proper types of study skills and habits. The subjects were told that by listening to a series of tapes on methods of study they might hope to improve their study skills and to reduce their level of test-anxiety.

At each meeting of the attention-placebo group the subjects listened to a tape, were reminded of the date of the next meeting, and then were dismissed. No attempt was made to facilitate interaction among the group members or between individual group members and the group leader. Any questions which were asked by group members were answered politely but briefly and without elaboration. The room in which the group met was scheduled for use by another group immediately following the conclusion of the tape, and this further discouraged interaction among the group members.

The tapes which were played for the members of the attention-placebo group consisted of eight titles from a series entitled *How to Study and Why* (5). The titles of the tapes were: "How to Be More Self-Confident;" "How to Speak;" "How to Listen;" "How to Take Notes;" "How to Take Tests;" "How
Control Subjects

Four female and four male students from the El Centro sample served as control subjects. These subjects had completed the TAQ at the pre-enrollment orientation sessions, and all of them had scores which fell in the first quarter of the distribution. These control subjects were retested with the TAQ at the time of the conclusion of the meetings of the attention-placebo and desensitization groups. None of these subjects were informed of the fact that they were chosen as control subjects in an investigation of test-anxiety.

Post-Treatment and Follow-up Administration of TAQ

The TAQ was administered to subjects in the desensitization and attention-placebo groups at the conclusion of the final meetings. At approximately the same time, the TAQ was administered to the control subjects.

Approximately two months after the conclusion of the group desensitization sessions, the TAQ was administered for a third time to thirteen of the sixteen subjects in the desensitization groups. The purpose of this follow-up was to determine whether changes on TAQ scores would remain stable. No follow-up was attempted with either attention-placebo or control subjects.
Table III presents a summary of the composition of the groups. Each group is identified as to source of subjects,

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>TAQ Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Texas Desensitization</td>
<td>8</td>
<td>236.75</td>
<td>35.894</td>
</tr>
<tr>
<td>El Centro Desensitization</td>
<td>8</td>
<td>245.00</td>
<td>19.525</td>
</tr>
<tr>
<td>El Centro Placebo</td>
<td>8</td>
<td>240.50</td>
<td>23.0976</td>
</tr>
<tr>
<td>El Centro Control</td>
<td>8</td>
<td>238.25</td>
<td>11.0651</td>
</tr>
</tbody>
</table>

number of subjects, pre-treatment mean on the TAQ, and standard deviation.

Description of the Test Anxiety Questionnaire

The instrument which was utilized in the assessment of test-anxiety was the College Form of the Test Anxiety Questionnaire (4). The College Form of the TAQ is a self-report device consisting of thirty-nine questions to which the subject is asked to respond. For each question there is a scale, the ends of which represent opposing reactions. The middle of the line contains the word "Mid-point" or else a phrase which indicates a position in-between the opposing positions represented by the ends of the line. The subject is asked to mark an X on the line on the point which most appropriately
indicates his reaction to the particular question. For clarification, an example follows (the complete TAQ is presented in Appendix C):

29. Before taking a course examination, to what extent are you aware of an "uneasy" feeling?

<table>
<thead>
<tr>
<th>am not aware of</th>
<th>Midpoint</th>
<th>am very much aware of it</th>
</tr>
</thead>
<tbody>
<tr>
<td>it at all</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Four of the thirty-nine items are "fillers" and are not scored. Each of the remaining items is scored on a ten-interval scale. The line on which the subject makes his response is divided into ten equal segments. The end of the scale which is indicative of the least anxiety is scored one; the end which is indicative of maximum anxiety is scored ten. Each item on which the subject marks his reaction at some point between the two extremes is scored in accordance with the interval in which the mark falls. For purposes of scoring the questionnaires, a transparent overlay was prepared for each page. The total score for an individual subject was obtained by summing the scores on the individual items. The extreme scores possible on the TAQ are a low of thirty-five and a high of three-hundred fifty.

Mandler and Cowen (3) reported a test-retest reliability coefficient of .91 for the TAQ. These same investigators reported a split-half reliability coefficient of .91.

Correlation coefficients between scores on the TAQ and scores on other anxiety scales are presented in Table IV.
TABLE IV

CORRELATIONS BETWEEN TEST ANXIETY QUESTIONNAIRE SCORES AND OTHER MEASURES OF ANXIETY

<table>
<thead>
<tr>
<th>Source of Information</th>
<th>Instrument</th>
<th>Correlation with TAQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raphelson (8)</td>
<td>Manifest Anxiety Scale</td>
<td>.59</td>
</tr>
<tr>
<td>Endler and Others (2)</td>
<td>S-R Inventory of Anxiousness</td>
<td>.66</td>
</tr>
<tr>
<td>Endler and Others (2)</td>
<td>Gordon-Sarason General Anxiety Questionnaire</td>
<td>.37</td>
</tr>
<tr>
<td>Alpert and Haber (1)</td>
<td>Debilitating Achievement Anxiety Scale</td>
<td>.64</td>
</tr>
</tbody>
</table>

The magnitude of these correlation coefficients, while not extremely high, is acceptable as regards the relationship of the TAQ to other measures of anxiety. Research in the area of anxiety has suggested that anxiety is not a unitary construct, that is, there are different types of anxiety. Scales which are designed to assess a particular type of anxiety would be expected to correlate only moderately with scales designed to assess other types of anxiety. The basis of these moderate correlations might be the presence of some general factor common to all varieties of anxiety, for example, certain autonomic reactions.

Handler and Sarason (4) presented one item of evidence which bears on the construct validity of the TAQ. These investigators obtained TAQ scores on a group of subjects and made ratings of overt indications of anxiety on these same subjects in a testing situation. The investigators had no
knowledge of the subjects' TAQ scores at the time of the behavioral ratings of anxiety. The correlation coefficient between these behavioral ratings of anxiety and TAQ scores was .59 (significant at .001 level).

Statistical Analysis of Data

The primary statistical analysis consisted of an analysis of covariance of anxiety reduction scores (9). This procedure provided a statistical control over individual differences among subjects on initial level on the dependent variable, TAQ scores. A t test (7) comparison of the mean change of the two desensitization groups revealed that there was no significant difference between these two means, therefore the two groups were combined for purposes of the statistical analysis. The Duncan multiple range test (6) was utilized to make specific contrasts between group mean change scores.

Within each group (attention-placebo, desensitization, and control) a t test was used to evaluate the significance of the difference between pre- and post-treatment TAQ scores. For the follow-up on thirteen of the sixteen desensitization subjects, pre-treatment and follow-up means on the TAQ were compared by the t test.
CHAPTER BIBLIOGRAPHY


CHAPTER IV

RESULTS

The results of the analysis of covariance (3) of anxiety reduction scores are presented in Table V. The obtained F ratio was significant at the .01 level, indicating that there were significant differences among the three groups in anxiety reduction.

TABLE V

SUMMARY OF ANALYSIS OF COVARIANCE OF ANXIETY REDUCTION SCORES

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>19626.844</td>
<td>2</td>
<td>9813.422</td>
<td>7.622*</td>
</tr>
<tr>
<td>Within Groups</td>
<td>37336.625</td>
<td>29</td>
<td>1287.469</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>56963.469</td>
<td>31</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at .01 level.

To determine which group anxiety reduction means differed significantly, the Duncan multiple range rest (1) was utilized to perform specific contrasts between group means. The results of this procedure are presented in Table VI. As can be noted from Table VI, all contrasts between group means were significant at the .01 level. Desensitization subjects demonstrated significantly greater anxiety reduction as measured.
by the TAQ than did either attention-placebo or control sub-
jects. Subjects in the attention-placebo group demonstrated
significantly greater anxiety reduction scores than did
control subjects.

Decreases within each group on TAQ scores were evaluated
by way of t tests for correlated means (2), the results of
which are presented in Table VII. The mean decrease for

**TABLE VII**
WITHIN GROUP CHANGES ON TAQ SCORES

<table>
<thead>
<tr>
<th>Group</th>
<th>Pre-Treatment Mean</th>
<th>Post-Treatment Mean</th>
<th>Change</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desensitization</td>
<td>240.88</td>
<td>170.00</td>
<td>-70.88</td>
<td>6.62*</td>
</tr>
<tr>
<td>Placebo</td>
<td>240.50</td>
<td>211.50</td>
<td>-29.00</td>
<td>2.44**</td>
</tr>
<tr>
<td>Control</td>
<td>238.25</td>
<td>223.00</td>
<td>-15.00</td>
<td>2.16</td>
</tr>
</tbody>
</table>

*Significant at .001 level, df = 15.
**Significant at .05 level, df = 7.
subjects in the desensitization group was 70.88 points, a difference which was highly significant (.001 level). Subjects in the attention-placebo group demonstrated a mean decrease of 29 points, a difference which reached significance at the .05 level. The mean decrease for control subjects failed to reach significance.

The pre-treatment TAQ scores of thirteen of the sixteen desensitization subjects were compared with follow-up TAQ scores on these same thirteen subjects. These follow-up scores were obtained two months after the conclusion of desensitization. When the follow-up scores of these subjects were compared with their pre-treatment scores on the TAQ, the mean decrease for these thirteen subjects was 79.46 points, a difference which was highly significant (t = 8.64, df = 12, significant at .001 level).

Evaluation of the Hypotheses

Hypothesis number one stated that subjects participating in group systematic desensitization would demonstrate significantly greater score decreases on the TAQ than would participants in an attention-placebo group or control subjects. The results of the analysis of covariance and the Duncan range tests strongly confirm hypothesis number one.
Hypothesis number two stated that the TAQ score decreases demonstrated by subjects in the desensitization group would remain stable two months after treatment. The results of the follow-up administration of the TAQ strongly confirm hypothesis number two (TAQ scores for all subjects are presented in Appendix F).
CHAPTER BIBLIOGRAPHY


CHAPTER V

DISCUSSION

The results of the present investigation clearly demonstrate that systematic desensitization can be effectively administered to groups of eight persons. Desensitization subjects achieved test-anxiety reductions which were significantly greater than those achieved by either attention-placebo subjects or control subjects. Furthermore, the follow-up assessment of test-anxiety two months after the conclusion of desensitization demonstrated that the desensitization subjects maintained their reductions in test-anxiety. Between the post-treatment and follow-up assessments of test-anxiety, the average desensitization subject showed a further reduction of 10.46 points on the TAQ. While this further decrease failed to reach statistical significance, it certainly argues against any claim that the effects of the desensitization were temporary or transient.

In Chapter II, it was noted that several of the published reports of group desensitization contained methodological weaknesses which made it difficult to draw conclusions from the results. An investigation by Lazarus (5) was cited as being the first published report of group systematic desensitization. As previously noted, Lazarus both conducted
the treatment and assessed the outcome, thus raising the possibility of experimenter bias. In the present investigation, the outcome assessment was accomplished by means of a standardized instrument. This procedure both eliminated the operation of bias in assessment and allowed the use of a more adequate statistical design, analysis of covariance. Also, the majority of the groups in Lazarus' investigation consisted of only two members. The two desensitization groups in the present investigation contained eight members each, thus demonstrating that a very substantial saving of time may be accomplished through group desensitization.

Another study which was previously reviewed was that of Katahn, Strenger, and Cherry (4), in which systematic desensitization and directive counseling were combined to bring about reductions on test-anxiety scores. The present investigation avoided any confounding of desensitization with other therapeutic strategies. The eight group meetings were spent only in training in relaxation and desensitization, and the sessions were not in any sense a traditional group counseling situation.

Suinn (11) combined group and individual procedures in effectively reducing test-anxiety through systematic desensitization. The present study demonstrated that all of the phases involved in desensitization can be carried out in a group setting.
The present results closely parallel several aspects of the study by Paul (7) in which individual insight psychotherapy was compared with individual systematic desensitization. Consistent with Paul's results, desensitization subjects in the present investigation demonstrated significantly greater anxiety reduction than either control or placebo subjects. In both investigations, however, subjects in an attention-placebo group manifested significant reductions in anxiety. While the placebo effect in the present study just reached the .05 level of significance, this consistency with the results of Paul's investigation suggests that attention-placebo groups should be included as a matter of routine in future investigations of anxiety reduction. The practice of including placebo groups in studies of the effects of drugs has been a standard procedure for a number of years. It appears that psychotherapy research would do well to pay closer attention to the operation of attention, expectancy, placebo, and other non-specific therapeutic effects.

Theoretical Factors in Group Desensitization

An obvious advantage of group methods of counseling and psychotherapy is the saving in time over individual methods. In the present group application of systematic desensitization, the experimenter spent eight sessions with the groups of subjects, each session lasting approximately forty minutes.
With eight subjects in each group, this amounts to an average time per subject of about forty minutes. This period of forty minutes represents less time than would ordinarily be spent with a single subject in an initial interview, whether working within the framework of behavior therapy or insight-oriented counseling.

With the demand for counseling services often exceeding the supply, there has been an increase in emphasis in recent years upon the development of group methods of counseling and psychotherapy. In this context, it is noteworthy that systematic desensitization, which has proven to be very effective in individual therapy, can be administered successfully in a group setting.

Group methods of counseling and psychotherapy are readily recognized for their time-saving qualities. In addition, however, many investigators recognize that group therapy differs from individual therapy in qualitative as well as quantitative aspects. Many years ago, investigators in the areas of social psychology and group dynamics focused attention upon some of the unique factors which were operative in a group situation. Evidence of this early awareness of these group-specific factors is contained in the theoretical writings of the sociologist George Simmel in 1902 (9), as well as in the investigations of the social facilitation effect which were carried out by Triplett in 1898 (13) and Allport in 1920 (1). In this connection, it may be fruitful to examine
some of the possible theoretical differences between individ-
ual and group systematic desensitization.

Recent investigations by Zajonc (14) and Zajonc and Sales (15) have clarified certain inconsistencies in the results of previous studies of the social facilitation effect. Simply described, the social facilitation effect refers to the observation that the presence of other persons facilitates or enhances the performance of certain tasks by individual subjects. Past investigations have revealed that the presence of others may sometimes facilitate performance, while at other times it may inhibit individual performance.

Zajonc (14) has proposed a theoretical resolution of these conflicting results by suggesting that the presence of other persons raises the arousal or drive level of the individual. If this is the case, then the facilitation or inhibition of performance as a function of the presence of others would depend upon the nature and complexity of the tasks upon which the individuals were working. Studies of drive theory and manifest anxiety have demonstrated that a high level of drive facilitates the performance of dominant responses in simple tasks, while at the same time inhibiting the performance of complex tasks. This is a result of the fact that high levels of drive increase the reaction potential or incorrect competing response tendencies in the performance of complex tasks. Zajonc maintains that the
social facilitation effect will be demonstrated in the performance of simple tasks, whereas the presence of other persons may be expected to inhibit individual performance of complex tasks.

Zajonc and Sales (15) tested a derivation from Zajonc's theoretical formulation in a study in which thirty-nine male college students served as subjects. The subjects learned ten nonsense words which were later presented to them tachistoscopically for recognition. In one of the recognition conditions the subjects were alone, while in a second condition the subjects were watched by an audience of two persons. To assess the relative habit strengths of the nonsense words, the experimenters interspersed pseudorecognition trials among the recognition trials. On these pseudorecognition trials, rapid flashes of empty space were presented. The subject, thinking that it was a recognition trial, guessed as to which nonsense word had been presented. It was assumed that the guesses on these pseudorecognition trials would be a function of the habit strengths of the nonsense words. In other words, the nonsense words which were the most well-learned or dominant would appear more frequently as guesses on the pseudorecognition trials. In this manner it was possible to categorize the degree of habit strength associated with each of the nonsense words.

The primary hypothesis was that the presence of other persons would increase the ease with which dominant words
were recognized while decreasing the ease with which non-dominant words were recognized. The results supported this hypothesis. The individual subjects' recognition of dominant words was enhanced by the presence of other persons. Individual recognition of non-dominant words was inhibited by the presence of an audience.

Certain features of the social facilitation effect may be operative in group systematic desensitization. The aspect of desensitization which might be most influenced by the presence of other persons is the training in muscle relaxation. The development of the ability to achieve a deep state of relaxation is essentially only an amplification of an already well-practiced response. The response of relaxation may qualify as a dominant response, and as such, it could be facilitated by group membership. The presence of other persons who give an appearance of being calm and relaxed may aid each individual group member in more easily achieving a satisfactory level of relaxation.

A second theoretical difference between individual and group desensitization concerns the opportunities for response modeling which are present in the group situation. Recent investigations of response modeling, especially the work of Albert Bandura (2), indicates that the acquisition of a new behavior may be facilitated through the observation of another person performing the behavior.
The efficacy of modeling procedures in bringing about fear reduction was demonstrated in a recent investigation by Bandura, Blanchard, and Ritter (3). Snake-phobic subjects were assigned to one of four conditions: (1) systematic desensitization to a hierarchy of items relevant to snake-phobia; (2) symbolic modeling, in which subjects were trained in relaxation and shown motion picture films of other persons handling snakes; (3) live modeling and guided participation, in which the subjects watched as the therapist played with a snake and later were given opportunities to come into contact with the snake; and (4) no treatment control condition.

The results demonstrated that the live modeling and guided participation procedure was significantly more effective in reducing fear than were either systematic desensitization or symbolic modeling. Both desensitization and symbolic modeling were significantly more effective than no treatment.

When systematic desensitization is administered in a group setting, certain aspects of response modeling may enter into effect in such a way as to facilitate desensitization. In terms of the individual member of the group, the other group members may serve as both behavioral models and discriminative stimuli for the response of relaxation. In a group of eight subjects, to the extent that the other members of the group give the appearance of being relaxed, each
individual member is provided with seven relaxation models. A similar state of affairs would also exist in the desensitization proper phase, that part of the procedure during which the group members are actually dealing with the items from the anxiety hierarchy.

If aspects of response modeling are present in group desensitization, then group desensitization might actually produce greater reductions in anxiety than would individual desensitization. A partial test for the presence of modeling factors in group desensitization might be accomplished by having subjects sit as non-participating observers in a group that undergoes desensitization for an anxiety or phobia that is shared by the observer. Pre- and post-observation assessments of the strength of the anxiety or phobia might detect reductions which could be accounted for in terms of response modeling.

A final area of theoretical importance in group desensitization concerns stimulus generalization. The problem of test-anxiety is one which, for the most part, occurs in a group setting, the classroom. When desensitization of test-anxiety is carried out in groups, generalization to the real-life situation should be facilitated, because of the greater similarity of stimuli in the two situations. The same thing should also hold for similar anxieties which have their primary locus in a social situation.
Application of the Present Study to Additional Problem Areas

The target behavior of the present investigation was test-anxiety, a behavior which was chosen because previous studies had shown it to be both a serious and widespread difficulty among college students. Based upon the present results, it would seem likely that other difficulties might be dealt with through group desensitization. Test-anxiety is an example of a performance anxiety, and the demands of the college curriculum often give rise to other behaviors which could be classified as performance anxieties. Public speaking, student teaching, practicums, and internships are other areas of performance which may be a source of anxiety to many students. Group desensitization should prove to be of value in dealing with these and related types of anxiety. Further research will be necessary to determine precisely the scope of difficulties which can be dealt with through group desensitization. The present results should encourage such investigations.

The method utilized in the formation of two of the groups might be extended in both future research and in counseling practice. It will be recalled that the TAQ was administered to a large sample of students, and students whose scores were indicative of high test-anxiety were then invited to participate in one of the groups. Of the total number of students who were interviewed, 49 out of 56 (89 per cent) expressed a desire to participate in one of the groups.
While many of the interested students were subsequently unable to participate because of schedule conflicts, this high percentage of interested students suggests that similar methods of group formation might provide a viable alternative to simply asking for volunteer subjects. Many students who are interested in participating in some activity may be hesitant to volunteer for that activity in the public atmosphere of a classroom. In a private interview situation, however, these students may feel more comfortable in expressing an interest in something like a counseling group. If future investigations demonstrate that difficulties other than test-anxiety can be effectively dealt with in group desensitization, then the use of the present method of group formation might prove to be quite effective in getting more students involved in groups. The Mooney Problem Check Lists (6) might be especially well suited for use in the identification of problem areas which affect large numbers of individuals in a given population.

Implications for Further Research

The present investigation demonstrates that systematic desensitization can be administered in a group setting. In the discussion of the results, several additional investigations have already been suggested. In connection with the examination of theoretical factors in group desensitization, it was noted that certain group effects might produce
systematic differences between group and individual desensitization. A comparative study of group versus individual desensitization will be necessary in order to examine these possible differences.

An investigation by Paul (7) demonstrated individual systematic desensitization to be superior to individual insight-oriented psychotherapy in the reduction of fear of public speaking. An informative follow-up to Paul's study would be a controlled comparison of group desensitization and one of the more traditional forms of group psychotherapy. The traditional group therapy situation would probably need to be a rather highly structured situation in order to accomplish any significant anxiety reduction in a limited period of time. It might prove to be interesting, however, to see what sort of reduction of anxiety in a specific problem area would result from a limited number of unstructured group meetings.

Investigations by Paul and Shannon (8) and by Suinn (11) have revealed that, following desensitization, subjects experienced declines in overall fears, as well as in the specific difficulty which was dealt with in desensitization. These results suggest that there is some transfer of anxiety reduction from the particular target problem to other areas.

Taylor (12) noted a similar type of transference in a case study of the systematic desensitization of public speaking anxiety in a female college student. On the day of the
conclusion of desensitization, the student remarked that on the previous day she had received a notice to meet with her employer in the employer's office. She reported for the conference, talked with her employer about some matter, and returned to her work. At this point, she related, she suddenly realized that, contrary to her past experiences, she had not experienced any anxiety regarding the conference with her employer. As she related the details of the incident, she expressed her belief that the process of desensitization, which was almost complete at this point, had enabled her to handle a potentially anxiety-provoking situation which had not been specifically dealt with in the desensitization sessions.

It may be that in undergoing systematic desensitization, a subject is not only learning to deal with a particular problem but is also learning something about dealing with anxiety in general. If future research substantiates this transference phenomenon, it might be possible to map out a gradient of transference from one situation to another. One would expect the greatest amount of transfer to occur within a general class of anxieties, for example, performance anxieties; however, there may be substantial transfer to less closely related areas of behavior.

The present investigation utilized decreases on TAQ scores as the criterion of reduction in level of test-anxiety. Future investigators may find it useful to attempt to develop
behavioral indices of anxiety reduction. Such indices could then be combined with self-report devices in the assessment of anxiety. One such possibility would be to develop a behavioral checklist of test-anxiety symptoms and to have trained observers rate the subjects during an actual examination.

Spielberger (10) noted that 20 per cent of a group of high scorers on the Manifest Anxiety Scale subsequently dropped-out of college as a result of academic deficiencies. A longitudinal comparison of treated and non-treated test-anxious students could be instrumental in determining the extent to which test-anxiety is a factor in withdrawal from college. In connection with this, comparisons could be made between the grade point averages of the treated and non-treated test-anxious students, with appropriate adjustments made for intelligence differentials. Grade point averages alone, however, should not be employed as a criterion of the success of desensitization for test-anxiety, for the "psychological comfort" of the individual is certainly an important factor to be considered.
CHAPTER BIBLIOGRAPHY


CHAPTER VI

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

In recent years, there has been a steady growth of interest in behavior therapy techniques in counseling and psychotherapy. One of the most widely used of the behavior therapy techniques is systematic desensitization, a procedure which has been demonstrated to be very effective in the reduction of anxiety and phobic disorders. In dealing with specific fears and anxieties, systematic desensitization has consistently proven to be superior to the more traditional methods of insight psychotherapy.

Another trend in counseling and psychotherapy in recent years has been the growth of interest in group methods. In connection with this increased emphasis upon group counseling and psychotherapy, several investigators have attempted to administer systematic desensitization to groups of subjects. Because of various methodological weaknesses in the completed studies, the basic question of whether desensitization can be effectively administered in a group setting has remained unanswered.

The problem of the present investigation was to determine the effectiveness of group systematic desensitization procedures in the reduction of test-anxiety among college students.
The primary purposes of the investigation were to determine whether desensitization could be administered in groups and to evaluate the stability of anxiety reductions which resulted from group desensitization.

It was hypothesized that group systematic desensitization would be more effective than either an attention-placebo procedure or no treatment in reducing test-anxiety. Furthermore, it was hypothesized that the reductions which resulted from desensitization of test-anxiety would remain stable at a two-month follow-up assessment of test anxiety.

The sample consisted of thirty-two highly test-anxious undergraduate college students. Systematic desensitization was administered to two groups of eight students. These groups met for a total of eight sessions, each session lasting approximately forty minutes. The attention-placebo group consisted of eight subjects who met for a total of eight sessions. During the meetings of the attention-placebo group, the subjects listened to tape recorded information on how to improve study skills and attitudes. An additional eight subjects served as non-participating control subjects. Changes in test-anxiety for all thirty-two subjects were assessed by means of a self-report questionnaire.

The results strongly confirmed both hypotheses. Subjects who participated in the systematic desensitization groups demonstrated significantly greater (.01 level) test-anxiety score decreases than did either the attention-placebo
or control subjects. Two months after the conclusion of the desensitization sessions, the anxiety questionnaire was administered to thirteen of the sixteen desensitization subjects. The results of this follow-up assessment of test-anxiety revealed that the mean anxiety reduction for these thirteen subjects was greater than it had been at the conclusion of group desensitization. Subjects who participated in the attention placebo group demonstrated test-anxiety score decreases which were significantly greater (.01 level) than those of the control subjects.

In the discussion of the results, it was noted that there were some theoretical bases for suspecting that there may be systematic differences between group and individual desensitization. The roles of social facilitation, response modeling, and stimulus generalization were discussed in relationship to group desensitization.

The methods used in the formation of several of the experimental groups were discussed. Some suggestions were made as to how these methods of group formation might be applied in counseling practice. The implications of the present investigation for future research were discussed.

Conclusions

The results of the present investigation lead to the formulation of the following conclusions:
1. Group systematic desensitization is a highly effective procedure for producing significant reductions in test-anxiety.

2. Group systematic desensitization results in a degree of anxiety reduction which is significantly greater than that which is produced by placebo, expectancy, and other non-specific therapeutic factors.

3. Group systematic desensitization produces anxiety reductions which are stable rather than temporary in duration. Subjects who undergo group desensitization for anxiety may continue to experience further anxiety reduction with the passage of time.

4. Group systematic desensitization would prove to be effective in the reduction of types of anxiety other than test-anxiety. Anxieties which could be classified as performance anxieties may be especially amenable to treatment by group systematic desensitization procedures.

5. In some instances, subjects who undergo desensitization for either test-anxiety or other performance anxieties may experience some transfer of anxiety reduction to related situations. As subjects overcome a specific fear or anxiety, they should experience a general increase in self-confidence which will be of benefit to them in a wide variety of situations.

6. The period of time which is required for the administration of group systematic desensitization represents a
substantial saving over that which is required by either individual desensitization or other individual methods of counseling.

7. The procedural modifications necessary to adapt systematic desensitization to the group setting do not result in any attenuation of the effectiveness of desensitization. All aspects of systematic desensitization can be efficiently and effectively administered to groups of subjects.

8. The procedures employed in the present investigation for the construction of the anxiety hierarchies for the individual subjects could be effectively utilized in individual desensitization.

9. Focusing attention and concern upon the anxieties of subjects can result in a significant reduction of these anxieties.

10. The mere passage of time does not result in any significant reductions of test-anxiety. Likewise, exposure to college work does not produce significant reductions of test-anxiety.

Recommendations

The results of the present investigation warrant the following recommendations:

1. Programs of group systematic desensitization should be instituted in college and university counseling centers. These desensitization programs should be used to deal with
the problem of test-anxiety as well as with those problems which are demonstrated by future research to be amenable to treatment by group desensitization.

2. Additional research should be undertaken in order to determine the range of behavioral difficulties which can be dealt with effectively through group desensitization. Special attention should be focused upon the areas of interpersonal and performance anxieties.

3. Additional research should be undertaken in order to determine whether the methods of group formation which were employed in the present investigation might have applications in counseling practice.

4. Attention-placebo groups should be included as a matter of routine in future investigations which are aimed at determining the effectiveness of various methods of anxiety reduction.

5. Behavioral methods of counseling and psychotherapy promise to be effective in dealing with a wide variety of difficulties. In programs for the preparation of psychological counselors, proper emphasis should be placed upon instruction in the basic principles of behavior modification.
APPENDIX A

PROCEDURES FOR CONSTRUCTION
OF ANXIETY HIERARCHY

NAME ___________________ GROUP ___________________

Each statement below describes a situation that is in some way related to taking examinations. If you found yourself in any one of these situations, you might be bothered quite a bit--somewhat--not at all. Look over the list of situations. If you can think of other situations which bother you in relation to taking exams, add these situations to the list. You do not have to add any situations, but please feel free to do so.

When the list seems to contain all of the situations that might bother you, look it over again for a moment. Then pick the situation that would bother you the most and place a 1 beside it. Next, look at the remaining situations. Of these, pick the one that would bother you the most and place a 2 beside it. Continue with this procedure until you have ranked all of the items on the list, including any that you may have added.

_ on the way to school the day of an examination
_ in the process of taking an exam
_ sitting at your desk and waiting for the distribution of the exams
_ cramming for an exam the night before
_ entering the room where an exam is to be given
_ the teacher announces and discusses a course examination with the class
_ having thirty minutes left to complete an examination and an hour's worth of work to do
_ seeing an exam question and not being sure of the answer
_ the examination paper lies face down on the desk
_ one day before an important examination
_ two days before an important examination
_ three days before an important examination
_ one week before an important examination
_ two weeks before an important examination
_ one month before an important examination
_ studying for an exam one week before the exam
APPENDIX B

INTERVIEW FORMAT

You may remember having filled out a questionnaire at the end of your orientation session before you registered for classes. That questionnaire had to do with how you felt about different types of testing situations and, more specifically, what sorts of anxiety you might feel in relation to taking tests, examinations, etc. These questionnaires have now been evaluated, and we feel that we have gained a better understanding of the way students feel about taking tests.

The response patterns on some of the questionnaires indicated that some of our students have very high levels of test anxiety, that is, some persons are bothered a great deal by tests and course exams. Psychological research has shown that the academic performance of many students is hampered or lowered by excessive anxiety, especially anxiety over taking tests.

Some members of the counseling staff are involved in a program of research which is designed to evaluate some new methods for helping students to overcome excessively high levels of test-anxiety. The program which we are organizing this semester will take the form of small group meetings. These meetings will last approximately thirty minutes, and there will be eight such meetings spread out over the course of the semester.

Your responses on the test-anxiety questionnaire indicate that you may be one of those persons who are highly anxious about taking tests. Have you ever noticed yourself getting overly anxious before taking tests? Or, have you ever gone into a test and "blanked out" or forgotten material which you thought you knew pretty well?

We would naturally like to give the first chance at participation in these small group meetings to persons like yourself who had scores on the questionnaire which were indicative of high test-anxiety. Several students have already responded very favorably toward the idea of participating in one of these groups, especially since the total amount of time (eight thirty-minute sessions) is not too great. Do you think that you might be interested in participating in this
program designed to relieve or lower test-anxiety? We have
tentatively planned to have these meetings sometime on
Tuesdays and Thursdays, but we can be flexible about the
time if some other time would be more convenient for the
participants.

Naturally, there is no charge made for participating
in these sessions, although the same services purchased
professionally might cost over one-hundred dollars or so.
This is one of the fringe benefits of being a student here.
The only thing we ask is that you make a commitment to the
entire group of eight meetings and agree to do your utmost
to attend each session.
APPENDIX C

RATIONALE FOR SYSTEMATIC DESENSITIZATION GROUP

You are all here today because of a shared complaint—excessive anxiety over taking tests and exams. I have asked you to participate in these meetings in order to help you overcome this complaint of test-anxiety.

Some psychological theories would say that your test-anxiety is caused by hidden or unconscious motives of which you have no awareness. I do not believe this to be the case. The anxiety that you experience before or during an exam is not something that is natural or inevitable, nor is it something that you were born with. You are anxious in a testing situation because you have learned to be anxious in these situations. If anxiety is learned, it can also be unlearned. This is precisely what we propose to do in this series of meetings.

The method that we use to help you overcome your anxiety is called systematic desensitization. It involves two basic processes—relaxation and counterconditioning. I will explain the process to you now.

Anxiety about taking an exam is not a single anxiety but rather many anxieties which are connected to many different kinds of behavior. But let me illustrate this by drawing an example of a different nature—fear of high places. Let's say that you are afraid of going up in tall buildings. Now, if this were the case, your fear would not begin when you got to the top of the building. It would begin before this point. You might first begin to become afraid when you walked toward the building; you might become more anxious as you entered the building; you might become a little bit more anxious as you entered the elevator, etc. The point is, there are many different behaviors involved in getting to the top of the building. Since this is the case, the first step in overcoming a fear of going to the top of the building might be overcoming the fear of walking into the building. Once you could do this without anxiety, you might then be able to walk toward the elevator without feeling anxious, etc.
We will attempt to break your test-anxiety down like this into smaller parts. Then, we will work on overcoming each anxiety, starting with the smaller ones and moving up to the bigger ones. In a few minutes we will construct a device known as an anxiety hierarchy. This will be the list of basic anxieties which we will eliminate one at a time.

Now, a word about relaxation. We use relaxation to eliminate anxiety, and we do so for a simple reason—it is impossible to be anxious and relaxed at the same time. The part of your nervous system which is responsible for anxiety is also responsible for relaxation, and it cannot do both at the same time. I will teach you how to relax much more deeply and thoroughly than you have ever relaxed before. While you are relaxed, you will learn to substitute this relaxation for the test-anxiety which you normally experience,
You are all here today because of a shared complaint--excessive anxiety over taking tests and exams. I have asked you to participate in these meetings in order to help you overcome this complaint of test-anxiety.

Some psychological theories would say that your test-anxiety is caused by hidden or unconscious motives of which you have no awareness. I do not believe this to be the case. The anxiety that you experience before or during an exam is not something that is natural or inevitable, nor is it something that you were born with. You are anxious in a testing situation because you have not acquired the proper types of study skills and habits. By developing better study skills, you should be able to take your tests with more confidence and less anxiety.

Each time that we meet, I will play for you a tape which will give you basic information on how to improve your study skills, habits, and attitudes. By listening carefully to this information, you can learn much that will be of value to you in helping you to take tests without feeling overly anxious.

There will be a total of eight tapes, and we will listen to one tape at each meeting. Are there any questions before I start the first tape?
APPENDIX E

QUESTIONNAIRE ON ATTITUDES TOWARD THREE KINDS OF TESTING SITUATIONS
(COLLEGE FORM)

NAME: ____________________________
(Please Print)

AGE: ____________ SEX: Male ______ Female ______

This questionnaire is designed to give you an opportunity to indicate how you feel in regard to three types of testing situations:

a) the group intelligence or aptitude test, such as you took upon entrance to college,

b) the course examination,

c) the individual (face-to-face) type of intelligence test

One of the main reasons for constructing this questionnaire is the fact that very little is known about peoples' feelings toward the taking of various kinds of tests. We can assume that people differ in the degree to which they are affected by the fact that they are going to take a test or by the fact that they have taken a test. What we are particularly interested in here is how widely people differ in their opinions of and reactions to the various kinds of testing situations.

The value of this questionnaire will in large part depend on how frank you are in stating your opinions, feelings, and attitudes. Needless to say, your answers to the questions will be kept strictly confidential; they will under no circumstances be made known to any instructor or official of the university.

We are requesting you to give your name, age, and sex because this information may be necessary for research purposes.

Each of you has taken a course examination and a group intelligence or aptitude test, but not all of you have taken an individual intelligence test. Those of you who have not taken such a test are requested to answer the relevant questions in terms of how you think you would react to them. We want to know what you think your attitudes and feelings toward
taking such a test would be and not what you think they
ought to be. Those who have taken an individual intelli-
gence test will, of course, answer the questions in terms
of what they actually experienced.

For each question there is a line or scale on the ends
of which are statements of opposing feelings or attitudes.
In the middle of the line you will find either the word
"Midpoint" or a phrase, both of which are intended to re-
fect a feeling or attitude which is in between the state-
ments of opposing feelings described above. You are asked
to put a mark (X) on that point on the line which you think
best indicates the strength of your feeling or attitude
about the particular question. The midpoint is only for
your guidance. Do not hesitate to put a mark on any point
on the line as long as that mark reflects the strength of
your feeling or attitude.

If you have any questions at this time, please ask the
person who has passed out the questionnaires.

THERE ARE NO "CATCH" QUESTIONS IN THIS QUESTIONNAIRE, PLEASE
READ EACH QUESTION AND EACH SCALE VERY CAREFULLY. THERE IS
NO TIME LIMIT.

THE MIDPOINT IS ONLY FOR YOUR GUIDANCE. DO NOT HESITATE TO
PUT A MARK (X) ON ANY POINT ON THE LINE AS LONG AS THAT MARK
REFLECTS THE STRENGTH OF YOUR FEELING OR ATTITUDE.

SECTION I

The following questions relate to your attitude and ex-
perience with group intelligence or aptitude tests. By group
intelligence tests we refer to tests which are administered
to several individuals at a time. These tests contain dif-
ferent types of items and are usually paper and pencil tests
with answers requiring either fill-ins or choices of several
possible answers. Scores on these tests are given with
reference to the standing of the individual within the groups
tested or within specific age and educational norms. Tests
required for entrance to college represent this type of test.
Please try to remember how you usually reacted toward these
tests and how you felt while taking them.

1. How valuable do you think group intelligence tests are
in determining a person's ability?

Very valuable  Valuable in some respects  Valueless
and valueless in others
2. Do you think that group intelligence tests should be used more widely than at present to classify students?

<table>
<thead>
<tr>
<th>Should be used less widely</th>
<th>Should be used at present</th>
<th>Should be used more widely</th>
</tr>
</thead>
</table>

3. Would you be willing to stake your continuance in college on the outcome of a group intelligence test which has previously predicted success in a highly reliable fashion?

<table>
<thead>
<tr>
<th>Very willing</th>
<th>Uncertain</th>
<th>Not willing</th>
</tr>
</thead>
</table>

4. If you know that you are going to take a group intelligence test, how do you feel beforehand?

<table>
<thead>
<tr>
<th>Feel very unconfident</th>
<th>Midpoint</th>
<th>Feel very confident</th>
</tr>
</thead>
</table>

5. After you have taken a group intelligence test, how confident do you feel that you have done your best?

<table>
<thead>
<tr>
<th>Feel very unconfident</th>
<th>Midpoint</th>
<th>Feel very confident</th>
</tr>
</thead>
</table>

6. When you are taking a group intelligence test, to what extent do your emotional feelings interfere with or lower your performance?

<table>
<thead>
<tr>
<th>Do not interfere at all</th>
<th>Midpoint</th>
<th>Interfere a great deal</th>
</tr>
</thead>
</table>

7. Before taking a group intelligence test, to what extent are you aware of an "uneasy" feeling?

<table>
<thead>
<tr>
<th>Am very much aware of it</th>
<th>Midpoint</th>
<th>Am not aware of it at all</th>
</tr>
</thead>
</table>

8. While taking a group intelligence test, to what extent do you experience an accelerated heartbeat?

<table>
<thead>
<tr>
<th>Heartbeat does not accelerate at all</th>
<th>Midpoint</th>
<th>Heartbeat noticeably accelerated</th>
</tr>
</thead>
</table>

9. Before taking a group intelligence test to what extent do you experience an accelerated heartbeat?

<table>
<thead>
<tr>
<th>Heartbeat does not accelerate at all</th>
<th>Midpoint</th>
<th>Heartbeat noticeably accelerated</th>
</tr>
</thead>
</table>
10. While taking a group intelligence test to what extent do you worry?

<table>
<thead>
<tr>
<th>Worry a lot</th>
<th>Midpoint</th>
<th>Worry not at all</th>
</tr>
</thead>
</table>

11. Before taking a group intelligence test to what extent do you worry?

<table>
<thead>
<tr>
<th>Worry a lot</th>
<th>Midpoint</th>
<th>Worry not at all</th>
</tr>
</thead>
</table>

12. While taking a group intelligence test to what extent do you perspire?

<table>
<thead>
<tr>
<th>Perspire not at all</th>
<th>Midpoint</th>
<th>Perspire a lot</th>
</tr>
</thead>
</table>

13. Before taking a group intelligence test to what extent do you perspire?

<table>
<thead>
<tr>
<th>Perspire not at all</th>
<th>Midpoint</th>
<th>Perspire a lot</th>
</tr>
</thead>
</table>

14. In comparison with other students how often do you think of ways of avoiding a group intelligence test?

<table>
<thead>
<tr>
<th>Less often than other students</th>
<th>As often as other students</th>
<th>More often than other students</th>
</tr>
</thead>
</table>

15. To what extent do you feel that your performance on the college entrance tests was affected by your emotional feelings at the time?

<table>
<thead>
<tr>
<th>Affected a great deal</th>
<th>Midpoint</th>
<th>Not affected at all</th>
</tr>
</thead>
</table>

SECTION II

The following questions relate to your attitude toward individual intelligence tests and your experience with them. By individual intelligence tests we refer to tests which are administered to one individual at a time by an examiner. These tests contain different types of items and thus present a variety of tasks. These tasks can be both verbal and manipulative, i.e. verbal or written answers to questions or manipulations of objects such as is involved in puzzles, form boards, etc. Please try to remember how you have usually reacted toward these tests or how you would expect to react to them.
16. Have you ever taken any individual intelligence tests?
   Yes   No (Circle the appropriate answer)

IF your answer to the above question is yes, indicate in the
questions below how you do or did react to individual intelli-
gence tests?

IF your answer to the above question is no, indicate in the
following questions how you think you would react to or feel
about individual intelligence tests.

17. When you are taking an individual intelligence test, to
what extent do (or would) your emotional feelings inter-
fere with your performance?

| Would not interfere with it at all | Midpoint | Would interfere a great deal |

18. If you know that you are going to take an individual
intelligence test, how do you feel (or expect that you
would feel) beforehand?

| Would feel very unconfident | Midpoint | Would feel very confident |

19. While you are taking an individual intelligence test,
how confident do you feel (or expect that you would feel)
that you are doing your best?

| Would feel very confident | Midpoint | Would feel very unconfident |

20. After you have taken an individual intelligence test,
how confident do you feel (or expect that you would feel)
that you have done your best?

| Would feel very unconfident | Midpoint | Would feel very confident |

21. Before taking an individual intelligence test, to what
extent are you (or would you be) aware of an "uneasy"
feeling?

| Am not aware of it at all | Midpoint | Am very much aware of it |
22. While taking an individual intelligence test to what extent do you (would you) experience an accelerated heartbeat?

| Heartbeat does not accelerate at all | Midpoint | Heartbeat noticeably accelerated |

23. Before taking an individual intelligence test to what extent do you (would you) experience an accelerated heartbeat?

| Heartbeat does not accelerate at all | Midpoint | Heartbeat noticeably accelerated |

24. While taking an individual intelligence test to what extent do you (would you) worry?

| Worry a lot | Midpoint | Worry not at all |

25. Before taking an individual intelligence test to what extent do you (would you) worry?

| Worry a lot | Midpoint | Worry not at all |

26. While taking an individual intelligence test to what extent do you (would you) perspire?

| Would never perspire | Midpoint | Would perspire a lot |

27. Before taking an individual intelligence test to what extent do you (would you) perspire?

| Would never perspire | Midpoint | Would perspire a lot |

28. In comparison to other students, how often do you (would you) think of ways of avoiding taking an individual intelligence test?

| More often than other students | As often as other students | Less often than other students |
SECTION III

The following questions relate to your attitude and experience with course examinations. We refer to major examinations, such as mid-terms and finals, in all courses, not specifically in any one course. Try to represent your usual feelings and attitudes toward these examinations in general, not toward any specific examination you have taken. We realize that the comparative ease or difficulty of a particular course and your attitude toward the subject matter of the course may influence your attitude toward the examinations; however, we would like you to try to express your feelings toward course examinations generally. Remember that your answers to these questions will not be available, at any time, to any of your instructors or to any official of the institution.

29. Before taking a course examination, to what extent are you aware of an "uneasy" feeling?

| Am not aware of it at all | Midpoint | Am very much aware of it |

30. When you are taking a course examination, to what extent do you feel that your emotional reactions interfere with or lower your performance?

| Do not interfere with it at all | Midpoint | Interfere a great deal |

31. If you know that you are going to take a course examination, how do you feel beforehand?

| Feel very unconfident | Midpoint | Feel very confident |

THE MIDPOINT IS ONLY FOR YOUR GUIDANCE. DO NOT HESITATE TO PUT A MARK (X) ON ANY POINT ON THE LINE AS LONG AS THAT MARK REFLECTS THE STRENGTH OF YOUR FEELING OR ATTITUDE.

32. After you have taken a course examination, how confident do you feel that you have done your best?

| Feel very unconfident | Midpoint | Feel very confident |

33. While taking a course examination, to what extent do you experience an accelerated heartbeat?

| Heartbeat does not accelerate at all | Midpoint | Heartbeat noticeably accelerated |
34. Before taking a course examination, to what extent do you experience an accelerated heartbeat?

| Heartbeat does not accelerate at all | Midpoint | Heartbeat noticeably accelerated |

35. While taking a course examination, to what extent do you worry?

| Worry a lot | Midpoint | Worry not at all |

36. Before taking a course examination, to what extent do you worry?

| Worry a lot | Midpoint | Worry not at all |

37. While taking a course examination, to what extent do you perspire?

| Never perspire | Midpoint | Perspire a lot |

38. Before taking a course examination, to what extent do you perspire?

| Never perspire | Midpoint | Perspire a lot |

39. When, in your opinion, you feel well prepared for a course examination, how do you usually feel just before the examination?

| Confident | Midpoint | Anxious |

THE MIDPOINT IS ONLY FOR YOUR GUIDANCE. DO NOT HESITATE TO PUT A MARK (X) ON ANY POINT ON THE LINE AS LONG AS THAT MARK REFLECTS THE STRENGTH OF YOUR FEELING OR ATTITUDE.
APPENDIX F

TAQ SCORES OF SUBJECTS

El Centro Desensitization Group

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North Texas Desensitization Group

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El Centro Attention-Placebo Group

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### El Centro Control Group

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BIBLIOGRAPHY

Books


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