SYSTEMATIC DESENSITIZATION, FLOODING, AND RELAXATION TRAINING AS TREATMENTS FOR TEST ANXIETY

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Peter Todd Hampton

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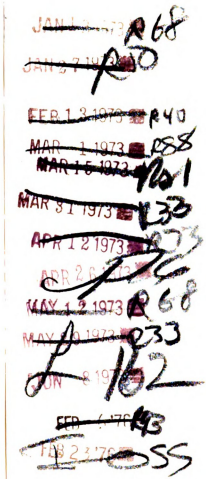

SYSTEMATIC DESENSITIZATION, FLOODING, AND RELAXATION TRAINING AS TREATMENTS FOR TEST ANXIETY

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Peter Todd Hampton

This study compared the effectiveness of three therapies, systematic desensitization, flooding, and relaxation training, in reducing the test anxiety of college students. Forty-four subjects scoring high on test anxiety and volunteering for treatment of test anxiety were obtained from a population of students enrolled in two elementary psychology courses at Michigan State University. Subjects were assigned to one of four groups: systematic desensitization treatment group, flooding treatment group, relaxation treatment group, or no-treatment control group. Before and after the treatment period, subjects completed self-report measures of test anxiety and self-esteem. The subjects' pre and posttherapy academic quarter grade-point-averages and psychology course exam grades were also obtained. Treatment subjects and therapists made ratings on various aspects of the therapy experience. Several of the measures were completed by the subjects again in a follow-up assessment the next quarter.

The results of this study did not indicate general differences between the effectiveness of the three therapies in reducing subjects' test anxiety or in increasing subjects' self-esteem. The relaxation treatment, however, was rated by therapists as requiring less time to complete than the flooding treatment. Each of the three therapies was more effective than the no-treatment control condition in decreasing subjects' self-report measure test anxiety scores and in increasing subjects' self-esteem scores. No significant improvement on either of the academic grade measures was achieved by the therapy treatments or the control condition. The relation of these findings and others to the findings of previous research was discussed. Implications for further research and clinical practice were commented upon.

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SYSTEMATIC DESENSITIZATION, FLOODING, AND RELAXATION TRAINING AS TREATMENTS FOR TEST ANXIETY

By

Peter Todd Hampton

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CHAPTER I

INTRODUCTION

Purpose of Study and Review of the Literature

This study compares the effectiveness of three therapies, systematic desensitization, flooding, and relaxation training, in reducing the test anxiety of college students. Of these three therapies systematic desensitization is probably the best known. Certainly one of the most notable developments of the last decade of psychotherapy research is the widespread application and investigation of this particular technique. Since the early delineation of the technique (Wolpe, 1954, 1958), a host of papers have been published reporting the success of systematic desensitization in treating a broad range of disorders in which anxiety was of fundamental importance (see Paul, 1969a,b for recent summaries of this research). Now some of the more recent research on systematic desensitization is focusing on comparisons of the technique with other types of therapy and on investigations of the contributions of various components of the technique to the therapy outcome. A comparison of systematic

desensitization to implosive or flooding therapy and to relaxation therapy relates to both these research focuses since the latter techniques are distinct therapies from desensitization, yet they share some common components with desensitization. A description of the techniques will illustrate this.

In treating phobic or anxiety reactions systematic desensitization first involves: (a) training in muscular relaxation using an abbreviated version of Jacobson's (1938) progressive relaxation technique, and (b) identification of stimuli or situations which elicit the client's anxiety reaction. The stimuli are incorporated into an anxiety hierarchy consisting of carefully graded situations ranging from those which elicit very little anxiety from the client to those which elicit maximum anxiety. Desensitization proper then consists of verbally presenting the situations to the deeply relaxed client to imagine for a short time (5-30 seconds). The scenes are presented in hierarchical order beginning with the least and progressing to the most anxiety provoking scene. Each scene is repeatedly presented to the client until he indicates that it no longer makes him anxious. Wolpe proposes that the effectiveness of the treatment is due to a counterconditioning process. He states:

> If a response antagonistic to anxiety can be made to occur in the presence of anxiety evoking stimuli so

> that it is accompanied by a complete or partial suppression of anxiety responses, the bond between these stimuli and the anxiety responses will be weakened (Wolpe, 1958, p. 71).

The response antagonistic to anxiety is relaxation.

Flooding (Wolpe & Lazarus, 1966) and implosive therapy (Stampfe & Levis, 1967) are two related techniques in which the client is also asked to imagine scenes related to his fear. No minimally anxiety arousing scenes are presented, but rather the subject is asked to visualize highly anxiety arousing scenes. No relaxation training is involved in this technique. Although some investigators equate the flooding and implosive techniques (Rachman, 1969), the two seem somewhat different in that the scenes imagined in implosive therapy are often chosen to relate to conflict areas suggested by psychoanalytic theory (e.g. orality, anality, castration) while those in the flooding technique are usually chosen without regard to psychoanalytic theory. For both techniques, however, it is hypothesized that anxiety reduction is produced via a process of extinction rather than counterconditioning as in systematic desensitization. The extinction hypothesis assumes that the client's anxiety is a classically conditioned response to the phobic stimuli, and that if the phobic stimuli are presented to the client without the unconditioned stimulus punishment, then the anxiety response to the phobic stimuli will diminish or extinguish.

Relaxation therapy consists of teaching the client how to relax himself. An abbreviated version of Jacobson's (1938) progressive relaxation training is most commonly used for this purpose. This involves successive tensing and releasing gross muscle groups throughout the body on instruction from the therapist. Attention is focused upon identification of localized tension and relaxation. The goal of the therapy is to make the person generally more relaxed and also to provide him with a technique to combat anxiety should it arise in any particular situation. As in systematic desensitization the relaxation response is considered to be incompatible with the anxiety response. Thus the counterconditioning process underlies the technique. The client's invoking his relaxation in an actual fear producing situation is similar to in vivo systematic desensitization (desensitization using the actual feared stimuli rather than having the client imagine them) except that there may be a more abrupt confrontation of the feared stimuli and the client rather than the therapist instigates and controls his own relaxation.

Since desensitization, flooding or implosive therapy, and relaxation therapy are used to treat similar types of disorders, comparisons of the effectiveness and efficiency of the techniques are especially interesting. Research along this line has tended to contrast systematic desensitization against flooding or implosive therapy and

against relaxation training rather than comparing the latter techniques.

Barrett (1969) in treating snake phobic subjects found no difference in effectiveness of systematic desensitization and a modified implosive therapy (the scenes were notchosen to relate to psychoanalytic theory). The implosive therapy, however, took less time and was hence concluded to be more efficient. Cohen (1969) treated test-anxious subjects with either standard systematic desensitization or systematic desensitization using only high anxious hierarchy items (except for the use of relaxation the latter treatment resembles flooding). Again there was no difference in the effectiveness of the two techniques, but the flooding-like treatment took less time. Rachman (1966) found systematic desensitization to be more effective than flooding which was no better than no-treatment control in treating spider phobic subjects. Rachman had his subjects image for 2- minute intervals, and it has been suggested (Staub, 1968) that this short exposure time may have prevented extinction of anxiety and actually reinforced withdrawal from the feared stimuli. Wolpin and Raines (1966) report success in treating snake phobic subjects with a flooding technique using scene presentations of quite long duration (2-30 minutes). Two other studies report results related to the issue of length of stimulus presentation and extinction of fear to that

stimulus: Paul (1969a) found that repeated short (5-20 second) imagining of an anxiety arousing scene while the subject was not deeply relaxed increased the subject's fear response to the stimulus; Baum (1969) reports that short periods of forced confrontation of a feared stimulus were ineffective in reducing an avoidance response in rats, but that long periods were effective.

Nothing very definite can be concluded from the studies reviewed above, although they do hint that flooding-type treatments may be more efficient than systematic desensitization. The evidence also suggests that, to be on the safe side, the duration of stimulus presentation in flooding techniques should be relatively long, unless this variable is itself being investigated.

Studies comparing systematic desensitization and relaxation training have produced even more of a variety of results than those comparing desensitization and flooding. Lang, Lazovik and Reynolds (1965) and Davison (1968) treated snake phobic subjects with either desensitization or relaxation and imagining of innocuous scenes unrelated to snakes. In both studies desensitization produced more change than relaxation, which produced the same results as no treatment. Rachman (1965) compared spider phobic subjects given group desensitization to subjects merely relaxed in each therapy session. The sample size was too small for statistical analysis, but on qualitative

evaluation the desensitization appeared to have produced greater improvement than relaxation. Cooke (1966) reports a study with results not entirely in accord with the three studies just mentioned. In treating students who were afraid of rats, he found no posttreatment criterion measure differences between subjects receiving systematic desensitization; desensitization with relaxation training but without relaxation induction during desensitization; relaxation only, but with an initial ranking of a hierarchy which was not presented; hierarchy ranking only, or no treatment at all. The findings, however, are clouded by the fact that: (a) many of the desensitization subjects did not finish their hierarchies, (b) the groups were not shown to be equated on pretreatment criterion scores, and (c) many of the subjects were not very afraid of a laboratory rat even before treatment began.

The four studies cited above are in agreement in illustrating that merely relaxing the client in several therapy sessions does not produce a decrement in his anxiety reaction when he is later faced with the phobic stimuli. This seems to indicate that the effect of desensitization is not due merely to the client's learning how to relax and then incidentally applying this ability in actual stress situations. In the above studies the clients were not specifically instructed to use relaxation when confronted with disturbing situations. McReynolds

(1969) ventures that such instruction is a necessary and important part of relaxation treatment, and at least three studies support this position.

Snider and Oetting (1966) treated test-anxious students with autogenic training, a type of relaxation training, and instructed the subjects to use the training whenever they were under tension, particularly during exams. The students reported being less tense and anxious in many situations, and they all showed improvement on examination marks. The grade-point-average (GPA) of the group went from C+ to B+. There was, however, no control or comparison treatment group in this study, and no statistical analyses of the data were made. Zeisset (1968) utilized a relaxation treatment which also included training in how to use relaxation in stressful situations. This treatment was as effective as desensitization and more effective than attention-placebo treatment or no treatment in reducing interview anxiety in male psychiatric patients. Fokins, Lawson, Opton, and Lazarus (1968) report the third study in which instructing the subjects to utilize their relaxation training proved beneficial. They compared the effects of three brief treatments on autonomic and verbal responses to a stress-producing motion picture film. The stress treatments were an analog desensitization therapy, relaxation therapy with instructions to use it while viewing the film, and a flooding-type therapy

involving imagining frightening scenes similar to those used in the film. On the posttest all the treatment groups when compared to a control group yielded lower anxiety scores on an adjective checklist, and on a skin conductance measure taken during the film. There was also a tendency for the relaxation and the visualization-only groups to show lower conductance than desensitization subjects. This study and the Zeisset study have been criticized (by Lang, 1969 and Paul, 1969c, respectively) for flaws in the desensitization treatments used.

One last study comparing systematic desensitization and relaxation with test anxious students was done by Johnson and Sechrest (1968). The relaxation group subjects were told in an intake interview that knowing how to relax could allow them to inhibit tension and anxiety in any disturbing situation. However, unlike subjects in the three studies just reviewed, Johnson and Sechrest's subjects were not specifically instructed to apply relaxation in the test situation--it was merely suggested to them that treatment procedures would result in greater relaxation for them when they were test anxious (Johnson, 1969). In the therapy sessions they were given relaxation training and then when relaxation had been induced the therapist left the room, instructing the client to continue relaxing for the rest of the session. Subjects were also told to practice relaxation at home. The results revealed

significantly greater improvement in performance in a standardized multiple-choice examination for the desensitization group than for either the relaxation or no-contact control groups which did not differ in effectiveness. On the other major criterion, the Alpert-Haber test anxiety scale, there were no significant differences between any of the groups. One confounding factor in this study is the fact that the desensitization subjects received more attention from and had more contact with their therapists than did the relaxation subjects.

In five of the eight studies reviewed above relaxation training was ineffective in reducing the client's anxiety reaction. In each of these five studies the subject was not specifically instructed to use his training to relax himself in anxiety provoking situation, whereas in the three studies in which relaxation training was effective the subject had been instructed to use it when he was anxious. It may be that a crucial element for the success of relaxation training is insuring that the subject can and will transfer his relaxation training to extra-therapy situations. One aspect of promoting this transference seems to be specifically instructing the subject to use his relaxation training in stress situations.

Another means of promoting the subjects' transfer of relaxation skills to extra-therapy situations might be

the use of extensive relaxation practice homework assignments for the clients. This would prevent the relaxation response from coming under the specific stimulus control of the therapy setting. The comparison in Table 1 of the circumstances in which relaxation is often taught and practiced as opposed to those in which it is to be applied in an actual stress situation, like taking an exam, suggests why the response is not transferred to the stress situation.

Table 1. Comparison of the typical circumstances under which relaxation is taught or practiced and the circumstances of a stress situation, such as taking an exam.

Training Situation	Exam Situation
1. Small room	1. Large room
2. Dim lighting	2. Normal lighting
3. Very quiet	3. At least some noise from coughing, shuffling, etc.
4. Eyes shut	4. Eyes open
5. Client alone or with only therapist present	5. Many others present
6. No anxiety aroused	6. Anxiety aroused

Emery (1969) notes that subjects experience some difficulty in utilizing relaxation techniques even in the solitude and privacy of their own room.

He states:

> . . . the large majority of clients find the relaxation exercises to be more effective in the counselor's

> darkened office while in a reclining chair. They report that it is easier for them to relax if someone else is telling them what to do (p. 281).

With this in mind, it is not hard to see why it would be difficult for subjects to relax in an actual stress situation. A more effective relaxation treatment than those typically used would be one which focused on getting the client to instigate and practice relaxation in a wide variety of extra-therapy situations. In addition, to prepare the client for the relatively greater difficulty he will experience in trying to relax when he is anxious, the client should be forewarned of this difficulty. This should help to keep the client confident in the technique when he actually tries to apply it in a stress situation, just as a two-sided communication preserves more attitude change than a one-sided communication when the subject is exposed to subsequent counterpropaganda (Cohen, 1964).

In the present comparison of the effectiveness of systematic desensitization, flooding, and relaxation therapy in treating students suffering from undue test anxiety, the criteria of therapy effectiveness will include grade-point-averages, grades on examinations in an introductory psychology course, self-report measures of anxiety in the testing situation, and client and therapist ratings of the success of therapy. These measures are at least fairly directly related to the therapy target problem of test

anxiety. A somewhat indirectly related measure, level of self-esteem, will also be used as an outcome criterion in this study. The use of change in clients' self-esteem and self-concept as a criterion of therapy success has long been popular with insight oriented therapists, particularly the Rogerian group (Rogers and Dymond, 1954; Rogers, Gendlin, Kiesler, and Truax, 1967). This criterion has, however, been neglected by investigators of behavior therapies. One might expect that a high predisposition to anxiety would lower one's self-esteem. The highly anxious person may have a lower opinion of himself because he realizes that he is more easily threatened and frightened than his fellows. In addition high anxiety may interfere with performance of various skilled behaviors, thus causing the highly anxious person to appear less competent than his less anxious peers. An inverse relationship between general anxiety level and self-esteem has been reported by a number of investigators (Rosenberg, 1962; Suinn and Hill, 1964; Fitts, 1965). Suinn and Hill also found a correlation of -.58 between a self-acceptance measure and a measure of test anxiety. Similarly, Sarason and Ganzer (1962) and Sarason and Koenig (1965) found that high test-anxious subjects made more self-deprecatory remarks in a free verbalization situation than did low test-anxious subjects. If systematic desensitization, flooding, or relaxation therapy decreases test anxiety and perhaps,

through generalization, also reduces general or trait anxiety, then they may also increase clients' self-esteem. This seems worth investigating.

The results of the studies discussed above suggest a number of research questions which are further explored in the present study. The most central of these are: (a) Which, if any, of the three therapies is most effective in reducing a target anxiety, as for instance test anxiety, (b) do any of the three therapies produce an increase in clients' self-esteem, and if so which produces the greatest increase, and (c) which, if any, of the three therapies is most economical in terms of time? These questions are reformulated into hypotheses below. Hypotheses 1, 3, and 5 are stated in null hypothesis form rather than as directional hypotheses since this study is mainly exploratory to determine what if any differences there are among the outcomes of the three techniques.

Hypotheses to be Tested

(1) There will be no difference in the effectiveness of systematic desensitization, flooding, or relaxation therapy in reducing clients' test anxiety.

(2) Systematic desensitization, flooding, and relaxation therapy will all be more effective than no treatment at all in reducing clients' test anxiety.

(3) There will be no difference in the effectiveness of systematic desensitization, flooding, or relaxation therapy in increasing clients' self-esteem.

(4) Systematic desensitization, flooding, and relaxation therapy will all be more effective than no treatment at all in increasing clients' self-esteem.

(5) Therapists' estimates of the amount of therapy time necessary to conduct systematic desensitization, flooding, or relaxation training with test-anxious students will not differ.

CHAPTER II

METHOD

Subjects scoring high on text anxiety and volunteering for treatment of test anxiety were obtained from a population of students enrolled in two elementary psychology courses at Michigan State University. Subjects were assigned to one of four groups; systematic desensitization treatment group, flooding treatment group, relaxation treatment group, or no-treatment control group. Before and after the treatment period, subjects completed self-report measures of test anxiety and self-esteem. Treatment subjects and therapists also made ratings on various aspects of the therapy experience. Several of the measures were completed by the subjects again in a follow-up assessment the next quarter.

Instruments

Test Anxiety Scale (TAS).--This scale (Appendix B) is Sarason's (Sarason and Ganzer, 1962) 16 item true-false version of Mandler and Sarason's (1952) Test Anxiety Questionnaire (TAQ). Subjects' scores on the TAQ have been shown to be significantly related to: (a) subjects'

skin conductance while taking a test (Raphelson, 1957; Kissel and Littig, 1962), and (b) observer ratings of subjects' behavioral manifestations of anxiety while taking a test (Sarason and Mandler, 1952). These validity data should hold true for the TAS to the extent that it is related to its parent instrument the TAQ; however no correlations between the two tests are reported.

Several studies have shown the TAS to be sensitive to changes resulting from systematic desensitization treatment of test anxiety (Katahn, Strenger, and Cherry, 1966; Garlington and Cotler, 1968; Suinn, 1968; Cohen, 1969). The test-retest reliability of the TAS over a five week period is reported as .78 (Suinn, 1969).

Anxiety Differential (AD).--The Anxiety Differential (Appendix B) (Husek and Alexander, 1963) is an 18 item inventory with a Semantic Differential format. The inventory has been shown to discriminate between the anxiety level of students completing the measure immediately before beginning their midterm or final exam and the anxiety level of students completing the measure during a regular class session (Wittrock and Husek, 1962; Husek and Alexander, 1963). The test has also differentiated the anxiety reduction produced by three different relaxation procedures (Paul, 1969c) and three different types of psychotherapy (Paul, 1966). In the latter study the Anxiety Differential was also significantly correlated

with two other self-report measures of anxiety (S-R Inventory of Anxiousness, Personal Report of Confidence as a Speaker) and with observers' ratings of subjects' behavioral manifestations of anxiety while giving a speech.

Tennessee Self Concept Scale (TSCS).--The TSCS (Fitts, 1965) consists of 100 self-descriptive statements. The subject portrays his own picture of himself by rating each item's degree of applicability to him on a five-point scale, ranging from "completely false" to "completely true." The Personal Self subscale (PS) of this test is used as the primary measure of self-esteem for this study. The score on this scale "reflects the individual's sense of personal worth, his feeling of adequacy as a person and his evaluation of his personality apart from his body or his relationships to others (Fitts, 1965, p. 3)." Scores on the Personal Self subscale correlate .90 with scores on the Total Positive subscale (TP). The latter scale is the TSCS measure of overall level of self-esteem. It is used as the secondary rather than primary measure of self-esteem in this study because it contains many items, particularly those concerning satisfaction with one's physical appearance, which would not be expected to change as a result of a decrease in test anxiety.

Fitts reports the test-retest reliabilities of the Personal Self and Total Positive subscales over a two week period to be .85 and .92 respectively. Both scales have

been shown to be sensitive to changes produced by psychotherapy (Ashcraft and Fitts, 1964).

Subject and Therapist Posttreatment and Follow-up Questionnaires.--The Subject Posttreatment Questionnaire, Subject Follow-up Questionnaire, and the Therapist Posttreatment Questionnaire (Appendix B) are slightly modified versions of subject and therapist rating forms used by Paul (1966). The subject's ratings include an evaluation of the effectiveness of his therapy and the competence and likeability of his therapist. The therapist ratings on their subjects' are for: likeability, responsiveness to treatment, appropriateness of length and type of treatment, degree of reduction of test anxiety, degree of improvement in other areas, indication of necessity for further treatment, and therapist comfort in working with the client.

Therapists

The eleven therapists who volunteered their services for this study were a somewhat varied lot--five were upper level graduate students in counseling or clinical psychology who were enrolled in a behavior therapy seminar the quarter the research was conducted, three were first year graduate students in clinical psychology whose therapy experience was limited mainly to graduate level clinical assessment courses, one was a second year graduate student in clinical psychology who was enrolled in the

therapy practicum at the Psychology Clinic, one was a college graduate who had worked with in-patients at a community mental health center and who was a volunteer worker at a crisis intervention center, and one was a staff psychologist at the Michigan State University Counseling Center with 18 months of post-Ph.D. psychotherapy experience. Of these therapists, six were males and five were females. The seminar students were trained in systematic desensitization in the seminar and had begun using the technique with another subject before their contacts with their research subjects. The staff psychologist had used systematic desensitization and relaxation therapy with two clients outside the research project. The other therapists had no prior experience with the desensitization, flooding, or relaxation techniques.

Each therapist began treatment with three subjects --one receiving systematic desensitization, one flooding, and one relaxation training. The treatment manuals in Appendix C, which are adaptations of Paul's (1966) Systematic Desensitization Treatment Manual, were used to provide the therapists with guidelines for each treatment. In addition the therapists read selected articles on the techniques, observed a flooding session with a test anxious subject, and discussed the techniques and procedures with the investigator.

Treatments

Systematic Desensitization.--This treatment consists of a somewhat modified form of the desensitization treatment delineated by Paul (1966) and originated by Wolpe (1958). Tape recorded relaxation instructions were used, and two one-hour and three one-half-hour sessions were allotted as treatment time. The specific treatment procedure is described in Appendix C.

Flooding.--This treatment consists of a modified form of the flooding treatment described by Wolpe and Lazarus (1966). The treatment procedure is described in Appendix C, and it also included two one-hour and three one-half-hour therapy sessions.

Relaxation Training.--This treatment consists of the same abbreviated Jacobson relaxation training given to subjects in the desensitization treatment with the addition of two modifications. Cautela's (1969) technique of using the word "relax" as a conditioned stimulus for relaxation was included. This involves having the subject say "relax," either aloud or to himself, ten times each time he practices relaxation. The word "relax" is probably already a conditioned stimulus which will elicit relaxation in many people (Wolpe, 1969), and Cautela's procedure may increase the eliciting value of the word. Thus the client might be able to become relaxed both by

voluntarily releasing the tension in his muscles and also by telling himself to relax. The second addition to the abbreviated relaxation training was an intensive concentration on the client's practicing relaxation outside of the therapy session. The client was instructed to practice relaxation in a variety of surroundings, and during the therapy sessions the client's experiences during relaxation practicing were reviewed. Two one-hour and three one-half-hour sessions were allotted as treatment time. The treatment procedure is more fully described in Appendix C.

Subjects

A total of 44 subjects (10 males, 34 females), ranging in age from 17 to 22 years with a median age of 19, participated in this study. Of these subjects, 24 were freshmen, 10 sophomores, 6 juniors, and 4 seniors. The grade-point-average of these subjects for the academic quarter immediately preceding the treatment ranged from a high of 3.91 to a low of 1.08, with a mean on 2.47[1]

These subjects were selected from the population of 794 students enrolled in two introductory psychology courses who had completed the Pretreatment Battery. This

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[1]The grading scale at Michigan State University ranges from 0 (F) to 4.5 (A+).

battery included the Test Anxiety Scale, and a cover sheet (Appendix A) which stated the purpose of the study, described the amount of time involved in participation, and asked for volunteers. Of those students who expressed a desire for treatment, the ones who scored 10 or above on the TAS (upper 17% of the total population) were contacted individually by telephone for a screening interview appointment. At the screening interview some subjects were excluded from the study for the following reasons: (a) failing to appear for the appointment, (b) currently receiving psychotherapy elsewhere, (c) not being sufficiently concerned about test anxiety to commit themselves to the study. Forty-four subjects were accepted after screening, and eleven subjects were assigned to each of the three treatment groups and to the control group.

Of the 44 subjects who began treatment, 9 (all females) are not included in the final data analysis. Two subjects (one in the control group, one in the flooding group) were excluded from the analysis because they had received extensive psychotherapy at the University Counseling Center during the period the study was conducted. (One subject in the relaxation group who had had only one and one-half therapy sessions at the Counseling Center was included in the analysis since after talking to his therapist the investigator decided this minimal contact would not confound the research results.) Seven subjects

voluntarily attritted from the treatment. One of these from the flooding group dropped out of school even before her first therapy session. The other six subjects repeatedly missed therapy appointments, and gave excuses that they were too busy to participate in the research. None of these subjects completed more than two therapy sessions. Comparisons between the attrition subject group and the group which remained in treatment revealed no significant ($\alpha = .05$) differences between the two groups' mean pretreatment TAS, AD, TSCS PS, TSCS TP, midterm grade, or GPA scores. What the status of the attrition subjects would have been on the anxiety and self-esteem measures when they exited from therapy is unknown. It is, of course, possible that when they left therapy the attrition subjects were either more or less anxious than the subjects who remained in therapy. For instance, by focusing on the subjects' anxiety, the therapy may have made these subjects even more anxious and less willing to continue in therapy. On the other hand, these subjects may have experienced a remission of their test anxiety which caused them to feel less need for therapy and less desire to continue with it.

Procedure

The basic plan of the study is presented in Table 2. The Pretreatment Battery was administered in class to all the students attending the lectures of the two

Table 2. General experimental design and procedure.

Group	Pretreatment Battery	Screening Interview	Midterm Exam	Treatment	Posttreatment Battery	Final Exam	Follow-up Assessment
SD	Cover sheet TAS	TSCS Personal history form	AD Rating scales	Systematic desensitization	TAS TSCS Subject posttreatment questionnaire	AD Rating scales	TAS TSCS Subject follow-up questionnaire
Fl				Flooding			
R				Relaxation training			
C				No treatment			

introductory psychology courses. During the screening interview the rationale and course of treatment which the subject was to undergo was explained to him. Control group subjects were told that due to limitations on the number of therapists available they could not be treated that quarter but could receive treatment the following quarter. They were asked to participate in the testing aspect of the study in order to aid the research endeavor. At the end of the screening interview all subjects completed the Tennessee Self Concept Scale and a Personal History Form (Appendix A).

The midterm exam in one of the introductory psychology courses was given before the screening interviews and in the other after. Immediately before starting the exam all students, including the experimental subjects, completed the Anxiety Differential and two rating scales (Appendix B) asking how much the student had studied for the exam and how well prepared he felt. The latter two scales were included to determine if the treatments affected the students' preparation for the exam. The grades the subjects received on the exam were converted to standard scores and recorded. After the midterm, treatment subjects began the therapy which continued for five weeks. Before the therapy began, therapists made ratings of their degree of confidence in their ability to effect improvement with each technique (Appendix B). At the end of each

therapy session the therapist and subject completed a summary sheet describing the session (Appendix D). After the last therapy session therapists filled out the Therapist Posttreatment Questionnaire. They also gave their subjects a packet containing the Test Anxiety Scale, the Tennessee Self Concept Scale, the Subject Posttreatment Questionnaire, and the Anxiety Differential and asked the subject to complete and to mail back the first three forms when they were done with their final exams. The subjects were instructed to bring the Anxiety Differential with them to their psychology exam and to fill it out just before the exam and return it to the investigator after the exam. Similar written instructions (Appendix A) were included with the test packet. A postcard with about the same instructions was sent to the subjects during finals week as a reminder. Control group subjects were contacted by the investigator and given the same instructions. They were also sent the postcard.

The subjects' final exam grades were converted to standard scores and recorded. As a short follow-up, subjects were mailed the Test Anxiety Scale, the Tennessee Self Concept Scale, and the Subject Follow-up Questionnaire during the fourth week of the following academic quarter. After the control group subjects returned their forms they were contacted by the investigator and offered therapy.

CHAPTER III

RESULTS

Statistical Procedure

Since there were no significant ($p < .05$) differences between the pretreatment means of the groups on any of the criterion measures, the results of this study were examined with analyses of variance. The data is analyzed with either single factor analysis of variance or with analysis of variance for a two-factor (treatments X pre-post-follow-up) experiment with repeated measures on the second factor (Winer, 1962). Although the same therapists participated in each treatment, the treatment factor was not treated as a repeated measure since preliminary Kendall Coefficient of Concordance tests revealed that individual therapists' subjects' criterion scores were not significantly intercorrelated. When the appropriate *F* test of the analysis of variance was significant or approached significance the individual therapy treatment means were compared with a two-tailed Tukey Honestly Significant Difference procedure (Winer, 1962). Regardless of the outcome of the *F* test, each of the three therapy groups was compared to the control group with a one-tailed Dunnett's *t*

statistic (Winer, 1962) since the a priori prediction had been made that the treatment groups would show more improvement on the outcome measures than the control group.

Sample Size Variations

Two subjects, one in the control group and one in the flooding group, did not return the follow-up questionnaires. Thus for the analyses of the follow-up data involving the TAS, TSCS, and subject ratings the sample size is generally 7 subjects for the flooding group, 8 for the relaxation group, and 9 for both the desensitization group and the control group. For analyses on the other criteria (AD, psychology course grades, GPA, therapist ratings) the sample size is generally 8 for both the flooding and the relaxation group, 9 for the desensitization group, and 10 for the control group. Exceptions to these sample sizes are noted when they occur. At follow-up one subject in the relaxation group had been dismissed from the University for academic reasons and one had transferred to another university. Two subjects in the flooding group also did not return to school the term after treatment. Data from these four subjects is included in the analyses.

Data Analyses

Anxiety scales: test anxiety scale; anxiety differential

Table 3 presents the results of the 4 x 3 (treatments, pre- post-follow-up) analysis of variance on the TAS scores, and Table 4 presents the TAS means and standard deviations for pretreatment, posttreatment, and follow-up conditions. The treatment-by-pre-post-follow-up interaction approaches significance ($p < .10$) indicating differential changes between groups.

Table 3. Analysis of variance on test anxiety scores.

Source	df	MS	F
Between Ss			
treatment	3	45.70	3.22**
error	29	14.18	
Within Ss			
pre-post-follow-up	2	61.50	20.68***
treatment-by-pre-post-follow-up	6	6.44	2.16*
error	58	2.97	

*p < .10
**p < .05
***p < .01

Individual comparisons revealed no significant differences between therapy group TAS means at posttesting. However at follow-up the mean TAS score of the relaxation group was significantly ($p < .05$) higher than the mean

Table 4. Mean pre-post follow-up test anxiety scale scores.

	Control		Desensiti-zation		Flooding		Relaxation	
Condition	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Pre	12.89	1.37	11.56	1.77	12.29	1.48	12.75	1.64
Post	12.11^{xyz}	2.28	9.33^{x}	3.86	8.71^{y}	2.86	10.50^{z}	1.94
Follow-up	12.78^{xyz}	1.55	8.22^{xr}	2.94	8.29^{ys}	4.06	10.12^{zrs}	1.54

Note: Any two means within a row are significantly different at at least the .05 level if they share the same symbol (x, y, z, r, or s). More exact significance levels are reported in the text.

scores of both the desensitization and flooding groups. The differences, however, were just barely significant, and it is likely that if the mean TAS score of the relaxation group had not been slightly higher to begin with, these differences would not have been significant. The mean anxiety scores of the desensitization, flooding, and relaxation groups were significantly lower than the mean scores of the control group both at post ($p < .005$, $p < .005$, $p < .05$, respectively) and at follow-up testing (all $p's < .005$).

The 4 x 2 (treatments, pre-post) analysis of variance for anxiety differential scores is summarized in Table 5, and the means and standard deviations for the pretreatment and posttreatment conditions are listed in Table 6. Again the significant ($p < .01$) treatment-by-pre-post interaction effect indicates differential changes between groups.

Table 5. Analysis of variance on anxiety differential scores.

Source	df	MS	F
Between Ss			
treatment	3	253.87	1.11
error	31	229.39	
Within Ss			
pre-post	1	342.72	3.58*
treatment-by-pre-post	3	466.48	4.87**
error	31	95.76	

*$p < .10$
**$p < .01$

Table 6. Mean pre-post anxiety differential scores.

	Control		Desensiti-zation		Flooding		Relaxation	
Condition	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Pre	73.40	9.89	76.22	10.77	77.38	11.37	76.62	15.33
Post	83.90^{xyz}	12.49	63.44^{x}	12.81	71.62^{y}	6.94	66.88^{z}	14.67

Note: Any two means within a row are significantly different at at least the .05 level if they share the same symbol (x, y, or z). More exact significance levels are reported in the text.

There were no significant differences between the mean posttreatment AD scores of the desensitization, flooding, and relaxation groups. However the mean post-therapy anxiety score of each of these groups was significantly less than that of the control group ($p < .005$, $p < .025$, $p < .005$, respectively).

Grades

Two grade measures were used as outcome criteria in this study: (a) standardized midterm and final exam grades in the psychology course from which subjects were solicited, and (b) pretreatment and posttreatment term grade-point-averages. The 4 x 2 (treatments-by-pre-post) analyses of variance for these two measures are presented in Table 7, and the means and standard deviations for pre-treatment and posttreatment conditions are listed in Table 8. The insignificant ($p > .10$) treatments-by-pre-post

Table 7. Analyses of variance on midterm and final exam psychology course grades (standardized) and pre-post term grade-point-averages.

		Course Grades		GPA	
Source	df	MS	F	MS	F
Between Ss					
treatment	3	429.12	2.23	.941	1.12
error	31	192.80		.844	
Within Ss					
pre-post	1	65.57	2.27	.069	.42
treatment-by-pre-post	3	40.22	1.39	.006	.03
error	31	28.84		.164	

Table 8. Mean midterm and final psychology course exam grades (standardized) and pre-post term grade-point-averages.

	Control		Desensitization		Flooding		Relaxation	
Condition	Mean	SD	Mean	SD	Mean	SD	Mean	SD
			Psychology course grades					
Midterm	51.16	8.45	45.67	13.37	55.19	10.87	43.14	7.44
Final	44.99[x]	8.81	46.76	11.14	53.68[x]	8.90	41.95	8.91
			Grade-point-averages					
Pre	2.50	.639	2.45	.839	2.80	.688	2.29	.698
Post	2.71	.328	2.49	.529	2.84	.967	2.25	.508

Note: Any two means within a row are significantly different at at least the .05 level if they share the same symbol (x). More exact significance levels are reported in the text.

interaction effects for both analyses of variance indicate no differential pre-post change between therapy groups. Comparisons with Dunnette's t statistic of the control group's mean standardized final exam score and mean post-treatment GPA to the mean exam score and GPA of each treatment group revealed no significant differences between these groups, except that the mean standardized final exam score of the control group was significantly ($p < .025$) less than that of the flooding group. As can be seen from Table 8, however, this difference is not due to grade improvement in the flooding group but rather to marked grade deterioration in the control group. None of the treatments produced significant improvement on either grade measure.

Self-esteem measures

The 4 x 3 analyses of variance for the Tennessee Self Concept Scale Personal Self subscale and Total Positive subscale scores are summarized in Table 9, and the PS and TP means and standard deviations at pretreatment, posttreatment, and follow-up are listed in Table 10. The insignificant ($p > .10$) treatments-by-pre-post-follow-up interaction effect for both analyses of variance indicates no differential change between therapy groups. Dunnette t statistic comparisons of the control group's mean post and follow-up PS and TP scores to the mean scores of each

treatment group revealed no significant differences for either measure at posttesting. However, at follow-up the mean PS and TP scores of the desensitization, flooding, and relaxation groups were significantly higher than those of the control group (all p's < .005 for PS scores, and p < .005, p < .005, p < .025, respectively for TP scores).

Table 9. Analysis of variance for Tennessee Self Concept Scale Personal Self subscale and Total Positive subscale scores.

		Personal Self		Total Positive	
Source	df	MS	F	MS	F
Between Ss					
treatment	3	196.00	1.59	3342.05	1.37
error	29	123.36		2436.41	
Within Ss					
pre-post-follow-up	2	79.86	4.13*	115.31	.38
treatment-by-pre-post-follow-up	6	34.45	1.78	466.93	1.53
error	58	19.32		306.01	

*p < .01

Since the mean PS and TP scores for the control group are smaller at follow-up than at pretesting, it was possible that the significant follow-up results were due to deterioration in the control group rather than improvement in the treatment groups. This possibility, however, is discounted by the fact that additional individual

Table 10. Mean Tennessee Self Concept Scale Personal Self subscale and Total Positive subscale scores.

	Control		Desensiti-zation		Flooding		Relaxation	
Condition	Mean	SD	Mean	SD	Mean	SD	Mean	SD
			Personal Self subscale					
Pre	56.78	9.81	60.00	5.25	61.43	7.50	59.00	6.12
Post	59.33	8.84	63.11	3.60	62.14	4.97	63.12	6.53
Follow-up	54.89^{xyz}	8.24	64.67^{x}	3.86	66.29^{y}	7.11	62.50^{z}	7.57
			Total Positive subscale					
Pre	318.89	37.03	332.33	16.95	338.00	35.71	323.12	30.88
Post	322.67	33.58	336.44	16.03	336.71	22.72	327.75	28.90
Follow-up	304.33^{xyz}	47.45	346.00^{x}	13.54	347.29^{y}	28.20	329.00^{z}	28.93

Note: Any two means within a row are significantly different at at least the .05 level if they share the same symbol (x, y, or z). More exact significance levels are reported in the text.

comparisons revealed that the mean follow-up PS score was significantly ($p < .01$) greater than the mean pretreatment PS score for each of the therapy groups, and that for the desensitization and flooding group the mean follow-up TP score was significantly greater ($p < .01$, $p < .05$, respectively) than the mean pretreatment TP score.

Subject ratings[1]

Table 11 presents the summary of the 3 x 2 (treatment, post-follow-up) analyses of variance for subjects' ratings of specific improvement (reduction of test anxiety) and other improvement accruing from their therapy experience. Table 12 lists the means and standard deviations for the posttreatment and follow-up test conditions. The insignificant F ratios for the specific improvement ratings indicate no significant differences between therapy groups on this criterion measure. The F ratio for the treatment-by-post-follow-up interaction effect for subject ratings of other improvement was significant ($p < .05$). Individual comparisons between treatment means revealed that at posttesting the mean subject rating of other improvement was significantly ($p < .05$) greater for the relaxation than for the desensitization or flooding group.

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[1]The control group is not included in analyses of subject and therapist ratings since these ratings relate to the therapy treatments themselves and thus were obtained only from subjects who received therapy.

At follow-up, however, the comparisons were no longer significant.

Table 11. Analyses of variance on subject ratings of specific improvement in test anxiety and improvement in other areas.

		Specific		Other	
Source	df	MS	F	MS	F
Between Ss					
treatment	2	.272	.31	2.14	2.14
error	21	.869		1.00	
Within Ss					
post-follow-up	1	.006	.04	.095	.99
treatment-by-post-follow-up	2	.001	.01	.395	4.12*
error	21	.134		.096	

*$p < .05$

Table 13 presents the summary of the single factor analyses of variance for subjects' posttherapy ratings of their therapists' competence and likeability. All therapists were rated as competent or very competent and likeable or very likeable. None were rated as incompetent or unlikeable. The means and standard deviations of these ratings are listed in Table 14. The F ratio of the analysis of variance for competence ratings was significant ($p < .01$) so the group means were compared with Tukey's procedure. The mean competence rating desensitization

Table 12. Mean subject ratings of specific improvement in test anxiety and improvement in other areas.

	Desensitization		Flooding		Relaxation	
Condition	Mean	SD	Mean	SD	Mean	SD
			Specific improvement			
Post	2.75	.408	2.50	.707	2.56	.682
Follow-up	2.78	.885	2.54	.713	2.56	.464
			Other improvement			
Post	2.33^{x}	.677	2.29^{y}	.452	3.12^{xy}	.781
Follow-up	2.58	.833	2.14	.639	2.75	.661

Note: Any two means within a row are significantly different at at least the .05 level if they share the same symbol (x or y). More exact significance levels are reported in the text.

subjects gave their therapists was significantly ($p < .01$) higher than that given by flooding group subjects to their therapists. The differences between the mean ratings for the relaxation and desensitization and relaxation and flooding group were not significant. The F ratio for subjects' ratings of their therapists' likeability was insignificant, indicating no significant differences between these treatment means.

Table 13. Analysis of variance of subjects' posttherapy ratings of their therapists' competence and likeability.

		Competence		Likeability	
Source	df	MS	F	MS	F
Treatment	2	1.10	7.09*	.113	.63
Error	22	.156		.178	

*$p < .01$

Like the subject ratings of therapist competence and likeability, the ratings which subjects made on the quality of their imagery or relaxation during the therapy sessions are of interest in describing the adequacy of certain components of the therapy treatments. The mean imagery rating across treatment session was 1.89 for desensitization subjects and 2.08 for flooding subjects.

These correspond approximately to the rating of "vivid" imagery. The mean relaxation rating across treatment sessions was 1.33 for desensitization subjects and 1.69 for relaxation subjects. These ratings fall between the scale ratings of "excellent" and "good" relaxation.

Table 14. Mean subject post-therapy ratings of therapist competence and likeability.

	Desensitization		Flooding		Relaxation	
Condition	Mean	SD	Mean	SD	Mean	SD
			Competence			
Post	2.97[x]	.679	2.25[x]	.433	2.62	.484
			Likeability			
Post	2.81	.360	2.62	.484	2.84	.330

Note: Any two means within a row are significantly different at at least the .05 level if they share the same symbol (x). More exact significance levels are reported in the text.

Table 15 presents the summary of the 4 x 2 (treatments, pre-post) analyses of variance for subjects' ratings of how much they had studied for and how prepared they felt for their psychology course midterm and final exams. The means and standard deviations of the ratings are listed in Table 16. The F ratio for the treatment-by-

pre-post interaction effect in the analysis on study ratings approached significance ($p < .10$), and further individual comparisons revealed that this was due to a significant ($p < .01$) decrease in the amount of time relaxation group subjects rated themselves as having devoted to studying for their final exam as opposed to their midterm exam. The insignificant F ratio for the analysis on preparation ratings indicates no significant differences between groups on how prepared the subjects felt for their midterm or for their final exam.

Table 15. Analysis of variance for subjects' midterm and final study and preparation ratings.

		Study		Preparation	
Source	df	MS	F	MS	F
Between Ss					
treatment	3	2.88	1.77	1.28	1.48
error	28	1.63		.86	
Within Ss					
pre-post	1	.99	3.50*	.37	1.10
treatment-by-pre-post	3	.66	2.32*	.21	.60
error	28	.28		.34	

*$p < .10$

Note: Several subjects failed to complete the forms, thus the N was 10 subjects for the control group, 8 for the desensitization group, and 7 for both the flooding and the relaxation group.

Table 16. Mean subject midterm and final study and preparation ratings.

	Control		Desensitization		Flooding		Relaxation	
Condition	Mean	SD	Mean	SD	Mean	SD	Mean	SD
			Study ratings					
Midterm	3.80	.980	3.87	.331	3.00	1.07	3.57[x]	1.29
Final	3.65	.950	3.87	.599	3.00	.756	2.71[x]	1.03
			Preparation ratings					
Midterm	2.90	1.04	3.00	.707	2.71	.452	2.57	.728
Final	3.00	.632	3.38	.484	3.00	.534	2.43	.904

Note: Any two means within a column are significantly different at at least the .05 level if they share the same symbol (x). More exact significance levels are reported in the text.

Therapist ratings

Not all the ratings the therapists completed are analyzed here, since some are not of direct relevance to the issues investigated in this study. The ratings which were examined are therapists' pretreatment ratings of their degree of confidence in reducing test anxiety with each treatment, therapists' posttreatment ratings of comfort in working with each technique, and therapists' posttreatment ratings of specific improvement (reduction of test anxiety), other improvement, appropriateness of

length of therapy, and appropriateness of type of therapy for each of their subjects. Table 17 summarizes the single factor analyses of variance for these measures, and Table 18 lists the means and standard deviations for each treatment group. The F ratios indicate no significant differences between groups for the ratings of specific improvement, other improvement, appropriateness of type of therapy, therapist confidence in reducing test anxiety, or therapist comfort in working with each technique. Tukey individual comparisons made after the significant F ratio obtained for the treatment length ratings revealed that the relaxation technique was rated as requiring significantly ($p < .01$) less time than the flooding treatment.

Relationship between Outcome Criteria

The relationship between the various outcome measures used in this study is depicted in Tables 19 and 20. Table 19 presents the correlation matrix for subject post-therapy ratings of specific and other improvement, therapist post-therapy ratings of specific and other improvement, and post-therapy change scores (Post minus Pre) of the TAS, AD, TSCS PS, TSCS TP, psychology course test grade, and GPA criteria. Table 20 presents the correlation matrix for the subject follow-up ratings of specific and other improvement and follow-up change scores (Follow-up minus Pre) of the TAS, TSCS PS, and TSCS TP criteria.

Table 17. Analyses of variance for therapists' ratings of confidence in each technique, comfort in working with each technique, specific improvement in subject, other improvement in subject, appropriateness of length of therapy for subject, and appropriateness of type of therapy for subject.

		Confidence		Comfort		Specific			Other		Length		Type	
Source	df	MS	F	MS	F	df	MS	F	MS	F	MS	F	MS	F
Treatment	2	1.72	2.38	5.39	3.08	2	.69	.52	.89	.64	3.25	6.22*	3.00	2.57
Error	10	.72		1.75		22	1.32		1.38		.52		1.17	

*p < .01

Note: Degrees of freedom for confidence and comfort ratings are less because the analyses of variance for these ratings are on repeated measures. For these ratings the N was 6 in each group.

Table 18. Mean therapist ratings of confidence in each technique, comfort in working with each technique, specific improvement in subject, other improvement in subject, appropriateness of length of therapy for subject, and appropriateness of type of therapy for subject.

	Desensitization		Flooding		Relaxation	
Condition	Mean	SD	Mean	SD	Mean	SD
			Confidence			
Pre	4.00	.816	3.17	1.21	4.17	.687
			Comfort			
Post	4.50	.764	2.67	1.25	4.00	1.15
			Specific improvement			
Post	3.44	1.42	3.19	.864	2.87	.781
			Other improvement			
Post	2.11	1.10	2.50	1.22	2.75	.968
			Length of therapy			
Post	2.67	.667	2.25[x]	.661	3.50[x]	.707
			Type of therapy			
Post	4.00	1.05	2.87	1.17	3.12	.781

Note: Any two means within a row are significantly different at at least the .05 level if they share the same symbol (x). More exact significance levels are reported in the text.

Table 19. Correlations between outcome criteria at post testing.

	1	2	3	4	5	6	7	8	9
Subject rating									
1. Specific improvement									
2. Other improvement	.33								
Therapist rating									
3. Specific improvement	.52**	.09							
4. Other improvement	-.11	.42*	-.02						
Change scores									
5. Test anxiety scale	-.10	.18	-.26	.12					
6. Anxiety differential	-.10	.20	-.06	.15	.17				
7. Personal self subscale	.10	.29	-.01	.17	.31	-.15			
8. Total positive subscale	.09	.32	.18	.34*	.20	-.16	.76**		
9. Exam grade	-.24	-.24	-.11	-.16	-.22	-.22	-.10	-.08	
10. Grade-point-average	.16	.07	.46**	-.03	-.08	-.02	.03	.05	-.11

*p < .05, one-tailed test
**p < .01, one-tailed test

Note: Plus signs are omitted from the table. Correlations between change scores involve the total sample and correlations including subject or therapist ratings involve only subjects who received treatment. Agreement between criteria would be indicated by positive correlations between criteria, except for criteria 5 and 6 which, to show agreement, should be positively correlated with each other and negatively correlated to each of the other criteria.

Table 20. Correlations between outcome criteria at follow-up testing.

	1	2	3	4
Subject rating				
1. Specific improvement				
2. Other improvement	.36*			
Change scores				
3. Test anxiety scale	-.24	-.13		
4. Personal self subscale	.25	-.05	-.17	
5. Total positive subscale	.26	.31	-.35*	.89**

*p < .05, one-tailed test
**p < .01, one-tailed test

Note: Plus signs are omitted from the table. Correlations between change scores involve the total sample, and correlations including subject ratings involve only subjects who received treatment. Agreement between criteria would be indicated by positive correlations between criteria except for criteria 3 which would be negatively correlated with each of the other criteria.

A survey of the tables reveals that the Personal Self and Total Positive self-esteem subscales were strongly related both at post and at follow-up testing. Therapist ratings of specific improvement were significantly related to subject ratings of specific improvement and to change in grade-point-average. Therapist ratings of other improvement were significantly related to subject ratings of other improvement and to change on the Total Positive subscale. Subject follow-up ratings of specific and other improvement were moderately related, and finally, follow-up change scores for the Test Anxiety Scale and Total Positive

subscale were negatively and significantly related. The post-therapy Test Anxiety Scale and Anxiety Differential change scores were not significantly related; however the correlation (not listed in the Tables) between the follow-up Test Anxiety Scale and post-therapy Anxiety Differential change scores was significant ($r = .34$, $p < .05$).

Summary of Major Findings

Before relating the results of this study to the hypotheses originally proposed, a summary of some of the major findings may prove useful. Table 21 presents a summary of statistically significant comparisons between treatment groups on the major outcome criteria. At post-testing the relaxation treatment group evidenced greater improvement on subject ratings of other improvement than did the desensitization or flooding group. At follow-up the desensitization and flooding groups evidenced greater improvement on the Test Anxiety Scale than did the relaxation group. Other comparisons were not statistically significant. Table 22 presents a summary of statistically significant comparisons between the control group and the treatment groups on the major outcome criteria. At post-testing each treatment group evidenced greater improvement than the control group on the Test Anxiety Scale and on the Anxiety Differential. At follow-up each treatment group demonstrated greater improvement than the control

Table 21. Summary of statistically significant comparisons between treatment groups on the major outcome criteria.

Criterion	Condition	
	Post	Follow-up
TAS	None	SD, Fl > R
AD	None	
TSCS PS	None	None
TSCS TP	None	None
GPA	None	
Exam scores	None	
Subject rating spec. improvement	None	None
Subject rating other improvement	R > SD, Fl	None
Therapist rating spec. improvement	None	
Therapist rating other improvement	None	

Note: The sign (>) indicates that the treatment group(s) listed to the left of the sign evidenced significantly greater improvement on the listed criterion measure than the treatment group(s) listed to the right of the sign. The word "None" indicates that there were no significant differences between the treatment groups.

Table 22. Summary of statistically significant comparisons between control group and treatment groups on the major outcome criteria.

	Condition	
Criterion	Post	Follow-up
TAS	SD, Fl, R control	SD, Fl, R > control
AD	SD, Fl, R control	
TSCS PS	None	SD, Fl, R > control
TSCS TP	None	SD, Fl, R > control
GPA	None	
Exam scores	Control > R	

Note: The sign (>) indicates that the treatment group(s) listed to the left of the sign evidenced significantly greater improvement on the listed criterion measure than the treatment group(s) listed to the right of the sign. One exception occurs with the exam scores where the control group evidenced significantly less deterioration in scores than the relaxation group, but neither group demonstrated improvement in scores. The word "None" indicates that there were no significant differences between the control and treatment groups.

group on the Test Anxiety Scale and on the Tennessee Self Concept Scale Personal Self and Total Positive subscales. Other comparisons were not statistically significant, except that the control group evidenced statistically less deterioration in psychology course exam scores than did the relaxation group; however neither group evidenced improvement in exam scores.

Decisions Regarding Hypotheses

The null Hypothesis 1 which states that there is no significant difference in the effectiveness of the systematic desensitization, flooding, and relaxation therapies in reducing clients' test anxiety cannot be rejected since there were no significant differences between these groups on the anxiety differential, psychology course grade, grade-point-average, subject ratings of specific improvement, and therapist ratings of specific improvement and appropriateness of type of therapy criteria. As mentioned earlier, the significant differences at follow-up testing for the test anxiety scale appear to be an artifact of the initially higher test anxiety scale scores of the relaxation group.

Hypothesis 2 which states that each of the therapy treatments is more effective than no treatment in reducing clients' test anxiety was supported by the analyses on the test anxiety scale and the anxiety differential, but not

by the analyses of psychology course exam grades and term grade-point-averages. The latter two criteria were perhaps not good indicators of test anxiety for this study, since in the intake interview some subjects stated that they felt their anxiety did not interfere with their test performance even though it was an unpleasant emotion they wished to be rid of, and since some subjects had pre-therapy psychology course midterm grades and term grade-point-averages which were too high (above 90th percentile) to allow much improvement.

The null Hypothesis 3 stating that there is no significant difference in the effectiveness of systematic desensitization, flooding, or relaxation therapies in increasing clients' self-esteem cannot be rejected since there were no significant differences between these groups on the Tennessee Self Concept Scale Personal Self subscale or Total Positive subscale.

Hypothesis 4 which states that each of the therapy treatments is more effective than no treatment in increasing clients' self-esteem was not supported by the post-therapy analyses on the Tennessee Self Concept Scale Personal Self and Total Positive subscales but was supported by the follow-up analyses on these scales. Apparently a time delay is necessary before the full impact of these treatments on self-esteem is realized.

The null Hypothesis 5 which states that there are no significant differences in therapists' estimates of the amount of time necessary to conduct systematic desensitization, flooding, and relaxation training with test anxious students is rejected since therapists rated the relaxation technique as requiring significantly less time than the flooding technique. In general the therapists rated the two one-hour and three one-half hour sessions which were allotted as treatment time in this study as more than enough time to conduct the relaxation treatment, but not quite enough time to conduct the flooding or desensitization therapies.

CHAPTER IV

DISCUSSION

Explanation of Effects

The main effects of this study to be explained are the decrease in clients' self-report of test anxiety and the increase in clients' self-esteem accruing from the therapy treatments investigated here. The decrease in test anxiety was evidenced only on self-report measures of test anxiety, and not on the grade measures. Thus it is possible that the treatments were effective in reducing only the subjective or the self-report component of test anxiety. The correlations reported between self-report measures of anxiety and physiological and behavioral measures of anxiety have often been discouragingly low. However, as was reported earlier in the method section of this paper, the self-report measures of anxiety employed in this study have been shown to be significantly correlated to physiological and behavioral measures of anxiety; thus there is some evidence for the general nature of the reduction of test anxiety evidenced on the self-report measures of this study.

There are several possible explanations of the decrease in clients' self-report of test anxiety and increase in clients' self-esteem observed in this study. The first and perhaps primary explanation is that the clients' improvement was the result of the specific process proposed as the rationale for each treatment. As was discussed in the introduction of this report, such a process would be the extinction of test anxiety in the flooding treatment and the counterconditioning of test anxiety via relaxation in the systematic desensitization and relaxation treatments. These two processes could account for the reduction of test anxiety experienced by the treatment subjects but these processes cannot adequately account for the clients' increase in self-esteem since the correlations between test anxiety change scores and self-esteem change scores were generally low and nonsignificant. Increase in self-esteem was apparently fairly independent of reduction in test anxiety. The increase in self-esteem may have resulted from a general placebo effect, as will be discussed shortly; or perhaps, to take a Rogerian position, from positive regard extended to the client by the therapist or even from client self-exploration which may have been stimulated by the client's commitment to therapy or discussion of test anxiety.

Another possible explanation of the clients' improvement is that the clients merely conformed to the

demand characteristics of the experiment, and reported a decrease in test anxiety and an increase in self-esteem because they thought this was what was expected of them. This possibility is somewhat discounted by the fact that the systematic desensitization technique has been demonstrated to produce changes over and above those which could be accounted for by subjects' conforming to experiment demand characteristics (Paul, 1966; Johnson and Sechrest, 1968), and by the fact that if a global acquiescence to demand characteristics were operating in the present study one would expect higher correlations between the subject self-report outcome criteria than those actually obtained.

A third possible explanation of the clients' improvement is that it is a result of what has been termed the "placebo effect" (Rosenthal and Frank, 1958). That is, that it is change resulting from therapist attention directed toward the client and the faith which this engenders in the client that change will occur and that the therapist or therapy will help him. For the changes in anxiety level obtained in this study, this possibility is somewhat discounted because: (a) previous studies (Lang, Lazovik & Reynolds, 1965; Paul, 1966; Zeisset, 1968) have shown that systematic desensitization is capable of producing a level of anxiety reduction greater than that which could be attributed to a placebo effect, (b) another study

(Johnson & Sechrest, 1968) found no placebo effect reduction of test anxiety accruing from a relaxation therapy treatment, and (c) a study (Zeisset, 1968) using a relaxation therapy somewhat similar to the one employed in the present study demonstrated a level of anxiety reduction from the treatment greater than that which could be attributed to a placebo effect. Still, the absence of a pseudotreatment or attention-placebo control group in the present study precludes definitely ruling out the placebo effect as the cause of the clients' reduction in test anxiety and increase in self-esteem.

Implications for Research and Practice

This study yields a number of implications and findings relating to the research and practice of psychotherapy. One of the most interesting of these is the demonstration that the three behavior therapies investigated here appear to be capable of increasing clients' self-esteem in addition to alleviating the target symptom of test anxiety. This is one of the first controlled investigations demonstrating an increase in self-esteem as a result of a behavior therapy, and also one of the first studies demonstrating the effectiveness of relaxation therapy and flooding therapy as treatments for test anxiety. For subjects who are not responsive to systematic

desensitization because of their difficulties in achieving adequate relaxation or imagery, the flooding and relaxation therapies might be especially useful treatments since the flooding technique does not require relaxation and the relaxation technique does not require imagery. The importance of emphasizing to subjects in a relaxation treatment that they practice relaxation outside of the therapy sessions and actually try to relax themselves in stressful situations is illustrated by the significant reduction of test anxiety achieved in this study where such instructions were stressed, as compared to the absence of significant test anxiety reduction obtained by Johnson and Sechrest (1968) who did not thus instruct their relaxation subjects. It should be kept in mind, however, that none of the three therapies was shown to be effective in improving subjects' academic performance, although as discussed earlier, this may have been due in part to characteristics of the sample employed in this study.

The results of this study did not reveal a general tendency for any one of the three therapies to be most effective in reducing test anxiety or increasing self-esteem. However, before generalizing from this finding to conclude that the three therapies are basically of comparable effectiveness, it must be cautioned that the therapies as applied in this study are somewhat different than desensitization, flooding, or relaxation therapies applied

in clinical practice. For instance the therapies were constrained by a set time limit and by a fairly standardized procedure, and the therapists had relatively little therapy experience and particularly little experience with the desensitization, relaxation, and flooding techniques. It is unknown whether basic differences in the effectiveness of the three therapies might have been evidenced if the therapies had been conducted by more experienced therapists given greater latitude in applying the techniques.

The findings of this study also demonstrate the feasibility of using short-term desensitization, flooding, or relaxation therapies and relatively inexperienced therapists in treatments for test anxiety, and perhaps for other anxieties as well. This is not, however, to say that longer treatments and more experienced therapists might not achieve even better results. More extensive training of therapists in the flooding technique might also be profitable in future studies investigating this technique, since in this study the competence ratings given therapists by flooding subjects were significantly lower than those given by desensitization subjects, and since therapists rated themselves as (nonsignificantly) less comfortable and confident with the flooding technique. Perhaps, also, the therapists' lesser confidence and comfort with the flooding technique is responsible for their

rating the flooding subjects as requiring lengthier therapy than the relaxation or desensitization subjects--although only the difference in ratings for flooding and relaxation subjects was significant. The finding of earlier studies (Barrett, 1969; Cohen, 1969) that flooding treatments require less time than systematic desensitization treatments was not supported by the therapist ratings of this study.

Two further implications for psychotherapy research designs can be drawn from the results of this study. The generally low correlations between the outcome criteria reemphasize the desireability of using multiple criteria rather than relying on a single criterion measure in outcome research, and the lack of consistent differences between the three therapy treatment groups illustrates the desirability of including a pseudotreatment group in the research design in order to be able to assess whether other treatments achieve more than a placebo effect.

Suggestions for Further Research

Several suggestions for further research can be derived from this study. Since the therapists rated the relaxation treatment as requiring less time than was allotted to it in this study, a more abbreviated relaxation training might be explored. Such a treatment could include one or two initial relaxation training sessions, and then subsequent telephone contacts to check up on the client's

progress in practicing relaxation and to discuss any difficulties the client might be experiencing in learning the technique. Another possible treatment procedure is suggested by the fact that in the intake interviews subjects in each of the treatment groups expressed varying degrees of confidence that the treatment might help them. A study could be done investigating the effectiveness of explaining each of the treatments to the subjects and then letting them choose the treatment they wished to participate in as compared to just randomly assigning subjects to treatments. Perhaps allowing the subjects to choose their own treatment would increase their responsiveness to and benefit from the treatments. Perhaps also such a procedure would decrease the subject dropout rate.

There are a number of other therapy comparisons relating to the present study's findings which might be of interest. The addition of study skills training to any of the three therapies investigated here might produce a greater decrement in test anxiety and a greater improvement in academic performance than that obtained by any of the therapies alone. Group applications of the relaxation and flooding procedures might be investigated, and a flooding procedure of the type employed in this study might be compared to the type of implosive therapy described by Stampfl and Levis (1967) which includes anxiety scene presentations chosen along more psychodynamically oriented

lines. A final comparison of interest would be that of each of the therapies used in this study to a pseudotreatment therapy in order to determine if the three therapies achieve more than a placebo effect.

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APPENDICES

APPENDIX A

TEST BATTERY FORWARDS

Pretreatment Battery Cover Sheet

Dear Student:

Today you are being asked to complete the accompanying questionnaire in conjunction with a study we are conducting in the Department of Psychology. We are concerned with the number of students who experience undue tension and anxiety during examinations. Although most students are somewhat tense during exams, some students are so upset, worried, and lacking in confidence that their feelings actually interfere with effective performance, thus lowering grades and generally making life at college less pleasant. Psychological principles, training, and therapeutic procedures have been successfully used to help such students both here and at other universities. The purpose of the present study is to determine which people benefit most from the specific psychological procedures involved. You, as an individual, may or may not experience these feelings. If you do, we may be able to help you to overcome them, but in any case your responses will be most helpful to us, even if you have no major difficulty with your emotional reactions during exams.

All students in Psych 225 are being asked to complete the accompanying questionnaire. Additionally, we will be able to meet with a number of students this quarter and next to help them overcome anxieties experienced during exams and become more confident in the testing situation. Of course, not all students will be bothered by these problems, nor will all students feel they have the time or need for these services.

On the Personal History Form, you are asked to indicate whether you would or would not be interested in obtaining help with these difficulties, and whether you have the time available to participate. This program will require approximately six or seven hours <u>total</u> participation time during the quarter, although a <u>shortage</u> of qualified therapists may necessitate that some students begin treatment next quarter rather than this quarter. About one half-hour will be spent in a pretherapy interview to explain the program more fully; another half-hour to hour will involve some further testing; and the remaining five or so hours will consist of meeting with a trained specialist once a week for an hour or less over a five week period.

Needless to say, your answers to the questions in the attitude questionnaire, and participation in the other phases of the study will be used for research purposes only; under no circumstances will they influence the grading in Psych 225.

Thank you for your cooperation.

Dr. Donald Grummon
Dr. Dozier Thornton
Peter Hampton

PLEASE REMEMBER TO COMPLETE THE QUESTIONNAIRE ON THE FOLLOWING PAGE.

Name_____

Phone_____

Address_____

I wish to participate in this project to reduce my test anxiety: Yes_____ No_____

If you wish to participate, please X-out the blocks on the schedule below during which you would not be available to meet.

	8:00	9:10	10:20	11:30	12:40	1:50	3:00	4:10	5-6	6-7	7-8	8-9
M												
T												
W												
T												
F												

Personal History Form

Name_____ Age_____ Sex_____

Present Address_____ Phone_____

Permanent Address_____ Phone_____

Class_____ Major_____

Indicate below the members of your family, including parents, husband or wife, brothers, and sisters.

Relationship	Age	Occupation	Education (highest grade completed)

Have you ever had psychological counseling previously?____

If so, where?_____

About how long have you been bothered by anxiety or tenseness during tests?_____

Posttreatment Battery Cover Sheet

There are four short questionnaires in this packet. Take the first one with you to your Psych 225 final exam and fill it out while you are waiting for the test to be handed out. Turn in this questionnaire along with your final at the end of the exam period. If you forget to bring this questionnaire to the final, look for Peter Hampton (the fellow you first talked to about this project) to give you another one before the exam. It will be more convenient, though, if you remember to bring the questionnaire to the exam.

Complete the other three questionnaires after you are done with approximately half your finals for this term. Mail them back in the self-addressed envelope provided.

IT IS VERY IMPORTANT THAT YOU FILL OUT THESE FORMS AT THE TIMES SPECIFIED ABOVE!

We will mail you one more set of questionnaires next quarter. If, after you complete these last materials and mail them back, you wish information about the purpose or results of this study or about your test results you may call me at 355-5907 and I will be glad to make an appointment with you to discuss these things. If you are one of those persons who did not start treatment for test anxiety this quarter, we will contact you after you return the research materials next quarter and arrange to begin treatment then. Thank you very much for the assistance you have given and are giving us in this research--your help is well appreciated.

Peter Hampton

Follow-up Battery Cover Sheet
for Therapy Subjects

April 22, 1970

Dear

Enclosed are three short forms we would like you to fill out again for the last time as part of our research project. Please complete them this week and mail them back in the enclosed envelope. If after you complete these last materials and mail them back, you wish information about the purpose of this study, or about the roughly tabulated results, or about your test results, call me at 355-5907 and I will be glad to make an appointment with you to discuss these things.

Thanks again for all your help.

Sincerely,

Peter Hampton

Follow-up Battery Cover Sheet
for Control Subjects

April 22, 1970

Dear

Enclosed are two short forms we would like you to fill out again for the last time as part of our research project. Please complete them this week and mail them back in the enclosed envelope. After you return the forms I will call you to arrange to begin the treatment for test anxiety if you still wish to participate. We would like to begin the treatment the week of May 4th, and continue it for the next three or four weeks (4 or 5 sessions total). Please also fill out the information on the attached sheet.

Thanks for your help.

Sincerely,

Peter Hampton

Name_____

Phone_____

Address_____

I still wish to participate in this treatment to reduce my test anxiety:

Yes_____ No_____

If you wish to participate, please X-out the blocks on the schedule below during which you would not be available to meet.

	8:00	9:10	10:20	11:30	12:40	1:50	3:00	4:10	5-6	6-7	7-8	8-9
M												
T												
W												
T												
F												

APPENDIX B

INSTRUMENTS

Test Anxiety Scale

DIRECTIONS: A number of statements which students have used to describe themselves are given below. Read each statement and decide whether it is true or false as applied to you. If a statement is true, or mostly true as applied to you, blacken the space between the brackets marked T on the answer sheet. If a statement is false, or mostly false as applied to you, blacken the space between the brackets marked F on the answer sheet. Please write your name and student number at the top of the answer sheet.

1. While taking an important examination, I perspire a great deal.

2. I get to feel very panicky when I have to take a surprise exam.

3. During tests, I find myself thinking of the consequences of failing.

4. After important tests, I am frequently so tense that my stomach gets upset.

5. While taking an important exam I find myself thinking of how much brighter the other students are than I am.

6. I freeze up on things like intelligence tests and final exams.

7. If I were to take an intelligence test I would worry a great deal before taking it.

8. During a course examination, I frequently get so nervous that I forget facts I really know.

9. During course examinations, I find myself thinking of things unrelated to the actual course material.

10. If I knew I was going to take an intelligence test, I would feel confident and relaxed beforehand.

11. I usually get depressed after taking a test.

12. I have an uneasy, upset feeling before taking a final examination.

13. When taking a test, my emotional feelings do not interfere with my performance.

14. Getting a good grade on one test doesn't seem to increase my confidence on the second.

15. After taking a test I always feel I could have done better than I actually did.

16. I sometimes feel my heart beating very fast during important tests.

Anxiety Differential

Name_____ Student No._____

The purpose of this instrument is to determine what certain words or concepts mean to you. Each numbered item presents a CONCEPT (such as DOG) and a scale (such as high-low). You are to rate the concept on the seven point scale indicated.

If you feel that the concept is very closely associated with one end of the scale, you would place your check-mark as follows:

DOG

high X : ___ : ___ : ___ : ___ : ___ : ___ :low

OR

high ___ : ___ : ___ : ___ : ___ : ___ : X :low

If you feel that the concept was closely related to one side of the scale, you would check as follows:

TREE

straight ___ : X : ___ : ___ : ___ : ___ : ___ :crooked

OR

straight ___ : ___ : ___ : ___ : ___ : X : ___ :crooked

If the concept seems only slightly related to one side as opposed to the other, you might check as follows:

CLOUD

easy ___ : ___ : X : ___ : ___ : ___ : ___ :difficult

OR

easy ___ : ___ : ___ : ___ : X : ___ : ___ :difficult

If you consider the scale completely irrelevant, or that both sides are equally associated, you would check the middle space:

CAR

idealistic ___ : ___ : ___ : X : ___ : ___ : ___ :realistic

Remember: Never put more than one check-mark on any scale. Also be sure to check every item.

For this instrument, work at a fairly high rate of speed without worrying or puzzling over individual items. It is your first impressions that we want. Go right ahead now.

1. FINGERS

straight____:____:____:____:____:____:____:twisted

---

2. ME

helpless____:____:____:____:____:____:____:secure

---

3. BREATHING

tight____:____:____:____:____:____:____:loose

---

4. SCREW

strong____:____:____:____:____:____:____:weak

---

5. HANDS

wet____:____:____:____:____:____:____:dry

---

6. TODAY

loose____:____:____:____:____:____:____:tight

---

7. ME

frightened____:____:____:____:____:____:____:fearless

---

8. GERMS

deep____:____:____:____:____:____:____:shallow

---

9. HANDS

good____:____:____:____:____:____:____:bad

---

10. BREATHING

careful____:____:____:____:____:____:____:carefree

---

11. FINGERS

stiff____:____:____:____:____:____:____:relaxed

---

12. ME

calm____:____:____:____:____:____:____:jittery

---

13. HANDS

tight____:____:____:____:____:____:____:loose

---

14. BREATHING

hot____:____:____:____:____:____:____:cold

---

15. SCREW

loose____:____:____:____:____:____:____:tight

---

16. ME

carefree____:____:____:____:____:____:____:worried

---

17. ANXIETY

clear____:____:____:____:____:____:____:hazy

---

18. FINGERS

loose____:____:____:____:____:____:____:tight

Subject Study and Preparation Ratings

DIRECTIONS: Answer the following two questions by circling one of the five alternatives on the scale. Please mark your answers on one of the alternatives, and not between two alternatives. Your answers will be held in confidence--they will not be reviewed by any 225 instructor.

1. How much have you studied for this exam?

/	/	/	/	/
very little	some	a moderate amount	a lot	a very lot

2. How prepared do you feel for this exam?

/	/	/	/	/
very poorly prepared	poorly prepared	moderately prepared	well prepared	very well prepared

Subject Posttreatment Questionnaire

Name_____

1. To what degree do you feel that the treatment sessions you attended this quarter have helped you to overcome anxieties or nervousness related to taking tests?

not at all	somewhat	much	very much

2. To what degree have these sessions been helpful to you in other areas, in addition to the exam or testing situation?

not at all	somewhat	much	very much

Please indicate other situations or areas in which these meetings have helped_____

_____.

3. What is your opinion of the person with whom you met these five sessions?

incompetent	competent	very competent

unlikeable	likeable	very likeable

4. Did you meet with anyone for help of a psychological nature during this quarter, <u>not</u> in conjunction with this project?

(yes; no) If yes (name)_____

5. Comments:

Subject Follow-up Questionnaire

Name_____

1. To what degree do you feel that the treatment sessions you attended last quarter have helped you to overcome anxieties or nervousness related to taking tests?

/	/	/	/
not at all	somewhat	much	very much

2. To what degree have these sessions been helpful to you in other areas, in addition to the exam or testing situation?

/	/	/	/
not at all	somewhat	much	very much

Please indicate other situations or areas in which these meetings have helped_____

_____.

3. Comments:

Therapist Posttreatment Questionnaire

Client:_____

Please complete each of the following questions for the client indicated on completion of the last treatment session.

1. Was this client likeable?

   Very Unlikeable_____ _____ _____ _____ _____Very Likeable

2. Was this client responsive to treatment?

   Very Unresponsive_____ _____ _____ _____ _____Very Responsive

3. Was treatment of appropriate length for this client to significantly reduce test anxiety?

   Too Short_____ _____ _____ _____ _____Too Long

   a. If length was inappropriate, how many sessions would you estimate to have been more appropriate? _____sessions.

4. Was this type of treatment appropriate for this client for reducing test anxiety?

   Very Inappropriate_____ _____ _____ _____ _____Very Appropriate

   a. If type was other than appropriate, what type of treatment would have been more appropriate?

      _____

5. To what degree has this client's test anxiety been reduced?

   None_____ _____ _____ _____ _____Very Much

   a. How confident are you of this rating? p = _____

6. To what degree has this client improved in areas other than test anxiety?

None_____ _____ _____ _____ _____Very Much

a. How confident are you of this rating? p = _____

7. Is further treatment indicated for this client for test anxiety?

Not at all_____ _____ _____ _____ _____Strongly Indicate

8. Number of sessions completed?_____

9. Is further treatment indicated for this client in areas other than test anxiety?

Not at all_____ _____ _____ _____ _____Strongly Indicate

10. Did you feel comfortable working with this form of treatment with this client?

Very Uncomfortable_____ _____ _____ _____ _____Very Comfortable

11. Any further comments you have about this subject, this treatment, or any other aspect of this study would be appreciated (use back of page if necessary).

Therapist Confidence Ratings

Name_____

Date_____

How confident are you in effecting change (reducing test anxiety) with each technique? Please make this rating before you begin working with your subjects.

systematic desensitization

confident_____ _____ _____ _____ _____unconfident

flooding

confident_____ _____ _____ _____ _____unconfident

relaxation

confident_____ _____ _____ _____ _____unconfident

APPENDIX C

TREATMENT MANUALS

Systematic Desensitization Treatment Manual

This treatment is basically the Systematic Desensitization Therapy of Wolpe, with several modifications directed toward reducing the number of sessions required for anxiety reduction. There are five major procedures involved in the use of this technique: (1) exploration of history and current status of symptoms; (2) explanation of rationale; (3) construction of anxiety hierarchy; (4) training in progressive relaxation; and (5) desensitization proper--working through the hierarchy under relaxation.

Although flexibility is normally the rule with this approach, the goals of research require that all therapists follow the outlined procedures as closely as feasible. Unlike the interpretation given by several writers in the area, this procedure is not to be carried out as a cold, manipulative operation; instead the therapist should be as warm, interested, and helpful as he would be in any helping relationship. The main difference between this approach and more traditional methods is that the therapist openly guides and directs the course and content of treatment, with a minimum of time and effort spent on introspection, and little or none spent on the client's searching for etiological factors. All happenings and incidences will be interpreted within this system if questioned, and dynamics left uninterpreted unless questioned. If questioned, interpret in a general manner --only superfically. In any case, it is most important that the therapist remain confident and stay with this specific treatment. Since the "target behavior" (test anxiety) will have been determined prior to the therapist's contact with the client, focus in retraining will begin with the first session, with desensitization proper beginning in the second session.

The following time schedule should handle most clients.

First session:

1. Exploration of history and current status of symptoms (5-10 minutes).
2. Explanation of rationale and course of treatment (5 minutes).
3. Construction of anxiety hierarchy (15-20 minutes).
4. Training in progressive relaxation using the tape-recorded instructions (30-35 minutes). Test imagery if time available.
5. Give subject your telephone number in case he has to cancel an appointment.

Second session:

1. Check on anxiety outside of treatment (i.e. current status of symptoms) and complete construction of anxiety hierarchy (5-10 minutes).
2. Check on success of relaxation and correct any problems arising (2-10 minutes).
3. Induce relaxation with relaxation tape, and then present visualizations.
4. Check on adequacy of relaxation and imagery (use therapy summary sheet for this).

Third and fourth sessions:

1. Check on anxiety outside of treatment. Check on success with relaxation and correct any problems arising (2-10 minutes).
2. Induce relaxation with your own instructions, and present visualizations.
3. Check on adequacy of relaxation and imagery (use therapy summary sheet for this).

Fifth session:

1. Continue as in sessions three and four, except at end of session give subject the test packet and instructions on how to complete it.

SPECIFIC PROCEDURES

1. Exploration of history and current status of symptoms. For the research project, this phase will be relatively short, serving primarily as an "icebreaker" and as a period in which to establish rapport. To help describe subjects and to further therapist understanding, determine (a) how long the subject has experienced test anxiety, (b) to what degree test anxiety interferes with functioning, and (c) whether other evaluative situations also arouse anxiety. This should be completed in no more than 10 minutes of the first session.

2. Explanation of rationale and course of treatment. Both the theory and course of treatment should be briefly explained to the subject and repeated if questions arise. It should be made clear that anxiety is the result of learning, and that the treatment is a learning process. If any subject seems to have trouble understanding, rephrase your explanation in language he can understand. Be sure to allay any doubts the more sophisticated subjects may have, e.g., "this does not produce inhibitions that might lead to symptom substitution, but is desensitizing--removing the problem." The following brief explanation usually suffices for introductory purposes.

"The emotional reactions that you experience are a result of your previous experiences in testing situations; these reactions oftentimes lead to feelings of anxiety or tenseness which are really inappropriate and interfering. Since perceptions of situations occur within ourselves, it is possible to work with your reactions right here in the office by having you image or visualize those situations.

"The specific technique we will be using is one called desensitization. This technique utilizes two main procedures--relaxation and counterconditioning--to reduce your anxiety. The relaxation procedure is based upon years of work that was started in the 1930's by Dr. Jacobson. Dr. Jacobson developed a method of inducing relaxation that can be learned very quickly, and which will allow you to become more deeply relaxed than ever before. Of course, the real advantage of relaxation is that the muscle systems in your body cannot be both tense and relaxed at the same time; therefore, once you have learned the relaxation technique, it can be used to counter anxiety, tenseness, and feelings like those you experience in the exam situation.

"Relaxation alone can be used to reduce anxiety and tension, and I'll be asking you to practice relaxation between our meetings. In addition, though, we are going to combine the relaxation technique with the psychological principle of counterconditioning to further desensitize you to testing situations so that you no longer become overly anxious in such situations.

"The way in which we will do this is to determine the situations in which you become progressively more anxious, building a hierarchy from the least to the most anxious situations with regard to taking an exam. Then I will teach you the technique of progressive relaxation, and have you practice this. You will see how this operates in a few minutes when we actually start training. After you are more relaxed than ever before, we will then start counterconditioning. This will be done by having you repeatedly image the specific situations from the anxiety hierarchy while under relaxation. By having you visualize very briefly, while you are deeply relaxed, the situations that normally arouse anxiety, those situations gradually become desensitized, so that they no longer make you anxious. We start with those situations that bother you the least, and gradually work up to the examination itself. Since each visualization will lower your anxiety to the next, a full-fledged anxiety reaction never occurs. Most of these procedures will become clearer after we get into them. Do you have any questions before we begin?

3. Construction of the anxiety hierarchy. The anxiety hierarchy is one of the most important aspects of this treatment. The object is to determine situations related to exams which run from very slight, controllable amounts of anxiety to the most extreme anxiety attendant upon the actual exam situation. It is not necessary to determine every instance, since generalization from one instance to another will bridge the gap. It is necessary to determine situations close enough together to allow generalization to occur.

3a. The basic test-anxiety hierarchy. Based upon interviews with students and analysis of the situation, the following hierarchy may be used as a beginning framework, thus reducing the time involved. The (0) item should be unanxious and used to test imagery.

(0) Lying in bed in room just before going to sleep--describe room.
(1) The teacher announces and discusses a course examination (to be held in three weeks) with the class.
(2) Studying for an important examination that is two weeks away.
(3) Studying for an important examination that is two days away.
(4) Studying for an important examination that is the next day.
(5) Going to sleep, the night before an important exam--thinking about the test.
(6) Studying the day of the exam--one hour left until exam time.
(7) Leaving your room at your living quarters to go to an important exam.
(8) Entering the room where the exam is being given and sitting down.
(9) The exam is being handed out--you receive a copy.
(10) Reading over the instructions to a final exam and surveying the exam.
(11) Taking an exam and working on a question to which you do not know the answer.
(12) While trying to think of an answer to an exam question you notice everyone around you writing very rapidly.
(13) People are leaving and you're only 1/2 through the exam.
(14) You're taking a final and see that most of the material is unfamiliar.

This hierarchy is to serve only as a guide; the final hierarchy should be carefully individualized and should consist of items which the client perceives as realistic and relevant. The procedure is as follows. First explain that you wish to determine specific situations from the least to the most anxiety producing. Ask the subject when he first notices feelings of tenseness and anxiety; then work through each of the fourteen items to determine if others should be included, or if the order of some of the items should be rearranged. If there are any situations or circumstances which the client perceives as particularly relevant to his test anxiety devise hierarchy items which will include these situations. Write down the specifics associated with each item, so that you may better control the imagery of the subject, i.e., exactly where the subject studies, cues in the room, times, etc. You should have enough understanding so that, if necessary, you may "fill in" another item during desensitization without help from the subject. Most hierarchies will not be shorter than 10 items, nor longer than 15 items.

4. Training in progressive relaxation. This is a most important procedure, and one that should be mastered. It should be explained to the subject that this technique will take some time (25-30 minutes) at first, but as he learns, the time for inducing deep relaxation will be shortened. Training begins by having the subject systematically tense his gross-muscle systems, holding them tense until the tape says "relax," at which time the subject lets go immediately. If the muscles are first tensed, they will relax more deeply when they are released. Also explain that you want the subject to focus all his attention on each muscle system as the tape works through the various groups, so that after practice he will not have to tense the muscles first in order to achieve deep relaxation.

4a. The Method. Seat the subject in a comfortable chair, with the therapist sitting slightly to one side. Have him take out his contact lens if he wears them. Legs should be extended, head resting on the back of the chair or on his chest, and arms resting on the arms of the chair. No part of the body should require the use of muscles for support. Have the subject close his eyes to minimize external stimulation. The room should be quiet and lights dimmed if possible. Instruct the subject not to open his eyes when you turn off the tape, but to remain relaxed. Begin the tape-recorded relaxation instructions.

The tape will play for 28 minutes of relaxation instruction. After you turn it off, continue suggestions of relaxation for a couple of minutes, and then bring the subject back to "normal" with the numerical method of trance termination: "I'm going to count from one to four. On the count of one, start moving your legs; two, your fingers and hands; three, your head; and four, open your eyes and sit up. One--move your legs; two--now your fingers and hands; three--move your head around; four--open your eyes and sit up." Always check to see that the subject feels well, alert, etc., before leaving.

The subject should be instructed to practice relaxation twice a day between sessions. He should not work at it more than 15 minutes at a time, and should not practice twice within any three-hour period. He should also practice alone. Relaxation may be used to get to sleep if practiced while horizontal; if the subject does not wish to sleep, he should practice sitting up. Properly timed, relaxation can be used for a "second wind" during study.

By the third session, if the subject has been practicing well, relaxation may be induced by merely focusing attention on the muscle groups, and instructing the subject to "concentrate on muscles becoming relaxed, "warm," etc. However, if the subject has difficulty following straight suggestions, return to the use of tension-release under the therapist's instructions. The taped instructions will be used only in sessions one and two.

5. Desensitization proper--working through the hierarchy under relaxation. Preparatory to desensitization proper, usually at the end of the first session, the subject's imagery should be tested. This may be done by asking him to visualize item (0): "Now visualize yourself lying in bed in your room just before going to sleep. Describe what you see. Do you see it clearly? Do you see color? Do you feel as if you were there? All right, now stop visualizing that and go on relaxing." Some subjects may report clear, distinct images, as if they were watching a movie; this is fine, but not necessary. The minimum requirement is that their visualizations be as clear as a very vivid memory. Describing these visualizations as a dream is often helpful. With more practice, images will usually become clearer. It is also important that the subject can start and stop an image on request, and this should be determined. If difficulties arise in any of these areas, present a few more common, unanxious images, describing for the subject just what he should experience; for example, entering the office. It is important that the subject visualize situations as if he were there--not watching himself!

Before inducing relaxation in the second session, explain exactly what you'll be asking the subject to do, since his verbalizations are to be kept at a minimum. Tell him that if anytime during the session he feels any tension or nervousness whatever, to signal by raising his right index finger. This is important, and should be made clear from the beginning.

After relaxation is induced, presentation of images begins with item (1), whatever it may be: "Now I want you to visualize yourself sitting in class while the teacher announces and discusses with the class an exam to be held in three weeks" (10 seconds). "Stop visualizing that, and go on relaxing." Ask if the subject felt any tension and if he was able to start and stop the image on request. Then repeat item (1) again. "One more time, visualize yourself sitting in class while the instructor announces and discusses an exam to be held in three weeks" (10 seconds). "Stop visualizing that, and go on relaxing--completely relaxed, no tension anywhere in your body, warm and relaxed."

Follow the above paradigm throughout the hierarchy if the subject does not become anxious: i.e., present each item in the hierarchy, specifying all major aspects of the image. Allow 10 seconds to elapse after each presentation, then instruct the subject to "stop visualizing that, and go on relaxing." Continue suggestions of warmth, relaxation, lack of tension, heaviness, etc., for 30 to 45 seconds, and again present the image. Present each item in the hierarchy at least twice. If the subject does not signal anxiety, and the therapist does not detect anxiety during two 10-second presentations of an item, move on to the next item in the hierarchy.

If, on the other hand, the subject signals anxiety or the therapist detects anxiety in the subject, immediately instruct the subject to "stop visualizing that, and go on relaxing." Then continue with suggestions of relaxation (at least one minute) until the subject reports as deep a relaxation as before. Then inform him that you will shorten the presentation so that anxiety will not occur. Then, present the same item again for a period of only 3 to 5 seconds. If anxiety is still aroused, drop back to a 10-second presentation of the previous item in the hierarchy. If, however, the 3- to 5-second presentation does not arouse anxiety, give 30 to 45 seconds of relaxation suggestions, and present the same item again for 5 seconds, then 10 seconds, then 20 seconds. If the item can be presented for 20 seconds, move on to the next item in the hierarchy.

It is precisely at these points that clinical sensitivity must guide the presentations; one must know when to go back, when to construct new items, and when to move up the hierarchy. However, the above guides should handle most situations. Some items may require as many as 8 to 12 presentations of differing time intervals, with lower level items interspersed. Most items should be handled successfully in 2 to 4 presentations.

Never end the session with a presentation that arouses anxiety. Approximately 5 to 10 minutes before the end of a session, either stop with a successful item, or go back to the previous item in the hierarchy. "Awaken the subject, and discuss the session with him, reassuring him about any difficulties that may have come up. If by some quirk any of the presentations are nullified, or they do not carry over into real life, rapidly repeat those items in the next session. Normally, each session will begin with a single presentation of the last successfully completed item.

All subjects should complete the hierarchy in the five sessions. However, if any subject does not complete the hierarchy, take note of the number of items still to be covered, so this fact may be taken into account in evaluation. Be sure to keep a record of the items covered in each session, so that the proper items are presented each session.

Flooding Treatment Manual

This treatment consists of a modified form of the flooding treatment described by Wolpe and Lazarus in which the client is required to imagine highly anxiety arousing scenes related to his fear. The treatment is also similar to Stampfl's implosive therapy, except there is no specific consideration of psychoanalytic theory in choosing scenes for the client to visualize. There are four major procedures involved in the use of this technique: (1) exploration of history and current status of symptoms; (2) explanation of rationale; (3) identification of anxiety cues to be incorporated into the scenes for the client to imagine; and (4) stimulus flooding-presenting anxiety arousing scenes for the client to imagine.

In this treatment the therapist should be as warm, interested, and helpful as he would be in any helping relationship. At times, however, he may have to be firm in adhering to the technique by not allowing the client to avoid the anxiety aroused by his visualizations. The therapist will openly guide and direct the course and content of treatment, with a minimum of time and effort spent on introspection, and little or none spent on the client's searching for etiological factors. All happenings and incidences will be interpreted within this system if questioned, and dynamics left uninterpreted unless questioned. If questioned, interpret in a general manner--only superficially. In any case, it is most important that the therapist remain confident and stay with this specific treatment.

The following time schedule should handle most clients.

First session:

1. Exploration of history and current status of symptoms (5-10 minutes).
2. Explanation of rationale and course of treatment (5 minutes).
3. Identification of anxiety cues (40-50 minutes).
4. Test imagery if time available.
5. Give subject your telephone number in case he has to cancel an appointment.

Between sessions one to five:

1. Plan flooding scenes to be presented to client next session.

Second to fourth sessions:

1. Check on anxiety outside of treatment (i.e. current status of symptoms).
2. Present visualizations.
3. Identify new anxiety cues which can be incorporated into visualizations.
4. Check adequacy of imagery, and degree of anxiety experienced by the client toward the beginning and toward the end of the visualization portion of therapy (use therapy summary sheet for this).

Fifth session:

1. Check on anxiety outside of treatment.
2. Present visualizations.
3. Check adequacy of imagery and degree of anxiety experienced by the client toward the beginning and toward the end of the visualization portion of therapy (use therapy summary sheet).
4. Give subject the test packet and instructions on how to complete it.

SPECIFIC PROCEDURES

1. Exploration of history and current status of symptoms. For the research project, this phase will be relatively short, serving primarily as an "icebreaker" and as a period in which to establish rapport. To help describe subjects and to further therapist understanding, determine (a) how long the subject has experienced test anxiety, (b) to what degree test anxiety interferes with functioning, and (c) whether other evaluative situations also arouse anxiety. This should be completed in no more than 10 minutes of the first session.

2. Explanation of rationale and course of treatment. Both the theory and course of treatment should be briefly explained to the subject and repeated if questions arise. It should be made clear that anxiety is the result of learning, and that the treatment is a learning process. If any subject seems to have trouble understanding, rephrase your explanation in language he can understand. The following brief explanation usually suffices for introductory purposes.

"The emotional reactions that you experience are a result of your previous experience with testing situations; these reactions oftentimes lead to feelings of anxiety or tenseness which, when they become very strong, are really inappropriate and interfering. Since perceptions of

situations occur within ourselves, it is possible to work with your reactions right here in the office by having you image or visualize those situations.

"The specific technique we will be using is one called extinction. You may have already read about the general process of extinction in your 151 class since the extinction process is one of the basic laws in psychology. Essentially what happens during extinction is that when a person persistently confronts or exposes himself to a situation to which he has learned to be afraid without experiencing punishment or what we call negative reinforcement in that situation, then gradually his anxiety in this situation diminishes or extinguishes. The process, then, consists of unlearning the too intense anxiety response which you have learned to make to testing situations.

"The way in which we will do this is to determine aspects of the testing situation which make you anxious, and have you confront these in your imagination. When you first begin to imagine a particular scene relating to test-taking you will become anxious, perhaps very anxious, but gradually, through the process of extinction, this anxiety will diminish and finally disappear. Then we will repeat the process with a different test-taking scene, and so on, until you have unlearned your anxiety reaction to taking tests. Most of these procedures will become clearer after we get into them. Do you have any questions before we continue?

3. Identification of anxiety cues. This consists of determining cues or stimuli relating to test-taking which can be incorporated into the scenes which the client will visualize. The cues should elicit at least a moderate amount of anxiety from the client, and should be comparable to the items which would appear in the upper half or quarter of a systematic desensitization anxiety hierarchy.

3a. Basic test-anxiety cues. Based upon interviews with students and analysis of the situation, the following items might be incorporated into flooding scenes. The (0) item should be unanxious and used to test imagery. The other items are not intentionally listed in any particular order.

(0) Lying in bed in room just before going to sleep--describe room.

(1) Studying the day of the exam--one hour left until exam time.

(2) Leaving your room at your living quarters to go to an important exam.

(3) Entering the room where the exam is being given and sitting down.

(4) The exam is being handed out--you receive a copy.

(5) Reading over the instructions to a final exam and surveying the exam.

(6) Taking an exam and working on a question to which you do not know the answer.

(7) While trying to think of an answer to an exam question you notice everyone around you writing very rapidly.

(8) People are leaving and you're only 1/2 through the exam.

(9) You're taking a final and see that most of the material is unfamiliar.

(10) You suddenly realize that this exam will make the difference between a C and a D in the course.

These items are to serve only as a guide to choosing the final items which should be carefully individualized so as to be perceived by the client as realistic and relevant. The procedure is as follows. First explain that you wish to determine specific aspects of the test-taking situation or pre test-taking situations which make the client anxious. Ask the client to name any such aspects which he can think of. Write these down. When the client has described as many details as he can, work through the basic items suggested above to determine if any of these are anxiety-provoking. Write down the specifics associated with each item, so that you may better control the imagery of the subject. The more an item relates to this particular client's concerns, the easier it will be for him to imagine it.

The anxiety cues identified from conversation with the subject should be incorporated into extended scenes or sequences of scenes which the client will be asked to imagine during the flooding portion of therapy. These scenes can be developed by the therapist between sessions

in preparation for the coming therapy session. The client will be imagining the scene or sequence for extended lengths of time varying probably from five to fifteen minutes, thus the scene descriptions will have to be much more complex and lengthy than those of systematic desensitization.

A typical scene might progress from a client's entering the exam room through to his completion of the test--with a variety of incidents occurring in between. Examination anxiety does not offer as many possibilities for scene variations as do certain other types of anxieties (e.g. snake or spider phobias) so there may be a fair amount of repetition of detail in different scenes. Some scene variation can be produced by focusing on different kinds of tests (e.g. quizes, midterms, finals, multiple-choice tests, essay tests, tests for different courses, achievement tests, college board tests, intelligence tests, etc.). Scenes can, and probably should also be constructed which describe the subject studying or worrying in situations several hours before the exam since this is a particularly stressful period for most test-anxious students. Additional scenes can be developed by asking the subject to describe the most anxiety provoking experience he has had in a testing situation and also the most anxiety provoking experience in a testing situation he can imagine, and then using these as the basis for flooding descriptions. Experiences of test-anxiety outside of therapy should be inquired about in each session, and if any have occurred they can serve as the basis for flooding descriptions.

4. Stimulus flooding. This consists of actual presentation of scenes to the client for him to visualize. The scenes should be described as vividly as possible. Try to phrase the descriptions in the subject's own language. The subject may attempt to avoid or lessen the anxiety elicited by visualizations by engaging in excessive conversation or in repetitive body movements (e.g. foot tapping). Discourage this; try to make the subject experience the scene as realistically as possible--encourage him to imagine the scenes as if he were really in them now. Occasionally interrupting your description and asking the subject to describe what he is visualizing will serve to prevent him from avoiding the visualizations and will also inform you about how effective your descriptions are.

At each stage of the scene description an attempt should be made by the therapist to attain a maximal level of anxiety evocation from the client. When a high level of anxiety is achieved, the client should, if possible, be

held on this level until some signs of spontaneous reduction in the anxiety inducing value are indicated. At times this may require a longer description of the scene than the therapist is capable of providing, in which case the scene will have to be terminated without the anxiety reduction. After you have completed the scene description, discuss it with the client to determine what aspects were most anxiety arousing. These should be stressed in later scene presentations. Also determine if the manner of presentation (vocabulary, voice expression, speed of description, etc.) should be altered in any way to allow the client to visualize the scenes more vividly. The scene should be repeatedly described until a significant diminution in the anxiety elicited by the scene occurs. Then a new scene should be introduced, and worked through in the same way.

Relaxation Treatment Manual

This treatment starts with the abbreviated Jacobson training in progressive relaxation, and is supplemented with two additional procedures: (1) training to establish the word "relax" as a conditioned stimulus for the relaxation response, and, most importantly, (2) training to maximize the subject's ability to relax himself in extra-therapy situations, particularly test-taking situations. There are four major procedures involved in the use of this technique: (1) exploration of history and current status of symptoms; (2) explanation of rationale; (3) training in progressive relaxation and in establishing the word "relax" as a conditioned stimulus for relaxation; and (4) assigning relaxation homework practices to the client and checking on his success in carrying out these assignments.

In this treatment the therapist again should be as warm, interested, and helpful as he would be in any helping relationship. The therapist will openly guide and direct the course and content of treatment, with a minimum of time and effort spent on introspection, and little or none spent on the client's searching for etiological factors. All happenings and incidences will be interpreted within this system if questioned, and dynamics left uninterpreted unless questioned. If questioned, interpret in a general manner--only superficially. In any case, it is most important that the therapist remain confident and stay with this specific treatment.

The following time schedule should handle most clients.

First session:

1. Exploration of history and current status of symptoms (5-10 minutes).
2. Explanation of rationale and course of treatment (5 minutes).
3. Training in progressive relaxation using the tape-recorded instructions. When subject is completely relaxed have him say "relax" 10 times (30 minutes).
4. Have subject practice (repeat) the exercises just completed as best he can without the taped instructions and without instructions from the therapist. After completion of practice, correct any mistakes or omissions made by the subject (10-15 minutes).

5. Instruct the subject to practice relaxation. (This relaxation homework assignment should be the same as that for desensitization (see page of desensitization manual) except that when the subject is completely relaxed at the end of each practice session he is to say the word "relax" 10 times. Give subject the summary sheet listing muscle groups to be relaxed during practice.
6. Give subject your telephone number in case he has to cancel an appointment.

Second session:

1. Check on success with relaxation and correct any problems arising (10-15 minutes).
2. Training in progressive relaxation using the tape-recorded instructions but with eyes open. Have subject say "relax" ten times at end (30 minutes)? Check adequacy of relaxation using therapy summary sheet.
3. Have subject practice the exercises just completed, but without the taped instructions. After completion of practice correct any mistakes or omissions made by the subject (10-15 minutes).
4. Instruct the subject to practice relaxation in the same manner as during the previous week, but this time with his eyes open.

Third and fourth sessions:

1. Check on success with relaxation and correct any problems arising.
2. Have subject induce his own relaxation and say "relax" ten times. Question him about how the various muscle groups felt when he did this. Check adequacy of relaxation using therapy summary sheet.
3. Instruct subject to relax himself (by this time he should not need to tense his muscles to do so) in the following extra-therapy situations:
   a. While lying in bed, before falling asleep.
   b. At mealtimes.
   c. While studying or doing homework.
   d. In classes, especially before the lecture begins.
   e. While riding as a passenger in a bus or car if this opportunity arises.
   f. While watching television, a movie, a concert, a basketball game, etc., especially before the event begins or during intermission.
   g. While talking on the phone or when talking to friends.

h. When taking an exam or quiz if he is nervous.
i. In any situation in which he is tense or anxious.
j. In as many other situations as possible.

Fifth session:

1. Check on success with relaxation and correct any problems arising.
2. Have subject induce his own relaxation and say "relax" ten times. Question him about how the various muscle groups felt when he did this. Check adequacy of relaxation using therapy summary sheet.
3. Instruct subject to continue practicing relaxation and to utilize it during exams. Forewarn him that it may be a little more difficult to induce relaxation in the testing situation and that he need not become completely relaxed.
4. Give subject the test packet and instructions on how to complete it.

SPECIFIC PROCEDURES

1. Exploration of history and current status of symptoms. For the research project, this phase will be relatively short, serving primarily as an "icebreaker" and as a period in which to establish rapport. To help describe subjects and to further therapist understanding, determine (a) how long the subject has experienced test anxiety, (b) to what degree test anxiety interferes with functioning, and (c) whether other evaluative situations also arouse anxiety. This should be completed in no more than 10 minutes of the first session.

2. Explanation of rationale and course of treatment. Both the theory and course of treatment should be briefly explained to the subject and repeated if questions arise. If any subject seems to have trouble understanding, rephrase your explanation in language he can understand. The following brief explanation usually suffices for introductory purposes.

"The relaxation procedure we will be using is based upon years of work that was started in the 1930's by Dr. Jacobson. Dr. Jacobson developed a method of inducing relaxation that can be learned very quickly, and which will allow you to become more deeply relaxed than ever before. Of course, the real advantage of relaxation is that the muscle systems in your body cannot be tense and relaxed at the same time; therefore, once you have learned

the relaxation technique, it can be used to counter anxiety, tenseness, and feelings like those you experience in the exam situation. In fact once you learn the relaxation technique you can use it to counter anxiety in other situations in which you may become upset. It is also a good way to induce sleep when you begin to have a restless night in bed--actually it is quite a valuable skill to acquire. In learning how to relax it is important that you be able to induce relaxation here with me, but most important, it is necessary that you can relax yourself in real life situations. In order to accomplish this you will have to practice relaxation on your own in a number of situations apart from our meetings here. Thus I will be instructing you to practice relaxation a few minutes each day between our meetings. The procedure will become clearer after we get into it. Do you have any questions before we continue?

3. Training in progressive relaxation. This, of course, is a most important procedure, and one that must be mastered. It should be explained to the subject that this technique will take some time (25-30 minutes) at first, but as he learns, the time for inducing relaxation will be shortened. Training begins by having the subject systematically tense his gross-muscle systems, holding them tense until the tape says "relax," at which time the subject lets go immediately. If the muscles are first tensed, they will relax more deeply when they are released. Also explain that you want the subject to focus all his attention on each muscle system as the tape works through the various groups, so that after practice he will not have to tense the muscles first in order to achieve deep relaxation.

When the subject is completely relaxed he should say "relax" ten times. Explain that after this is practiced many times the words "relax" will become associated with the state of relaxation and will become somewhat capable of eliciting it. Thus saying "relax" to himself will also help the subject to relax.

3a. The Method. The method is the same, as for desensitization (see desensitization manual, pp. 95-96) except the subject is told to whisper the word "relax" ten times toward the end of each practice period.

4. Relaxation assignments. At the end of each treatment session the subject will be instructed to practice relaxation in various situations outside of therapy. The importance of the subject's carrying out these assignments should be stressed, since the extra-therapy practice

is vital to establishing the subject's ability to relax himself in naturally occurring situations. A major portion of sessions 3-5 will consist of checking on the subject's success in carrying out relaxation assignments. To do this, ask the subject to describe his experience on each occasion during which he practiced relaxation the week before the present therapy session. On the relaxation therapy summary sheet jot down a phrase describing each situation in which the subject has practiced relaxation. For any one week he may describe seven to fourteen or more situations, many of which will be identical except for time of the day or day of the week. Don't bother recording situations which are very similar. As the subject describes situations, ask specific questions concerning what he was thinking about, what he was looking at, where his appendages were placed, and how various muscle groups felt. Give verbal praise and encouragement for the subject's reports of relaxation practice, but explain to him early that you want accurate reports and that he should not fabricate reports because he believes that is what you want to hear. The above procedure should serve several purposes: (1) It should elicit difficulties the subject is experiencing with relaxation which he might otherwise fail to mention due to his being unaware of them, forgetting them, or considering them too unimportant to bring up, (2) it should motivate the subject to practice relaxation outside of therapy, and (3) it should serve as a means of filling out the therapy hour (or half hour) for subjects who make rapid progress and experience few difficulties in learning the technique.

Summary Sheet on Relaxation Procedures

You cannot be anxious while you are relaxed. Practice relaxation twice a day by completing the procedures below. Sufficient practice will enable you later to relax yourself quickly, easily, and without first tensing your muscles as is done here. Concentrate on noticing the difference between tension and relaxation. After each tensing note how your muscles feel when you relax them, when you "let them go." Always relax your muscles after tensing, and pay attention to that relaxation.

1. Make a fist with your left hand, tensing the muscles until they tremble. Feel the tenseness of the muscles. Now "let go," and relax--feel how your muscles relax.

2. Same with right hand.

3. Bend left hand up at wrist. Feel tension. Let go, and feel relaxation.

4. Same with right hand.

5. Flex biceps of both arms by bringing hands up to shoulders. Feel tension, then relax.

6. Shrug both shoulders, bringing them up as if to touch your ears. Feel tension in back and neck, then relax.

7. Wrinkle up forehead.

8. Close eyes tightly.

9. Press tongue up into roof of mouth.

10. Press lips together--pucker your lips.

11. Push your head back.

12. Bend your head forward, burying your chin into your chest.

13. Arch your back, sticking your chest and stomach out.

14. Take deep breath and hold it.

15. Suck in your stomach.

16. Tense your stomach muscles; make them hard.

17. Push your seat into the chair, tensing your buttocks.

18. Stretch both legs straight out, off the floor. Stretch your thigh muscles.

19. Point your toes upward, stretching the muscles in the calves.

20. Curl toes of both feet downward, feel the tension in your arches.

21. Let your whole body relax. Let the tension drain out of all your muscles.

22. When you are completely relaxed say the word "relax" to yourself 10 times.

APPENDIX D

THERAPY SUMMARY SHEETS

Therapy Summary Sheet
(systematic desensitization)

Date_____

Your Name_____ Session Number_____

S's Name_____

Length of session_____ Location of session_____

On a separate sheet of paper list the hierarchy when it is developed. On this sheet list the hierarchy items covered today, and the number of presentations of each item.

Items Covered Today Number of Presentations

Therapy Summary Sheet (desensitization)

S's rating of the quality of his imagery.

_____1. REALISTIC. Like being in the real situation.

_____2. VIVID. Very clear but was not totally immersed in the situation.

_____3. CLEAR. Like watching myself in the situation.

_____4. FLEETING. Imagery not clear at all times, felt superficially involved.

_____5. FUZZY. Could not maintain imagery; simply thought about the scene. Somewhat like looking at a picture with little or no interest.

_____6. NONE. Unable to imagine the described scene.

Rating of the quality of overall relaxation.

E's rating	S's rating	
_____1	_____1	EXCELLENT. Felt completely relaxed.
_____2	_____2	GOOD. Felt relaxed but thinks it could be deeper.
_____3	_____3	FAIR. Some specific areas of the body were not relaxed.
_____4	_____4	POOR. Unable to relax.

New problems raised by S _____

_____

_____

Problems you are having: _____

_____

_____

Supplement to Relaxation and Desensitization
Summary Sheets for Second and
Third Session

Your Name_____

S's Name_____

Date_____

Ask the subject how many times he practiced relaxation the previous week, and about how long, on the average, one of these practice sessions lasted.

No. of times relaxation practiced_____

Average practice time or duration_____minutes

Therapy Summary Sheet (relaxation)

Rating of the quality of overall relaxation.

E's rating	S's rating	
_____1	_____1	EXCELLENT. Felt completely relaxed.
_____2	_____2	GOOD. Felt relaxed but thinks it could be deeper.
_____3	_____3	FAIR. Some specific areas of the body were not relaxed.
_____4	_____4	POOR. Unable to relax.

New problems raised by S _____

_____

_____

Problems you are having: _____

_____

_____

Therapy Summary Sheet (relaxation)

Date_____

Your Name_____ Session Number_____

S's Name_____

Length of Session_____ Location of session_____

Jot down a phrase to describe each different situation the subject reports having practiced relaxation in during the week previous to this session. Don't make duplicate entries for situations which are very similar or identical.

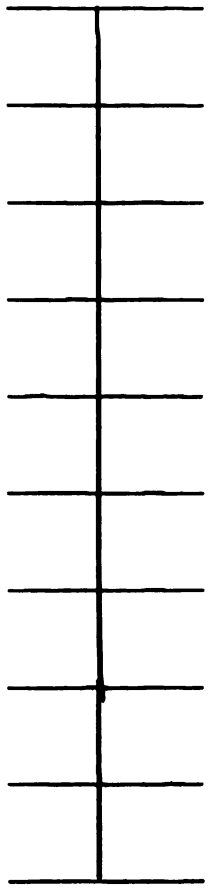
Therapy Summary Sheet (flooding)

For the subject:

Instructions

Draw a line across the scale below to indicate the amount of anxiety or tenseness you felt when you started to imagine scenes today.

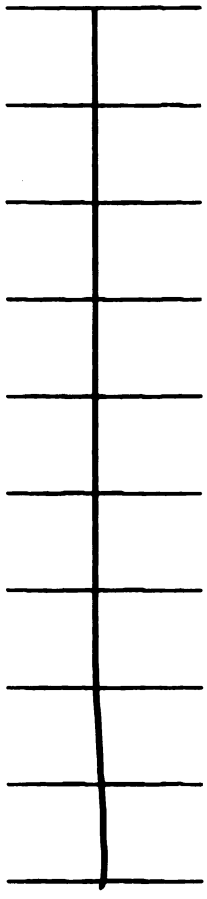
Extreme Anxiety



No Anxiety

Draw a line across the scale below to indicate the amount of anxiety or tenseness you felt just before you quit imagining scenes for today.

Extreme Anxiety



No Anxiety

Therapy Summary Sheet (flooding)

S's rating of the quality of his imagery.

_____1. REALISTIC. Like being in the real situation.

_____2. VIVID. Very clear but was not totally immersed in the situation.

_____3. CLEAR. Like watching myself in the situation.

_____4. FLEETING. Imagery not clear at all times, felt superficially involved.

_____5. FUZZY. Could not maintain imagery; simply thought about the scene. Somewhat like looking at a picture with little or no interest.

_____6. NONE. Unable to imagine the described scene.

New problems raised by S _____

_____

_____

Problems you are having: _____

_____

_____

Therapy Summary Sheet (flooding)

Date_____

Your Name_____ Session Number_____

S's Name_____

Length of Session_____Location of Session_____

Give a brief description of each scene presented to the subject today, and record how many times the scene was presented and approximately how long a single presentation or description lasted.