

A STUDY OF THE GENERALIZATION OF THE EFFECTS OF GROUP
SYSTEMATIC DESENSITIZATION OF TEST ANXIETY ON
CO-EXISTENT ANXIETY IN COLLEGE STUDENTS

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Leffingwell, R. Jon, A Study of the Generalization of the Effects of Group Systematic Desensitization of Test Anxiety on Co-existent Anxiety in College Students. Doctor of Philosophy (Counseling and Personnel Administration), December, 1971, 97 pp., 5 tables, bibliography, 101 titles.

The problem of the present investigation was to determine the degree of generalization of group systematic desensitization of test anxiety to certain co-existent anxieties in college students. The primary purposes were to determine if desensitization of a specific anxiety would generalize to a co-existent specific anxiety, and in turn to a general pervasive anxiety. In addition, a test of pragmatic significance of the technique was sought, utilizing a final examination as an overt behavioral criterion.

Three measurements of anxiety, including the College Form of the Test Anxiety Questionnaire, the Interpersonal Anxiety scales of the S-R Inventory of Anxiousness, and the Taylor Manifest Anxiety Scale, were administered to 704 undergraduate students enrolled in 18 introductory psychology classes at North Texas State University. The Test Anxiety Questionnaire was scored first in order to determine the number of subjects who would qualify as test anxious. Students whose scores exceeded the seventy-fifth percentile (a score of 225 or higher) and who fell within the age range of

18 to 20 years, qualified as potential subjects. The results of the procedure produced a sample of 111 students. Systematic desensitization was administered to two groups of 11 students and one group of 12. Subjects chose the group in which they participated according to meeting time. Each group met for 12 sessions, with each session lasting approximately 40 minutes.

The statistical procedure used in the present investigation was Hotelling T^2 to analyze residual change scores on all of the measures of anxiety. In addition, a Fisher's t test was used to compare group scores on the Psychology Departmental final examination.

Upon completion of data collection, scoring, and statistical treatment, an analysis of the data revealed the following findings:

1. The test-anxious subjects that participated in group systematic desensitization of test anxiety demonstrated a significantly greater reduction in test anxiety and interpersonal anxiety than did the non-treatment control group.

2. The test-anxious subjects that participated in group systematic desensitization of test anxiety failed to reach a significant level of reduction in anxiety.

3. The desensitization subjects demonstrated a significantly greater level of anxiety reduction than the non-treatment control group on the overt behavioral criterion of examination grades.

The formulation of the following conclusions are the result of the analysis of the present investigation:

1. Group systematic desensitization is an effective technique for reducing specific performance anxieties, such as test or interpersonal anxiety.

2. Group systematic desensitization of a specific anxiety can generalize to certain situations outside of the treatment center.

3. Subjects involved in the desensitization technique have a tendency to experience increasing feelings of confidence and self-esteem as they learn to overcome anxiety.

4. Systematic desensitization administered in a group setting is effective as well as efficient.

5. Response modeling of members of group systematic desensitization seems to provide additional feedback to individual members which would not be as evident in individual desensitization.

6. Group systematic desensitization should prove more effective using anxiety hierarchies that focus on specific anxieties as opposed to a general pervasive anxiety.

It is recommended that group systematic desensitization be further investigated by professional counselors in order to determine the applicability of the technique in the respective counseling center. In addition, graduate programs which train professional counselors would profit from an inclusion of behavior modification techniques among existing techniques.

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CO-EXISTENT ANXIETY IN COLLEGE STUDENTS

DISSERTATION

Presented to the Graduate Council of the
North Texas State University in Partial
Fulfillment of the Requirements

For the Degree of

DOCTOR OF PHILOSOPHY

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Denton, Texas

December, 1971

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CHAPTER I

INTRODUCTION

A major problem of study that has emerged during the past two decades is the impact of anxiety on the performance of individuals. Significant research has been accomplished related to the relationship of anxiety and performance of simple and complex tasks by Montague (10), Spence, Farber, and McFann (13), and Taylor and Spence (18).

College life in general and examinations in particular can be equated to complex tasks (17). Several investigations have found a negative correlation between anxiety and academic performance in college students (1, 8, 12, 14). In addition Mandler and Sarason have suggested that individuals "in situations involving implied personal threat or fear of failure, high-test-anxious subjects evoke task-irrelevant and defensive responses such as blocking or tremors that impair performance" (7, p. 446).

Several studies have dealt specifically with anxiety reduction in a test situation, utilizing the technique of systematic desensitization (2, 3, 4, 5, 6, 7, 9, 16, 17). Each of the studies has, in varying degrees, reduced debilitating test anxiety through the use of individual and/or group systematic desensitization. There remain unanswered

many questions related to the generalization of the treatment utilized, to the reduction of interpersonal anxiety, and to general anxiety. Further, implications from research demonstrate the need of a prophylactic experience to reduce debilitating anxiety to a level at which the student can more adaptively cope with a college environment.

Statement of the Problem

The problem of this study was to measure the generalization of the effects of group systematic desensitization of test anxiety on certain coexistent anxieties in college students.

Purposes of the Study

The purposes of this investigation were as follows:

1. to investigate the generalization of anxiety reduction from a test situation to a social situation,
2. to investigate the generalization of anxiety reduction from a test situation to a general situation, and
3. to analyze the results in terms of applicability to educational and psychological practice.

Hypotheses

I. Subjects participating in group systematic desensitization of test anxiety will show a significantly greater reduction of test anxiety, as measured by the college form

of the Test Anxiety Questionnaire, as compared with subjects in the non-participating control group.

II. Subjects participating in group systematic desensitization of test anxiety will show a significantly greater reduction of interpersonal anxiety, as measured by interpersonal situations of the S-R Inventory of Anxiousness, as compared with subjects in the non-participating control group.

III. Subjects participating in group systematic desensitization of test anxiety will show a significantly greater reduction of general anxiety, as measured by the Taylor Manifest Anxiety Scale, as compared with subjects in the non-participating control group.

IV. Subjects participating in group systematic desensitization of test anxiety will score significantly higher on the Psychology Departmental Final Examination as compared with subjects in the non-participating control group.

Definition of Terms

In the present investigation, the following definitions are used:

Test anxiety is operationally defined in terms of a score on the college form of the Test Anxiety Questionnaire. High test anxiety is defined as a score above the seventy-fifth percentile of the distribution of TAQ scores of

selected students at North Texas State University, Denton, Texas.

Interpersonal anxiety is operationally defined in terms of a score on the interpersonal anxiety scales of the S-R Inventory of Anxiousness administered to selected students at North Texas State University. High interpersonal anxiety is defined as a score above the median of scores obtained on the interpersonal anxiety scales of the S-R Inventory of Anxiousness.

General anxiety is operationally defined in terms of a score on the Taylor Manifest Anxiety Scale administered to selected students at North Texas State University. High general anxiety is defined as a score above the median of scores obtained on the Taylor Manifest Anxiety Scale.

Systematic desensitization is defined as a therapeutic technique developed by Joseph Wolpe which breaks down anxiety-response habits in a step-by-step fashion. Each step represents a component part of the subject's anxiety or fear which is desensitized individually.

The theoretical basis upon which systematic desensitization is based is described as follows:

If a response antagonistic to anxiety can be made to occur in the presence of anxiety-provoking stimuli so that it is accompanied by a complete or partial suppression of the anxiety responses, the bond between the stimuli and the anxiety responses will be weakened (19, p. 71).

The technique begins with the subject learning to relax deeply various groups of muscles. Relaxation facilitates the suppression of anxiety because the processes are antagonistic. Desensitization is systematic in that the order in which muscle groups are relaxed is consistent throughout the treatment. The subject spends approximately the first four sessions learning to tense and relax certain muscles in order to differentiate more accurately between tension and relaxation. At the same time, the individual is able to gain confidence in learning how to locate and control muscle tension. Four sessions were spent in relaxation training in the present study.

The second phase of the desensitization process involves the construction of an anxiety hierarchy. The anxiety hierarchy consists of a list of anxiety-provoking situations which have a common theme. The situations are ranked in descending order from the most to the least anxiety producing. Each subject in the present investigation modified the anxiety hierarchy (see Appendix A) to suit individual needs.

The actual desensitization procedure is ready to begin after the individual has received sufficient training in muscle relaxation and the appropriate anxiety hierarchy has been constructed. The procedure begins with the subject spending approximately five minutes in practicing muscle relaxation. When the individual signals with a nod of the head that he feels relaxed and tension-free, he is asked to

imagine the scene which is the least anxiety-producing on the hierarchy. The subject is told to indicate the presence of any feeling of tension or anxiety while imagining the scene by raising his right index finger. If the signal is given, the subject is instructed by the therapist to stop imagining the scene and to relax as deeply as possible once again. The period of relaxation lasts for approximately two minutes, after which the subject is asked to imagine the scene once again. If tension or anxiety are still present while the scene is being imagined, the subject is again asked to stop imagining the scene and to relax. The process is repeated until each scene can be imagined without feelings of anxiety or trepidation. As each scene is imagined, and the anxiety associated with the respective scene is desensitized, the individual advances up the anxiety hierarchy until the most anxiety-producing situation has been desensitized.

Group systematic desensitization utilized similar procedures as individual desensitization with some pertinent modifications: first, every member of the treatment group moved up the anxiety hierarchy as a unit. The rate of advancement to more anxiety-producing situations on the hierarchy was determined by the ability of the slowest member to become desensitized to the immediate situation. In the present investigation, when a member of the treatment group signaled the presence of anxiety in the imagination of a particular situation, the entire group was instructed to

stop imagining and once again relax. When the persons having difficulty felt free from tension, the scene was again presented until all members reported no tension during the respective scene.

A second variation in group desensitization was that the situations in the hierarchy were presented in written rather than oral form, the rationale being that each subject in the treatment group had modified the anxiety hierarchy in terms of the arrangement of situations to meet individual needs. In order to deal with the situation, each item on each subject's hierarchy was printed on separate index cards. The cards were arranged in a hierarchy by each subject in order to insure individuality. As instructions were given to move up to the next item in the hierarchy, the individual could view his situation according to the way he ranked it. This method proved effective and efficient.

Basic Assumptions of this Study

The following assumptions of the present investigation should be considered in the analysis of the results of this investigation:

1. It was assumed that all subjects responded honestly and to the best of their ability to the three instruments used to measure anxiety.

2. It was assumed that each of the instruments provided a valid assessment of each of the three types of anxiety.

3. It was assumed that the subjects participating in the therapeutic treatment cooperated to the fullest extent possible at the time.

4. It was assumed that the subjects were not participating in any counseling activities other than those in the present study.

5. It was assumed that significant reductions of anxiety, as measured by the instruments utilized in the present study, were the result of techniques used in the present investigation.

Limitations of this Study

The following limitations should be considered in the analysis of the results in this investigation:

1. The population of this study was limited to selected students enrolled in introductory psychology courses at North Texas State University.

2. The participants in this study ranged in age from eighteen to twenty. Caution should be taken in generalizing the results to a different age group.

3. The subjects in this study participated of their own volition. No pressure was brought to bear to procure subjects due to the nature of the therapeutic technique. Systematic desensitization requires the active cooperation of all participants.

Description of the Subjects

The subjects used for this investigation were 111 male and female college students attending introductory psychology classes at North Texas State University. The age of subjects included in the present study ranged from eighteen to twenty years.

Selection of the Instruments

The instruments chosen for this study were designed to measure the variables considered to be pertinent to this research. The variables to be studied in the present research are test anxiety, interpersonal anxiety, and general anxiety. The instrument chosen to measure test anxiety was the Test Anxiety Questionnaire. The interpersonal scales of the S-R Inventory of Anxiousness were utilized to measure interpersonal anxiety. General anxiety was measured in this research by the Taylor Manifest Anxiety Scale. An additional instrument to measure any differences between experimental and control groups in an actual test situation was the Psychology Departmental Final Examination.

Procedures for Collecting Data

The following procedures were utilized in the collection of data in the present investigation:

1. Teachers of introductory psychology classes at North Texas State University that were not participating in the

experimental programmed instruction unit were contacted and permission was obtained to test students in their classes.

2. The instruments pertinent to the present study, including the Test Anxiety Questionnaire, S-R Inventory of Anxiousness, and the Taylor Manifest Anxiety Scale, were administered to the psychology students (704 were tested).

3. On the basis of information obtained from the tests, subjects who scored at or above the seventy-fifth percentile of the Test Anxiety Questionnaire were contacted and interviewed as possible participants in this study.

Treatment of the Data

The statistical procedure used in the present investigation was Hotelling T^2 to analyze residual change scores on all measures, to test Hypotheses I, II, and III. When a significant T^2 was obtained (.05 level), simultaneous confidence intervals were used to test individual differences. In addition, a Fisher's t test was used to test Hypothesis IV.

Significance of the Study

The significance of anxiety as a mental health problem in education has been recognized for many years. Its significance is increasingly evident in college and university counseling centers today. The need for increased availability of services which provide methods and techniques to help students reduce excessive anxiety is apparent. To date,

only a limited amount of empirical data have dealt with specific innovations of treatment in groups.

A study designed to explore the effects of the generalization of reduction of test anxiety to the reduction of other forms of anxiety utilizing group systematic desensitization, will benefit professional personnel providing counseling services to college students.

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CHAPTER II

RELATED LITERATURE

The basic purpose of this study was to investigate the generalization of the effects of group systematic desensitization of test anxiety. This chapter reviews the research pertinent to the purpose of this study.

The Relationship Between Anxiety and Performance

The correlation between anxiety and performance has been the subject of a myriad of research efforts during the past two decades. Several classical studies emerged dealing with the relationship of anxiety and performance of such tasks as serial learning (9, 27), reaction time (28), classical conditioning (18), and paired-associates learning (19). The studies mentioned above generally concluded that the performance of relatively simple tasks, such as eyelid conditioning, were facilitated by high levels of anxiety. However, in complex tasks such as paired-associates learning, it was found that high anxiety was an inhibiting factor on performance.

Taylor and Spence (27) investigated the theoretical expectation that the performance of low anxious subjects would be superior to high anxious subjects in a competitive

learning situation. Subjects were selected from an introductory psychology course on the basis of scores on the Manifest Anxiety Scale. Twenty high-anxious subjects had scores ranging from twenty-five to thirty-seven, while the twenty low-anxious subjects had scores ranging from three to eleven on the same instrument. Each subjects was required to complete two consecutive errorless trials of learning twenty items on a Hull-type memory drum. The results were statistically significant (beyond the .05 level of confidence) and demonstrated that the high-anxious subjects made a significantly higher number of errors and required a larger number of trials to complete the criterion for learning (27).

Montague (9) studied the effect of anxiety on performance in a rote-serial learning situation in which the number and strength of competing responses varied on three lists. Undergraduate students were tested and selected on the basis of scores of the Manifest Anxiety Scale. The criterion for high anxiety was a score of thirty or above, while low-anxious students were selected on the basis of a score of nine or below. Results showed that the high-anxious subjects were inferior in performance to low-anxious subjects on the list in which the competing responses were highest. However, as the task became more simplified, the performance of the high-anxious subjects improved and eventually surpassed the low-anxious subjects on the task with the least competing

responses. The findings further substantiate the classical studies of Spence and associates.

Spence and Farber (18) made a study of conditioning and extinction as a function of anxiety. Subjects included in the study were sixty-four undergraduate students enrolled in an introductory psychology course at the State University of Iowa. The Taylor Manifest Anxiety Scale was used to distinguish high-anxiety and low-anxiety subjects for the classical conditioning study. Findings of the investigation gave further evidence that in a simple task such as eyelid conditioning, high-anxiety would increase the rate of response to a degree which was significantly higher (beyond the .05 level) than the rate of the low-anxiety group. Spence and Farber found significant differences in the performance level between the high-anxious and low-anxious groups during both conditioning and extinction.

Spence, Farber and McFann conducted two experiments using paired-associates learning tasks to further test the following hypothesis:

In general, the greater the number and strength of the competing, incorrect responses relative to the correct response, the more detrimental should a high drive be to performance level, at least in the early stages of learning (19,

It was hypothesized in experiment one that in a paired-associates learning task in which the competing response tendencies were minimal, the high-anxious subjects would be

superior to low-anxious subjects in learning stimulus-response pairs. The results showed that the high-anxious group made significantly fewer errors and required fewer trials to reach the learning criterion than did the low-anxious subjects.

In experiment two, it was hypothesized that in a paired-associates learning task in which a high amount of competition exists, high-anxious subjects should perform more poorly than low-anxious subjects. The findings of experiment two supported the hypothesis. High-anxious subjects required significantly more trials to reach the learning criterion.

Studies of the Relationship Between Anxiety and Academic Performance

Considering the plausibility that an academic environment would constitute a complex task situation, it would be expected that superabundant amounts of anxiety would have a debilitating effect on academic performance. Several definitive studies exist which have discovered negative correlations between scores on anxiety scales, and scales on various measures of academic performance.

General Anxiety and Performance

Spielberger et al. (23) have made it apparent that the college environment possesses a myriad of academic and social situations which would have a tendency to heighten present anxieties, or stimulate the introduction of new anxieties.

The authors further state that college students with high scores on the MAS have been found to have lower grades and a higher academic drop-out rate than low-anxious students of comparable ability (21, 22).

Spielberger studied the relationship between anxiety level and academic performance. The specific hypothesis was that high-anxious students would obtain poorer grades and be more likely to drop out due to academic failure than would low-anxious students. Subjects for the study included 288 male students enrolled in introductory psychology courses at Duke University. The Taylor Manifest Anxiety Scale was used to differentiate high-anxious subjects (raw scores of 19 or above) from low-anxious subjects (raw scores of 7 and below). The results of the study provided evidence of the debilitating effects of excessive anxiety on academic performance. High-anxious students in the middle ranges of ability had a higher percentage of academic failures and poorer grades than low-anxious students of comparable ability. Students classified as having low ability were found to have poor grades irrespective of their anxiety level (21).

In supplemental research by Spielberger, Weitz, and Denny (23), and Spielberger (), the authors stated that there was evidence that emotional problems have causative relationship to poor academic performance. Rather, emotional problems were found to have a correlational relationship with academic performance as a predisposing factor. The authors

suggested a prophylactic experience which would help students deal with inappropriate or maladaptive behavior at the beginning of the freshman year.

Although the Spielberger studies (20, 21, 22, 23) did not deal specifically with test anxiety, they did point out the anxiety-arousing aspects of the new college life (i.e., low social status, rejection by peers or family, academic failure, a pervasive anxiety of not succeeding) and their impact on academic performance.

Test Anxiety and Academic Performance

A negative correlation between scores on test anxiety scales and a myriad of measures of academic performance has been reported by several pertinent investigations.

Alpert and Haber (1) studied the relationship between scores on the Mandler-Sarason Test Anxiety Questionnaire and several indices of academic performance. Subjects consisted of 379 college students enrolled in introductory psychology courses at Stanford University. The results showed a negative correlation of $-.32$ (significant at the $.05$ level) between scores on the TAQ and the mid-term examination grade. These investigators also found a significant correlation of $-.24$ (significant at the $.05$ level) between the TAQ scores and grade-point averages. Alpert and Haber concluded that a specific anxiety scale such as the Test Anxiety Questionnaire was superior to a general anxiety scale due to its increased sensitivity.

Sarason (15) made a study of the relationships between test anxiety and eleven measures of intellectual performance. A sample of 738 college students enrolled in introductory psychology courses at the University of Washington were utilized in the present research. The eleven measures of achievement (high school grade-point averages) and aptitude (college entrance examination tests) were found to be negatively correlated with scores on a test-anxiety scale at a statistically significant level (.05). This evidence increased the support of the proposition that a negative relationship exists between test anxiety and academic performance.

Paul and Eriksen (13) designed an experiment to study the effects of anxiety on a "real life" examination. A random sample of 100 undergraduate students were selected from a large psychology class that had taken an hourly examination on the day of the experiment. In the evening of the same day, the subjects met in groups of approximately twenty to take an experimental examination over material on which they had been tested that morning. Each group met in informal surroundings such as coffee rooms or student lounges to reduce the effect of the classroom environment. The classroom teacher was substituted for by advanced graduate students who were instructed to minimize situational stress factors to the fullest extent possible. The results demonstrated that students tested in a classroom setting showed a correlation of $-.19$ (significant at the .05 level) between

scores on the Test Anxiety Questionnaire and scores on the classroom examination. When the same students were tested over the same materials in an environment designed to minimize anxiety, the correlation between test anxiety and performance on the experimental examination became statistically nonsignificant (-.08).

Spence and Farber (18) postulated two hypotheses relating to the relationship between motivation or drive, and scores on anxiety questionnaires. The chronic hypothesis states that highly anxious subjects will show higher motivation or drive than will low-anxious subjects in all situations, whether they are stressful or not. The second, known as the emotional reactivity hypothesis, states that high-anxious subjects will react with higher motivation or drive than low-anxious subjects only in stressful situations (20). The later hypothesis supports the finding of the Paul and Eriksen study, in which a nonsignificant relationship was found between performance and test anxiety in a reduced stress environment.

Interpersonal Anxiety and Performance

The complexity of the tasks of learning in college is compounded when anxiety pertaining to social or interpersonal survival is linked with academic survival. Subjective feelings of apprehension and tension relating to acceptance or rejection by significant people in the life of a student were found to interfere with performance in an academic setting (6, 7, 10, 11, 12, 14, 16, 20, 28).

Hedquist and Weingold (6) studied the effects of behavioral counseling on socially anxious college students. Subjects for this study were forty undergraduates enrolled in an introductory education course at Ohio State University. A modification of the S-R Inventory of Anxiousness, using the situational scales related to interpersonal anxiety, was used to identify highly anxious subjects. The criteria for success at the completion of the sessions was the number of verbal assertive responses made by the participants in social situations. A statistically significant difference (.05 level) was found between the experimental counseling group and the control group. One of the significant outcomes of the study was that the assertiveness of the students increased outside of the group. A reduction in interpersonal anxiety was reported in terms of increased verbal intercourse between participants and significant people in their college environment.

Paul (11) made a comparative analysis of three therapeutic treatments, including individual systematic desensitization, to test their respective abilities to reduce interpersonal anxiety manifested in public-speaking anxiety. A total of 74 undergraduates were obtained from a population of 710 students enrolled in a public-speaking course at the University of Illinois. The degree of severity of interpersonal anxiety was determined by self-report devices such as the Interpersonal Anxiety Scales from the C. P. Taylor

of Anxiousness (4), a behavioral checklist, and a physiological assessment of anxiety. The behavioral checklist included measures of overt manifestations of anxiety evidenced in quivering voice, paling, trembling knees, etc. The physiological assessments included the Palmar Sweat Index and a measure of pulse rate. The behavioral checklist and the physiological measures of anxiety were administered in an actual test speech situation.

Each of the subjects was assigned to one of the four treatments: (1) insight-oriented psychotherapy, (2) systematic desensitization, (3) attention-placebo, and (4) no-treatment classroom. A no-contact group served as the control group. All five of the counselors who administered the treatments were oriented toward insight psychotherapy, but were selected because of their professional ability to learn new techniques. Each of the five counselors was trained in the technique of systematic desensitization and dealt with three subjects in each of the treatment conditions.

Following the posttest of the indices of anxiety, the subjects were classified according to the number of indices in which significant anxiety reduction occurred. Subjects who demonstrated significant anxiety reduction on three indices were categorized as "much improved," significant reduction on two indices of anxiety as "improved," and a significant reduction on one index of anxiety as "slightly improved." Those who did not demonstrate a significant

reduction on any of the three indices were classified as "unimproved." The results are clarified in Table I.

TABLE I
PERCENTAGE OF CASES IN IMPROVEMENT CATEGORIES

Treatment	Unimproved	Slightly Improved	Improved	Much Improved
Desensitization			14%	86%
Insight	7%	47%	27%	20%
Attention-Placebo	20%	33%	47%	
Control	55%	28%	17%	

Source: G. L. Paul, Insight versus Desensitization in Psychotherapy, Palo Alto, California, Stanford University Press, 1966.

The ability to reduce interpersonal anxiety, operationally defined as public speaking anxiety, was accomplished with the greatest success by the technique of systematic desensitization.

Paul and Shannon (14), in a subsequent study to Paul (11), investigated the effectiveness of individual systematic desensitization combined with group discussion in the treatment of interpersonal anxiety. The criterion for success was a significant reduction in scores on self-report devices, including the Interpersonal Anxiety Scales of the S-R Inventory of Anxiousness, and a significant increase in grade-point average. Subjects included in the study consisted of fifty male undergraduate students enrolled in public speak-

the study show a statistically significant reduction (beyond the .05 level) in interpersonal anxiety as measured by the four specific scales on the S-R Inventory of Anxiousness (4) for the combined desensitization group. The authors also reported a significant increase in grade-point average in the combined desensitization group, while the control group showed a loss of nearly a full grade point. In addition, Paul and Shannon found the group to be an excellent setting in which to practice verbal interaction and thereby further reduce interpersonal or social anxiety. Subjective responses by the experimental subjects demonstrated a generalization of anxiety reactions in interpersonal situations outside the group.

Paul (12) investigated the possibility of relapse or symptom substitution in a two-year follow-up study of the results of Paul and Shannon (14). Subjects included those who had participated in the previous study in one of the treatment or control groups. The same self-report measures were used, including the Interpersonal Anxiety Scales of the S-R Inventory of Anxiousness. The overt manifestation of academic performance, in this case grade-point average, was also included. The results substantiated the earlier findings of Paul and Shannon (14) that individual systematic desensitization combined with group discussion was effective in reducing interpersonal anxiety. The reduction of anxiety was maintained over the two-year period, as measured by the

self-report devices. The criterion of academic success (GPA) was also maintained at a statistically significant level (.05). After two years of treatment, 90 percent of the experimental group were successful academically, versus only 40 percent of the control group. Paul reported there was no evidence of relapse in the desensitization groups. Further, generalized decreases in interpersonal anxiety outside of treatment occurred, which is opposite to symptom substitution expectations.

Studies of Group Systematic Desensitization

A dearth of research exists on the technique of group systematic desensitization. The research to date reinforces the credence of the technique in dealing with specific anxieties such as test anxiety.

Katahn, Strenger, and Cherry (8) studied the "widespread problem among college students," of test anxiety. In an effort to provide an effective and efficient treatment of test anxiety, the authors produced one of the earliest studies of group systematic desensitization. Participants in the study included forty-five test-anxious undergraduate students at Vanderbilt University. Fourteen subjects participated in the experimental group. The group meetings consisted of systematic desensitization to reduce test anxiety to a coping level, followed by counseling (suggestion and advice). A self-report measure of test-anxiety and an overt

measure of academic performance were evaluated prior to and immediately following treatment. The investigators concluded that the experimental treatment had been successful on the basis of a significant reduction in test-anxiety scores (.01 level) and a significant increase in GPA (.05 level). The control group failed to reach statistically significant differences on either measure. Increased evidence of success was reported by members in the experimental treatment in the form of reduction of physical symptoms related to anxiety (insomnia, skin rash, etc.), and an increased feeling of satisfaction with the academic environment.

Emery and Krumboltz (3) investigated the hypothesis that a standard hierarchy could be as effective as individualized hierarchies in the reduction of test anxiety. A group of 240 students were identified as "test-anxious" according to a test-anxiety scale at Stanford University. Fifty-four students were randomly selected and assigned to participate in one of the three following groups: (1) desensitization using a standard hierarchy, (2) desensitization using individualized hierarchies, (3) no-treatment control. The authors found that subjects in the desensitization groups rated themselves as significantly less anxious, both prior to and during examinations, than did subjects in the control group. There was no significant difference in the relative effectiveness between individualized and standard hierarchies.

Suinn (24) attempted to desensitize test anxiety in twelve undergraduate students, utilizing a combination of group and individual sessions. The treatment consisted of three group meetings in which the desensitization procedure was explained and hierarchies were constructed. The remaining five hourly sessions involved individual systematic desensitization. Subjects in the treatment group demonstrated a significant reduction in scores on two different scales of test anxiety compared to the no-treatment control group. In addition, Suinn reported that students experienced a decline in anxiety in other areas of life, although no specific examples were given.

Garlington and Colter (5) investigated the effectiveness of group systematic desensitization on sixteen highly test-anxious female undergraduate students. Subjects met twice a week for six weeks with each session lasting approximately thirty minutes. Posttests on a test-anxiety scale revealed that the treatment group scores differed significantly from the no-treatment control group at the .01 level of significance. Further, the investigation revealed that the treatment procedure which reduced test anxiety was reported by subjects to increase coping behavior in situations which were primarily of a social nature. The authors suggested further research to test the generalization of the reduction of one form of anxiety to other forms of anxiety, utilizing appropriate instruments.

Cohen (2) studied the effects of group interaction in group systematic desensitization of twenty-five undergraduates at Syracuse University. The groups met twice a week for six weeks. Upon completion of posttests, Cohen found that the reduction of test-anxiety scores for the experimental groups of interaction and non-interaction were significantly greater (.01 level) as compared to the no-contact control subjects. It was also found that the desensitization subjects that were encouraged to interact with other members demonstrated more test anxiety reduction than the subjects in the non-interaction group. The results were significant at the .01 level.

Taylor (25) studied the effects of a standardized plan of systematic desensitization in which all of the procedures were carried out in a group. The Test Anxiety Questionnaire was administered to thirty-two test-anxious undergraduate students enrolled in introductory psychology courses. Two experimental groups with a total of sixteen subjects participated in group systematic desensitization. Sessions were held twice weekly for four weeks, with each session lasting approximately forty minutes. The remainder of the subjects were divided into an attention-placebo group and a no-treatment control group. The results of the study showed that subjects participating in group systematic desensitization had significantly greater (.01 level) reduction in test-anxiety scores than either the placebo or control groups. The

author concluded that group systematic desensitization was effective in reducing test anxiety. Further, a recommendation was made to undertake additional research in order to determine the range of effects of group systematic desensitization. Taylor indicated that interpersonal anxiety should be the focus of new research.

A summation of the research that was reviewed in this chapter has demonstrated that systematic desensitization can be effective in the reduction of test anxiety. In addition, the investigations alluded to a generalization of the reduction of anxiety in situations that exist outside of treatment, although no specific criteria were examined. A study in which the generalization of the effects of group systematic desensitization of test anxiety is specifically measured would seem to have heuristic value.

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CHAPTER III

PROCEDURES OF THE STUDY

Selected subjects from introductory psychology classes at North Texas State University, Denton, Texas, were used for this study. The structure of this investigation was designed to study the generalization of anxiety reduction involved in the technique of group systematic desensitization. Appropriate instruments were utilized to measure the variables pertinent to this study. The appropriate statistical procedures were then applied to the data.

Description of the Sample

Three measurements of anxiety, including the College Form of the Test Anxiety Questionnaire, the S-R Inventory of Anxiousness, and the Taylor Manifest Anxiety Scale, were administered to approximately 704 students enrolled in 18 introductory psychology classes at North Texas State University. The Test Anxiety Questionnaire was scored first in order to determine the number of subjects who would qualify as test anxious. Students whose scores exceeded the seventy-fifth percentile (a score of 225 or higher) and who fell within the age range of eighteen to twenty years, qualified as potential subjects. The results of the procedure produced

a pool of forty-nine male and sixty-two female subjects with an average age of 18.49 years.

Students who qualified were randomly contacted and invited to participate in what was described as "a series of meetings which would help the participants reduce excessive anxiety in a test situation." In order to insure uniformity, a standard form was followed (see Appendix B). The interviews continued until thirty-six subjects verbalized a desire to participate in the sessions. Two subjects withdrew from the sessions due to what was described as "family illness at home," and "conflicts with social activities." The thirty-four remaining subjects consisted of sixteen males and eighteen females, with an average age of 18.56 years.

Subjects participating in the control group consisted of thirty-three males and forty-four females, with an average age of 18.46 years.

Selection of the Instruments

The instruments selected for use in the present study were designed to measure test anxiety, interpersonal anxiety, and general anxiety. In addition, a personal data sheet was included to aid in the selection of subjects according to the limitations of this study.

The instrument utilized to assess test anxiety was the College Form of the Test Anxiety Questionnaire, referred to as the TAQ (11). The College Form of the TAQ is a self-report

most anxiety is given a score of ten. A response to a question marked in a segment between the two extremes is scored according to the numerical value of that particular interval.

In order to score the questionnaires, a transparent overlay was constructed with a two-directional scale necessary to obtain a total score. Each individual item was scored and the summation of the scores produced a total score for the respective subject. The range of scores possible on the TAQ is a low of 35 to a high of 350. The median score for the 704 students tested at North Texas State University was 200. The score which fell at the seventy-fifth percentile for the same population was 225.

Mandler and Cowen (10) found the test-retest reliability coefficient to be .91 for the College Form of the Test Anxiety Questionnaire. A split-half reliability coefficient of .91 was reported by the same investigators.

Mandler and Sarason (11) made an investigation to establish evidence pertaining to the construct validity of the TAQ. Scores on the TAQ were obtained on a group of subjects. The same subjects were then rated by the experimenter on a five-point scale according to overt manifestations of anxiety in a testing situation. The experimenters had no knowledge of the respective TAQ scores at the time of the ratings. The authors reported a correlation coefficient of .59 (significant at the .001 level of confidence) between the TAQ scores and the ratings of behavior in a testing situation.

Interpersonal anxiety was assessed by the Interpersonal Anxiety Scales of the S-R Inventory of Anxiousness (7), referred to as the SRIA. The SRIA is a self-report device which measures the degree of intensity of each of fourteen modes of response to eleven situations. An example of one mode of response to one situation is illustrated as follows:

You are going into an interview for a very important job.

Get an uneasy feeling	1	2	3	4	5
	None				very strongly

For the purpose of further clarification, a more comprehensive example is provided in Appendix D, including the situational factors which measure interpersonal anxiety. For the purposes of scoring, the sum of response scores for the fourteen modes of response are computed for each situational factor used. The norm score results from the summation of the situational factor scores. The range of scores possible on the SRIA is from a low of 56 to a high of 280 on the interpersonal anxiety scales. The median score for the 704 students tested at North Texas State University was 137.

Endler et al. (7) reported a split-half reliability based on the norm score of the SRIA as .95. The same authors reported the reliability for the situational scores ranged from .62 to .90. The reliabilities from the fourteen modes of response ranged from .64 to .93.

The validity of the SRIA is reported by Endler and Hunt (4) and Paul (13) to exceed the validity of omnibus measures of anxiety due to the specification of situations in which anxiety occurs. These authors report validity coefficients for the SRIA to range between .60 and .80, while the validity coefficients for the omnibus measures of anxiety range from .20 to .25.

General anxiety was assessed in terms of scores on the Taylor Manifest Anxiety Scale, hereafter known as the MAS (16). The MAS is one of the most reputable tests of anxiety in existence as a result of the quality and quantity of research using it as a measuring device (2). The fifty-item MAS is composed of refined items on the MMPI which are classified as being indicators of general manifest anxiety.

Taylor (16) reported a test-retest reliability of .82 for the MAS over a five-month period. Bendig (1) reported an internal consistency reliability of .82 on the MAS.

The validity of the MAS is given credence by the fact that it is the most widely used measure of anxiety in existence (2). Hoyt and Magoon (8) attempted to provide specific evidence of the validity of the MAS. The authors obtained MAS scores on a group of college students and had counselors rate the same students' anxiety level without prior knowledge of MAS scores. A "reasonably high" validity for the MAS was reported by the authors (chi-square value beyond the .001 level).

The correlation coefficients between the TAQ and the other two instruments utilized in the present study were found in research to be significant. Endler *et al.* (7) reported a correlation coefficient of .66 between the TAQ and the SRIA. Raphelson (14) reported a correlation coefficient of .59 between the TAQ and the MAS.

In order to determine the effect of the presence or absence of group systematic desensitization in an actual test situation, an overt behavior criterion was utilized. The Psychology Departmental Final Examination served as a common measure of performance for both the experimental and control groups. The examination was constructed and administered for the first time during the fall semester of 1970. Construction of the examination was accomplished by having each of the instructors of the introductory psychology courses submit eighty questions from the eight chapters taught. In order to increase the possibility of an even distribution of questions from the textbook, ten questions per chapter were submitted. A resulting total of 160 multiple-choice questions (20 questions per chapter) were selected from all of the submitted questions as the most valid indicators of course knowledge.

To date, there are no published reliability and validity studies published concerning the Psychology Departmental Final Examination that was administered in the fall of 1970.

Procedures for Collecting the Data

The following procedures were followed in collecting the data necessary for the purposes of this study.

Instructors of the introductory psychology classes not participating in the programmed instruction experiment were contacted immediately prior to the beginning of classes. In a personal interview with each instructor, the study was briefly explained and permission to test students in their respective classes was sought. Every instructor contacted granted permission to use class time to test the students.

Actual testing of students occurred during the first two weeks of the fall semester of 1970. In order to insure uniformity in the administration of the tests, the same individual administered all pre- and posttests. All three instruments used to measure anxiety, including the College Form of the Test Anxiety Questionnaire, the Interpersonal scales of the S-R Inventory of Anxiousness, and the Taylor Manifest Anxiety Scale were administered at the same time. The required time to complete the three instruments did not exceed one hour.

In order to select the test-anxious students from the population tested, the Test Anxiety Questionnaire was scored first. The resultant scores in the upper quartile exceeded the raw score of 225. Students who scored above the seventy-fifth percentile were designated as test anxious and were randomly selected to be interviewed. Each student was

interviewed according to a standard format (see Appendix B) (15) and encouraged to ask any questions that he had at that time. Those students who expressed a desire to participate were given index cards to fill out with names, addresses, telephone numbers, and one-hour time blocks that were available for meeting in groups. The time schedule for the group meetings was arranged for the late afternoon (3:00 P.M. and 4:00 P.M. on Monday and Wednesday, and 3:40 P.M. on Tuesday and Thursday) in order to reduce interference with any other daily activities. A suitable location was found in the North Texas State University Counseling Center. Students were contacted and informed of the time and place of the first meeting until three groups of twelve each had been formed. Two subjects subsequently withdrew due to outside conflicts.

Subjects participating in the systematic desensitization groups consisted of sixteen males and eighteen females with an average of 18.56 years. All three groups met twice weekly for a total of ten sessions. Each session lasted approximately forty-five minutes. The first meeting consisted of an explanation of the rationalization of group systematic desensitization (see Appendix C) and an introduction to training in deep muscle relaxation. Meetings number two through four were devoted to a continuation of muscle relaxation training. The remaining sessions were spent in systematic desensitization to the fifteen items in the anxiety hierarchy.

The subjects that served as the control group consisted of thirty-three males and forty-four females with an average age of 18.46 years. All of the control subjects had scores above the seventy-fifth percentile of the population tested. None of the control subjects were informed that they were serving as members of a control group in an experimental investigation.

Following the completion of the systematic desensitization groups, all subjects in the experimental and control groups were administered the Test Anxiety Questionnaire, S-R Inventory of Anxiousness, and the Taylor Manifest Anxiety Scale, to determine the effects of the experimental treatment on the scores of the instruments.

As an additional criterion of outcome, the scores on the Psychology Departmental Final Examination were compared between treatment and control groups.

Procedures for Treating the Data

The following statistical procedures were utilized in the interpretation of the results of the present investigation:

In order to test Hypotheses I, II, and III, Hotelling's T^2 was used to analyze residual change scores on all of the measures. When a significant T^2 was obtained (.05 level), simultaneous confidence intervals were used to test individual differences (12).

In order to test Hypothesis IV, a Fisher's t test for the significance of the difference between the means of experimental and control groups on the Psychology Departmental Final Examination. The findings were accepted or rejected at the .05 level of significance.

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CHAPTER IV

ANALYSIS OF THE DATA

Results

The statistical technique of Hotelling T^2 was used to determine the differences in anxiety score reduction between two groups. The results of the significance of Hotelling T^2 are presented in Table II. The obtained F ratio was significant at the .05 level, indicating significant differences between the two groups in anxiety score reduction.

TABLE II
RESULTS OF HOTELLING T^2

T^2	F Ratio	df	P
41.45	13.56	3,107	0.001

In order to determine where individual differences existed within the three measures of anxiety, simultaneous confidence intervals were computed. The results of this procedure are presented in Table III.

The results of analyzing the simultaneous confidence intervals revealed that the desensitization group differed significantly (.05 level) from the control group on anxiety reduction scores measured by the TAQ and SRIA. The reduction

TABLE III
SUMMARY OF THE MEANS AND STANDARD DEVIATIONS OF
ANXIETY REDUCTION SCORES

Variables	Experimental Group		Control Group	
	Mean	S.D.	Mean	S.D.
TAQ	-20.807	28.774	9.187	19.535
SRIA	- 8.514	16.554	3.759	21.572
MAS	- 1.124	4.743	0.496	5.189

of anxiety scores as measured by the MAS was directional but failed to reach the .05 level of significance. (The percentile scores on the three measures of anxiety are found in Appendix D.)

As an overt behavioral criterion of anxiety reduction, Psychology Departmental Final Examination grades were compared between the desensitization and control groups. A Fisher's t test was used to compare the two groups on the basis of grades. The obtained F ratio was significant at the .01 level, indicating a significant difference existed between groups on the basis of examination grades. The results are presented in Table IV.

The desensitization group had a mean score of 85.56 as compared to the control group mean score of 77.49. The results were statistically significant (.01 level) and are graphically presented in Table V.

TABLE IV
SUMMARY OF ANALYSIS OF VARIANCE ON EXAMINATION GRADES

Source	SS	df	VE	F
Between Groups	1534.2266	1.	1534.2266	8.6105
Within Groups	19421.6289	109.	178.1801	
Total	20955.8555	110.		

TABLE V
A SUMMARY OF MEANS AND STANDARD DEVIATIONS ON
EXAMINATION SCORES

Group	No. of Subjects	Mean	S.D.
Desensitization	34	85.56	12.78
Control	77	77.49	13.59

Evaluation of the Hypotheses

It was stated in Hypothesis I that subjects participating in group systematic desensitization of test anxiety would show a significantly greater reduction of test anxiety than would subjects in the control group. The results of the Hotelling T^2 statistical analysis confirm Hypothesis I.

Hypothesis II stated that subjects participating in group systematic desensitization of test anxiety would show a significantly greater reduction of interpersonal anxiety than would subjects in the control group. The results of the Hotelling T^2 statistical analysis confirm Hypothesis II.

Hypothesis III stated that subjects participating in group systematic desensitization of test anxiety would show a significantly greater reduction of general anxiety than would subjects in the control group. The results of the Hotelling T^2 statistical analysis show a directional reduction in general anxiety. The level of statistical significance was not reached. Hypothesis III was not accepted.

Hypothesis IV stated that subjects participating in group systematic desensitization of test anxiety would score significantly higher on the Psychology Departmental Final Examination than would subjects participating in the control group. The results of the analysis of variance confirm Hypothesis IV.

Discussion

An analysis of the results of the present investigation has demonstrated that group systematic desensitization can be effective in the reduction of specific performance anxieties. A further general finding of the study was that systematic desensitization failed to reduce a pervasive or general anxiety to a significant degree. The combined findings have contributed to a more complete understanding of the limitations of the technique. A more detailed analysis of the results produced subjective as well as objective data.

Subjects that participated in the desensitization groups accomplished a significantly greater reduction in test

anxiety scores than did the control group. The median scores of the experimental group were reduced by fifty points, while the control group was virtually unchanged (Appendix D). In addition, the experimental group achieved significantly greater mean scores on the Psychology Departmental Final Examination than did the control group. The desensitization group had a mean score of 85.56, as compared to the control group mean score of 77.49.

The objective results lend credence to the effectiveness of the technique of group systematic desensitization. Another explanation for the differences between the experimental and control groups was hypothesized to be the intervening variable of motivation. Desensitization subjects demonstrated strong motivation to participate in the study from the time of the interview through posttesting. Individuals in the treatment groups were found to be exceedingly cooperative in being on time and actively participating during the sessions. Only two of the original thirty-six subjects withdrew from the experimental groups. The reasons for withdrawal were due to circumstances beyond the control of the subjects (i.e., family illness). Motivation to participate was further evidenced by the fact that the desensitization groups met in a room that was not air conditioned during relatively warm days without a loss in active participation. Future studies would profit from the use of a room in which the temperature could be regulated.

The differences between experimental and control group could be explained in terms of response modeling. Desensitization subjects served as behavioral models for each other. Each member of the group modeled the appropriate behaviors to the remaining members, with the counselor serving as the primary model. It was found that in the early stages of treatment, desensitization participants primarily focused attention on the counselor. As time progressed, the focus of the attention generalized to other members of the group until all of the participants served as models and reinforcers of behavior. Modeling behavior was dramatically demonstrated during the period of relaxation training. The initial reticence to recline on the mattresses was gradually overcome as each subject saw fellow members recline. Reinforcement for active participation between and among members was evident throughout the treatment process.

The focus of anxiety reduction, as designated by the subject matter of items in the hierarchy, pertained to testing situations. In order to gain a more comprehensive understanding of the degree to which systematic desensitization generalized, objective tests of interpersonal and general anxiety were administered along with the objective measurement of test anxiety. The results of the instruments demonstrated a significant reduction in interpersonal anxiety scores for the experimental group, even though the focus of

the hierarchy was test anxiety. At the same time, there were minor, but not significant, reductions in general anxiety (Appendix D).

The results provided objective evidence that group systematic desensitization most effectively reduced the type of anxiety that was the focus of the hierarchy of anxiety-producing situations. It was also found that another specific performance anxiety that has often been found to be co-existent could be reduced with effectiveness approaching the focal anxiety. The consequence of the failure of desensitization to reduce a general or pervasive anxiety to a significant degree provided additional evidence of the limitation of the technique. Group systematic desensitization was not found to be a panacea for all anxiety reduction. It was found to be effective in the reduction of specific performance anxieties that were the focus of the hierarchy or were closely related.

In addition to the objective evidence acquired in the present investigation, an attempt was made to gather subjective reactions from participants upon completion of the study. Responses provided by the subjects in the desensitization group were given in a session following the post-test administration. The impact of desensitization upon those who participated is illustrated in the following comments:

Subject A:

Not only did I feel better when taking a test, I also felt more relaxed and confident when I met my prospective mother-in-law. I also found that I have more control over my getting up-tight with my boyfriend.

Subject B:

My stomach doesn't bother me any more when I think about taking tests. Now I can look at teachers when they talk to me without getting butterflies in my stomach.

Subject C:

Sometimes I still get up-tight, especially when I feel that I am being tested, like at a fraternity function or in class. But, it's sure not like it used to be!

Subject D:

To me, the major test was eating in front of groups of people. I used to get so nervous my hand would shake, so I ended up eating food with a fork, so I could hold onto it. Since coming to this group I have learned to relax more around people. I can eat in the dorm or the U.B. now although I have to concentrate at times on controlling my anxiety.

Subject E:

While I was in this group I took an English Departmental and for the first time I didn't break out in a cold sweat or get muscle spasms. My grade was better than it has been in the past. . . . When I go home now I don't get so up-tight around my parents. It seems to help because when I keep my cool, they tend to keep theirs, and we can communicate better.

In summary, the results provided by objective measures of several types of anxiety have demonstrated that group systematic desensitization was effective in reducing specific performance anxieties. Test anxiety and interpersonal

anxiety were reduced using a test-anxiety hierarchy. The technique did not reduce, to a significant degree, the level of general anxiety. Subjective information gathered from the experimental subjects substantiated the results of the objective measures. The reduction of anxiety was found to generalize beyond the counseling center to actual encounters in the lives of the participants. In total, group systematic desensitization increased the level of coping behavior in testing situations as well as in interpersonal situations.

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CHAPTER V

SUMMARY, FINDINGS, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

A major problem that has emerged during the past two decades is the impact of anxiety on individuals. During this period it was found that excessive anxiety can have a debilitating effect on complex tasks. Further, the integration of a student into a college environment has been equated with learning a complex task. A myriad of therapeutic techniques have been utilized in order to help the individual more effectively cope with his environment. One of the most effective and widely used techniques in the reduction of anxiety has been systematic desensitization. An increased emphasis in recent years has led to the administration of systematic desensitization in groups. There remain unanswered many questions related to the effectiveness of the technique.

The problem of the present investigation was to determine the degree of generalization of group systematic desensitization of test anxiety to certain co-existent anxieties in college students. The primary purposes were to determine if desensitization of a specific anxiety would generalize to a co-existent specific anxiety, and in turn to

a general pervasive anxiety. In addition, a test of pragmatic significance of the technique was sought utilizing a final examination as an overt behavioral criterion.

Three measurements of anxiety, including the College Form of the Test Anxiety Questionnaire, the Interpersonal Anxiety Scales of the S-R Inventory of Anxiousness, and the Taylor Manifest Anxiety Scale, were administered to 704 undergraduate students enrolled in 18 introductory psychology classes at North Texas State University. The Test Anxiety Questionnaire was scored first in order to determine the number of subjects who would qualify as test anxious. Students whose scores exceeded the seventy-fifth percentile (a score of 225 or higher) and who fell within the age range of 18 to 20 years, qualified as potential subjects. The results of the procedure produced a sample of 111 students. Systematic desensitization was administered to two groups of 11 students and one group of 12. Subjects chose the group in which they participated according to meeting time. Each group met for 12 sessions, with each session lasting approximately 40 minutes. The remaining 77 students served as a non-treatment control group.

The statistical procedure used in the present investigation was Hotelling T^2 to analyze residual change scores on all measures to test Hypotheses I, II, and III. When a significant T^2 (.05 level) was obtained, simultaneous confidence intervals were used to test for individual

differences. In addition, a Fisher's t test was used to test Hypothesis IV.

Findings

Four hypotheses served as a basis for testing. Upon completion of data collection, scoring, and statistical treatment, an analysis of the data revealed the following findings:

1. The test-anxious subjects that participated in group systematic desensitization of test anxiety demonstrated a significantly greater reduction in test anxiety than the non-treatment control group.

2. The test-anxious subjects that participated in group systematic desensitization of test anxiety demonstrated a significantly greater reduction in interpersonal anxiety than the non-treatment control group.

3. The test-anxious subjects that participated in group systematic desensitization of test anxiety failed to reach a significant level of reduction in anxiety. The non-treatment control group did not show a significant reduction of anxiety.

4. The desensitization subjects demonstrated a significantly greater level of anxiety reduction than the non-treatment control group on the overt behavioral criterion of examination grades.

5. Subjects participating in the experimental group verbalized a generalized reduction in anxiety outside of the actual treatment situation.

Conclusions

The formulation of the following conclusions are the result of the analysis of the present investigation:

1. Group systematic desensitization is an effective technique for reducing test anxiety.

2. Group systematic desensitization is an effective technique for reducing specific performance anxieties, such as interpersonal anxiety.

3. Group systematic desensitization produces significantly greater reductions in specific performance anxieties than the mere passage of time.

4. Group systematic desensitization of a specific anxiety can generalize to certain situations outside of the treatment center.

5. Subjects involved in the desensitization technique have a tendency to experience increasing feelings of confidence and self-esteem as they learn to overcome anxiety.

6. Systematic desensitization administered in a group setting is effective as well as efficient.

7. Response modeling of members of group systematic desensitization seems to provide additional feedback to

individual members which would not be as evident in individual desensitization.

8. Group systematic desensitization should prove more effective using anxiety hierarchies that focus on specific anxieties, as opposed to a general pervasive anxiety.

Implications

The implications of the present investigation should lead to a more stringent evaluation of services provided in college counseling centers. Group systematic desensitization has been found to be an effective technique in reducing performance anxieties that often occur in an academic environment. An investigation by college counselors of the possibility of inclusion and integration of the technique with existing techniques should be of value to the respective centers.

A further implication would be to investigate the plausibility of using group systematic desensitization to reduce performance anxieties of different populations. There exists a need to study the effectiveness of the technique using secondary school students or graduate students. A significant follow-up to the present study would be to use desensitization to reduce doctoral qualifying examination anxiety.

One of the major implications of the present study is that the anxiety reduction generalizes from a specific

performance anxiety to a co-existent specific anxiety, but not to generalized anxiety. The implication is important in that it points out the need for great care in developing the proper anxiety hierarchy for the specific anxiety to be reduced. A need for future research to investigate the effectiveness of group systematic desensitization in reducing other specific anxieties should prove valuable.

The transference of anxiety reduction to situations outside of the therapeutic treatment room implies a need for the utilization of behavior indices to measure the actual changes that occur in behavior. In addition, there is a need to understand the relationship between the behavioral change due to anxiety reduction, and the changes in self-concept. Additional measures of increased coping behavior could be incorporated with measures of anxiety reduction.

A final implication of the present investigation seems to be that the anxieties which interfere with the coping behavior of individuals can be effectively dealt with using systematic desensitization. In addition, a prophylactic experience using desensitization in the repertoire of activities might prove beneficial to the participants. Freshman orientation could be more effective in helping the individual to cope with the new environment with the addition of techniques such as systematic desensitization.

The immediate value of the present investigation is that a group of college students were helped to deal with a problem that reduced their ability to function in an academic environment. It is possible that the debilitating effects of the problem might have increased if left unchecked, according to the subjective verbalizations of the experimental subjects. Instead, an effort was made to recognize the problem and to find the most suitable technique to combat the problem realistically. The major issue in the present study was excessive test anxiety. The technique utilized to reduce anxiety was group systematic desensitization. The number of students that were shown to possess excessive test anxiety was 111 out of a total of 704 students tested. In one university of approximately 16,000 students, it seems reasonable to assume that there are a number of other students whose needs for anxiety reduction have not been met. If the scope of the problem is enlarged to include schools, colleges, and universities nationwide, a dramatic implication arises. It is plausible, and indeed probable, that numerous students who possess academic ability are not achieving according to their potential.

A lack of counseling facilities, or a lack of awareness of the availability of needed services, or a combination of both seem to be impediments to more fulfilling experiences. The implied value of the present study is that it provides additional knowledge of the attributes and limitations of group systematic desensitization when used to reduce test

anxiety in college students. In addition, the study points out the need for counselors and counselor educators to become increasingly aware of effective therapeutic techniques that are not yet integrated into their respective institutions. The immediate value of the present study is to those subjects who participated in the desensitization group. The future value of the investigation will depend upon the manner in which innovative professional personnel choose to utilize the information provided.

Recommendations

The following recommendations are the result of the analysis of data collected in the present investigation:

1. Group systematic desensitization should be in the repertoire of therapeutic techniques of college and university counseling centers.
2. Certain students in freshman orientation programs might profit from the utilization of systematic desensitization as a prophylactic experience.
3. Additional research pertaining to specific anxieties, other than test or interpersonal anxieties, should be undertaken in order to increase understanding as to the utility of the technique.
4. Additional research needs to be undertaken in order to further understand the impact of member characteristics on group systematic desensitization.

5. Additional research should be undertaken in order to determine the effectiveness of behavior modification techniques, such as systematic desensitization, in a public school counseling center.

6. Finally, graduate programs which train professional counselors would profit from an inclusion of behavior modification techniques among existing techniques.

APPENDIX A

PROCEDURES FOR CONSTRUCTION OF ANXIETY HIERARCHY

NAME _____ GROUP _____

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

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

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

APPENDIX B

INTERVIEW FORMAT

You may remember having filled out a series of questionnaires at the beginning of the semester. These questionnaires had to do with how you felt when confronted with various testing situations, social situations, or feelings in general. More specifically, the important question is concerned with the degree of anxiety and its relationship to your behavior. These questionnaires have been evaluated and I feel that much understanding has been gained in regard to the way students feel about taking tests.

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

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

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

We would naturally like to give the first chance at participation in these small group meetings to persons like yourself who had scores on the questionnaire which were indicative of high test-anxiety. Several students have already responded very favorably toward the idea of participating in one of these groups, especially since the total amount of time (twelve forty-minute sessions) is not too great. Do you think that you might be interested in participating in this program designed to relieve or lower test

anxiety? We have tentatively planned to have these meetings sometime on Tuesdays and Thursdays or Mondays and Wednesdays, but we can be flexible about the time if some other time would be more convenient for the participants.

This is one of the fringe benefits of being a student here. The only thing we ask is that you make a commitment to the entire group of eight meetings and agree to do your utmost to attend each session.

APPENDIX C

RATIONALE FOR SYSTEMATIC DESENSITIZATION GROUP

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

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

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

Anxiety about taking an exam is not a single anxiety but rather many anxieties which are connected to many different kinds of behavior. But let me illustrate this by drawing an example of a different nature--fear of high places. Let's say that you are afraid of going up in tall buildings. Now, if this were the case, your fear would not begin when you got to the top of the building. It would begin before this point. You might first begin to become afraid when you walked toward the building; you might become more anxious as you entered the building; you might become a little bit more anxious as you entered the elevator, etc. The point is, there are many different behaviors involved in getting to the top of the building. Since this is the case, the first step in overcoming a fear of going to the top of the building might be overcoming the fear of walking into the building. Once you could do this without anxiety, you might then be able to walk toward the elevator without feeling anxious, etc.

We will attempt to break your test-anxiety down like this into smaller parts. Then, we will work on overcoming

each anxiety, starting with the smaller ones and moving up to the bigger ones. In a few minutes we will construct a device known as an anxiety hierarchy. This will be the list of basic anxieties which we will eliminate one at a time.

Now, a word about relaxation. We use relaxation to eliminate anxiety, and we do so for a simple reason--it is impossible to be anxious and relaxed at the same time. The part of your nervous system which is responsible for anxiety is also responsible for relaxation, and it cannot do both at the same time. I will teach you how to relax much more deeply and thoroughly than you have ever relaxed before. While you are relaxed, you will learn to substitute this relaxation for the test-anxiety which you normally experience.

APPENDIX D

SIGNIFICANT PERCENTILES OF SCORES ON THREE INDICES
OF ANXIETY

	Total (704)		Experimental (34)				Control (77)			
	Pretest		Pretest		Posttest		Pretest		Posttest	
Percentiles	50	75	50	75	50	75	50	75	50	75
Indices:										
TAQ	200	225	257	274	208	220	240	247	233	247
SRIA	137	158	153	171	142	151	149	173	149	172
MAS	21	27	29	35	24	32	25	30	23	28

Note: Raw scores above the significant percentile scores are labeled as "high anxiety."

APPENDIX E

QUESTIONNAIRE ON ATTITUDES TOWARD THREE KINDS OF
TESTING SITUATIONS

(COLLEGE FORM)

Name: _____
(Please print)

Age: _____ Sex: Male Female (circle)

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

- (a) the group intelligence or aptitude test, such as you took upon entrance to college,
- (b) the course examination,
- (c) the individual (face-to-face) type of intelligence test.

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

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

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

Each of you has taken a course examination and a group intelligence or aptitude test, but not all of you have taken

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

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

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

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

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

SECTION I.

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

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

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

Should be used less widely	Should be used as at present	Should be used more widely
----------------------------	------------------------------	----------------------------

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

Very willing	Uncertain	Not willing
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4. If you know that you are going to take a group intelligence test, how do you feel beforehand?

Feel very unconfident	Midpoint	Feel very confident
-----------------------	----------	---------------------

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

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

Do not interfere at all	Midpoint	Interfere a great deal
-------------------------	----------	------------------------

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

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

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

Heartbeat does not accelerate at all	Midpoint	Heartbeat noticeably accelerated
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9. Before taking a group intelligence test to what extent do you experience an accelerated heartbeat?

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

10. While taking a group intelligence test to what extent do you worry?

Worry a lot	Midpoint	Worry not at all
-------------	----------	------------------

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

Worry a lot	Midpoint	Worry not at all
-------------	----------	------------------

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

Perspire not at all	Midpoint	Perspire a lot
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13. Before taking a group intelligence test to what extent do you perspire?

Perspire not at all	Midpoint	Perspire a lot
---------------------	----------	----------------

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

Less often than other students	As often as other students	More often than other students
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15. To what extent do you feel that your performance on the college entrance tests was affected by your emotional feelings at the time?

Affected a great deal	Midpoint	Not affected at all
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SECTION II.

The following questions relate to your attitude toward individual intelligence tests and your experience with them. By individual intelligence tests we refer to tests which are administered to one individual at a time by an examiner. These tests contain different types of items and thus present a variety of tasks. These tasks can be both verbal and manipulative, i.e., verbal or written answers to questions or manipulations of objects such as is involved in puzzles, form boards, etc. Please try to remember how you have usually reacted toward these tests or how you would expect to react to them.

16. Have you ever taken any individual intelligence tests?

Yes No (Circle the appropriate answer)

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

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

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

Would not interfere with it at all	Midpoint	Would interfere a great deal
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18. If you know that you are going to take an individual intelligence test, how do you feel (or expect that you would feel) beforehand?

Would feel very unconfident	Midpoint	Would feel very confident
--------------------------------	----------	------------------------------

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

Would feel very confident	Midpoint	Would feel very unconfident
------------------------------	----------	--------------------------------

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

Would feel very unconfident	Midpoint	Would feel very confident
--------------------------------	----------	------------------------------

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

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

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

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

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

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

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

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

Worry a lot	Midpoint	Worry not at all
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25. Before taking an individual intelligence test to what extent do you (would you) worry?

Worry a lot	Midpoint	Worry not at all
-------------	----------	------------------

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

Would never perspire	Midpoint	Would perspire a lot
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27. Before taking an individual intelligence test to what extent do you (would you) perspire?

Would never perspire	Midpoint	Would perspire a lot
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28. In comparison to other students, how often do you (would you) think of ways of avoiding taking an individual intelligence test?

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

The following questions relate to your attitude toward and experience with course examinations. We refer to major examinations, such as mid-terms and finals, in all courses, not specifically in any one course. Try to represent your usual feelings and attitudes toward these examinations in general, not toward any specific examination you have taken.

We realize that the comparative ease or difficulty of a particular course and your attitude toward the subject matter of the course may influence your attitude toward the examinations; however, we would like you to try to express your feelings toward course examinations generally. Remember that your answers to these questions will not be available at any time, to any of your instructors or to any official of the institution.

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

Am not aware of it at all	Midpoint	Am very much aware of it
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30. When you are taking a course examination, to what extent do you feel that your emotional reactions interfere with or lower your performance?

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

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

Feel very unconfident	Midpoint	Feel very confident
--------------------------	----------	------------------------

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

Feel very unconfident	Midpoint	Feel very confident
--------------------------	----------	------------------------

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

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

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

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

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

Worry a lot	Midpoint	Worry not at all
-------------	----------	------------------

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

Worry a lot	Midpoint	Worry not at all
-------------	----------	------------------

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

Never perspire	Midpoint	Perspire a lot
----------------	----------	----------------

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

Never perspire	Midpoint	Perspire a lot
----------------	----------	----------------

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

Confident Midpoint Anxious

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

"You are getting up to give a speech before a large group."

Mark on the Answer Sheet one of the five alternative degrees of reaction or attitude for each of the following 14 items.

1.	Heart beats faster	1	2	3	4	5
	Not at all					Much faster
2.	Get an "uneasy feeling"	1	2	3	4	5
	None					Very strongly
3.	Emotions disrupt action	1	2	3	4	5
	Not at all					Very disruptive
4.	Feel exhilarated and thrilled	1	2	3	4	5
	Very much					Not at all
5.	Want to avoid situation	1	2	3	4	5
	Not at all					Very much
6.	Perspire	1	2	3	4	5
	Not at all					Perspire much
7.	Need to urinate frequently	1	2	3	4	5
	Not at all					Very frequently
8.	Enjoy the challenge	1	2	3	4	5
	Enjoy much					Not at all
9.	Mouth gets dry	1	2	3	4	5
	Not at all					Very dry
10.	Become immobilized	1	2	3	4	5
	Not at all					Completely
11.	Get full feeling in stomach	1	2	3	4	5
	None					Very full
12.	Seek experiences like this	1	2	3	4	5
	Very much					Not at all
13.	Have loose bowels	1	2	3	4	5
	None					Very much
14.	Experience nausea	1	2	3	4	5
	Not at all					Much nausea

"You are entering a competitive contest before spectators."

Mark on the Answer Sheet one of the five alternative degrees of reaction or attitude for each of the following 14 items.

1.	Heart beats faster	1	2	3	4	5
	Not at all					Much faster
2.	Get an "uneasy feeling"	1	2	3	4	5
	None					Very strongly
3.	Emotions disrupt action	1	2	3	4	5
	Not at all					Very disruptive
4.	Feel exhilarated and thrilled	1	2	3	4	5
	Very much					Not at all
5.	Want to avoid situation	1	2	3	4	5
	Not at all					Very much
6.	Perspire	1	2	3	4	5.
	Not at all					Perspire much
7.	Need to urinate frequently	1	2	3	4	5
	Not at all					Very frequently
8.	Enjoy the challenge	1	2	3	4	5
	Enjoy much					Not at all
9.	Mouth gets dry	1	2	3	4	5
	Not at all					Very dry
10.	Become immobilized	1	2	3	4	5
	Not at all					Completely
11.	Get full feeling in stomach	1	2	3	4	5
	None					Very full
12.	Seek experiences like this	1	2	3	4	5
	Very much					Not at all
13.	Have loose bowels	1	2	3	4	5
	None					Very much
14.	Experience nausea	1	2	3	4	5
	Not at all					Much nausea

"You are going into an interview for a very important job."

Mark on the Answer Sheet one of the five alternative degrees of reaction or attitude for each of the following 14 items.

1.	Heart beats faster	1	2	3	4	5
	Not at all					Much faster
2.	Get an "uneasy feeling"	1	2	3	4	5
	None					Very strongly
3.	Emotions disrupt action	1	2	3	4	5
	Not at all					Very disruptive
4.	Feel exhilarated and thrilled	1	2	3	4	5
	Very much					Not at all
5.	Want to avoid situation	1	2	3	4	5
	Not at all					Very much
6.	Perspire	1	2	3	4	5
	Not at all					Perspire much
7.	Need to urinate frequently	1	2	3	4	5
	Not at all					Very frequently
8.	Enjoy the challenge	1	2	3	4	5
	Enjoy much					Not at all
9.	Mouth gets dry	1	2	3	4	5
	Not at all					Very dry
10.	Become immobilized	1	2	3	4	5
	Not at all					Completely
11.	Get full feeling in stomach	1	2	3	4	5
	None					Very full
12.	Seek experiences like this	1	2	3	4	5
	Very much					Not at all
13.	Have loose bowels	1	2	3	4	5
	None					Very much
14.	Experience nausea	1	2	3	4	5
	Not at all					Much nausea

"You are going to meet a new date."

Mark on the Answer Sheet one of the five alternative degrees of reaction or attitude for each of the following 14 items.

1. Heart beats faster	1	2	3	4	5
Not at all					Much faster
2. Get an "uneasy feeling"	1	2	3	4	5
None					Very strongly
3. Emotions disrupt action	1	2	3	4	5
Not at all					Very disruptive
4. Feel exhilarated and thrilled	1	2	3	4	5
Very much					Not at all
5. Want to avoid situation	1	2	3	4	5
Not at all					Very much
6. Perspire	1	2	3	4	5
Not at all					Perspire much
7. Need to urinate frequently	1	2	3	4	5
Not at all					Very frequently
8. Enjoy the challenge	1	2	3	4	5
Enjoy much					Not at all
9. Mouth gets dry	1	2	3	4	5
Not at all					Very dry
10. Become immobilized	1	2	3	4	5
Not at all					Completely
11. Get full feeling in stomach	1	2	3	4	5
None					Very full
12. Seek experiences like this	1	2	3	4	5
Very much					Not at all
13. Have loose bowels	1	2	3	4	5
None					Very much
14. Experience nausea	1	2	3	4	5
Not at all					Much nausea

APPENDIX G

BIOGRAPHICAL INVENTORY

- _____ 1. I do not tire quickly.
- _____ 2. I am troubled by attacks of nausea.
- _____ 3. I believe I am no more nervous than most others.
- _____ 4. I have very few headaches.
- _____ 5. I work under a great deal of tension.
- _____ 6. I cannot keep my mind on one thing.
- _____ 7. I worry over money and business.
- _____ 8. I frequently notice my hand shakes when I try to do something.
- _____ 9. I blush no more often than others.
- _____ 10. I have diarrhea once a month or more.
- _____ 11. I worry quite a bit over possible misfortunes.
- _____ 12. I practically never blush.
- _____ 13. I am often afraid that I am going to blush.
- _____ 14. I have nightmares every few nights.
- _____ 15. My hands and feet are usually warm enough.
- _____ 16. I sweat very easily even on cool days.
- _____ 17. Sometimes when embarrassed, I break out in a sweat which annoys me greatly.
- _____ 18. I hardly ever notice my heart pounding and I am seldom short of breath.
- _____ 19. I feel hungry almost all the time.
- _____ 20. I am very seldom troubled by constipation.

- _____ 21. I have a great deal of stomach trouble.
- _____ 22. I have had periods in which I lost sleep over worry.
- _____ 23. My sleep is fitful and disturbed.
- _____ 24. I dream frequently about things that are best kept to myself.
- _____ 25. I am easily embarrassed.
- _____ 26. I am more sensitive than most other people.
- _____ 27. I frequently find myself worrying about something.
- _____ 28. I wish I could be as happy as others seem to be.
- _____ 29. I am usually calm and not easily upset.
- _____ 30. I cry easily.
- _____ 31. I feel anxiety about something or someone almost all the time.
- _____ 32. I am happy most of the time.
- _____ 33. It makes me nervous to have to wait.
- _____ 34. I have periods of such great restlessness that I cannot sit long in a chair.
- _____ 35. Sometimes I become so excited that I find it hard to get to sleep.
- _____ 36. I have sometimes felt that difficulties were piling up so high that I could not overcome them.
- _____ 37. I must admit that I have at times been worried beyond reason over something that really did not matter.
- _____ 38. I have very few fears compared to my friends.
- _____ 39. I have been afraid of things or people that I know could not hurt me.
- _____ 40. I certainly feel useless at times.
- _____ 41. I find it hard to keep my mind on a task or job.

- _____ 42. I am usually self-conscious.
- _____ 43. I am inclined to take things hard.
- _____ 44. I am a shigh-strung person.
- _____ 45. Life is a strain for me much of the time.
- _____ 46. At times I think I am no good at all.
- _____ 47. I am certainly lacking in self-confidence.
- _____ 48. I sometimes feel that I am about to go to pieces.
- _____ 49. I shrink from facing a crisis or difficulty.
- _____ 50. I am entirely self-confident.

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