THE EFFECTS OF SYSTEMATIC DESENSITIZATION ON TEST ANXIETY, GENERAL ANXIETY, AND ATTITUDE TOWARD SCHOOL AMONG FIFTH-GR ADE PUPILS

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

By

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The problem of this study was to investigate the effectiveness of systematic desensitization on test anxiety, general anxiety, and attitude toward school among fifth-grade elementary-school children.

Two fifth-grade classes, organized on the basis of heterogeneous grouping were selected to participate in this study. They were then randomly assigned to either serve as the experimental group or as the control group. Pre-post tests were administered to both the experimental and the control groups. Only the experimental group received desensitization.

The experimental group received eight one-hour sessions of desensitization, twice weekly, for a four-week period. Prior to the desensitization sessions, the "Test Anxiety Scale for Children," the "General Anxiety Scale for Children," and the Attitude Toward School Scale" were administered to both the experimental and control groups. The Short Form Test of Academic Aptitude, Level 3 was administered to both groups by the school personnel prior to the study. The experimenter spent a session with the experimental group prior
to the desensitization sessions, in the training of the group in relaxation, visualization, and in the construction of an anxiety hierarchy. A rationale for systematic desensitization was presented by the therapist to the experimental group, while the control group was simply instructed that they would be participating in a study.

The first session of systematic desensitization consisted of relaxation, visualization of a relaxing scene, and the presentation of the lowest anxiety-producing stimulus on the hierarchy. This procedure was repeated until a decrease in anxiety was experienced by the group with the presentation of the stimulus. The next higher item on the hierarchy was then presented. As anxiety was reduced upon the presentation of each item, the next higher item was presented, until the most anxiety-producing item was presented with a decrement in anxiety experienced by the group. Following eight one-hour sessions of desensitization, posttests of the "Test Anxiety Scale for Children," "General Anxiety Scale for Children," and "Attitude Toward School Scale" were administered to both the experimental group and the control group.

The analysis of the results failed to support the major hypothesis that there would be significant mean difference between the systematic desensitization group and the control group on the "Test Anxiety Scale for Children," the "General Anxiety Scale for Children," and the "Attitude Toward School Scale"
Scale following the desensitization sessions. The hypothesis that there would be a positive correlation between verbal ability scores on the Short Form Test of Academic Aptitude, Level 3 was also rejected after the analysis of the data. There were, however, indications that group systematic desensitization may be a useful technique in the reduction of test anxiety among elementary school children.
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CHAPTER I

INTRODUCTION

Systematic desensitization, a method of treating phobias and anxieties, was developed by Joseph Wolpe (14) in 1958. Since its development, it has been studied by many investigators, who used varied populations with various phobias and anxieties. However, most of the studies in the past have dealt with college populations, and few investigators have focused their studies on elementary school children. The present study is concerned with the application of systematic desensitization to test anxiety, or fear of examinations, as expressed by fifth-grade elementary school children.

It has been hypothesized by Emery and Krumboltz (4) that the child may have become anxious about taking examinations as a result of being punished by his parents, either directly or indirectly, whenever he brought a grade home that was lower than the grade expected by his parents. The repeated association of punishment with examinations will produce an increase in anxiety whenever the child encounters events associated with an examination.

Dreikurs (3) postulates that the child, after having experienced a series of previous embarrassing failures, may be unwilling to attempt a new task for fear of failure.
Desensitization may remove some of this fear and give the child the courage to attempt unfamiliar tasks.

According to Suinn (8), many capable students are prevented from performing up to their capacity by anxiety over examinations. Unfortunately, their competence is often judged by their performance on written examinations.

Wine has stated that

The low test anxious person is focused on task relevant variables while performing tasks. The highly test anxious subject is internally focused on self evaluative, self deprecatory thinking, and perceptions of his autonomic responses. Since the different tasks on which the test anxious person does poorly requires full attention for adequate performance, he cannot perform adequately while dividing his attention between internal cues and task cues (13).

Osterhouse (6) reported in his study of the effectiveness of systematic desensitization and training in study skills that students who were exposed to systematic desensitization received higher scores on an examination than the students in his study who received training in study skills. Garlington and Cotler (5) reported that changes in test anxiety were not reflected in better performance on course examinations or improvement in final grades among the college students in their study of the reduction of test anxiety by systematic desensitization.

Suinn (9) studied the effects of systematic desensitization on the test anxiety level of individuals and of groups, and he reported that the effects of treating test anxiety
appeared to generalize to the reduction of other anxieties and fears of his clients. The treated students in his studies experienced a reduction in test anxiety, as well as a decline in overall fears, which suggested that the effects of systematic desensitization generalized to other areas in the lives of the students.

Cottingham (2) stated that the self-image of the child is in the formative stage in his elementary school years, and that the nature of his experiences is highly significant. He suggested that education provide an "experiential setting, which will maximize personal growth and strength as a requisite for learning power and imagination to interact comfortably with society" (2, p. 113). One of the primary concerns of education, according to Cottingham (2), is to help children respond successfully to their environmental demands by releasing the individual's potential to interact freely with the knowledge and experience gained from his environment. A reduction in test anxiety and general anxiety, accompanied by a more positive attitude toward school, may provide the freedom for the child to interact openly with environment, the freedom to use and expand his knowledge, and the freedom to release and enhance his native potential for reacting to knowledge and experiences.
Statement of the Problem

The problem with which this study was concerned was the reduction of test anxiety and improvement of attitude toward school among elementary school children.

Purpose of the Study

The purpose of this study was to determine whether this method of systematic desensitization would be effective in reducing test anxiety and improving school attitude in a group of elementary school children.

Hypotheses

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

I. At the end of the desensitization period, the experimental group will exhibit significantly lower test anxiety (as evidenced by mean scores on the "Test Anxiety Scale for Children") than will the control group.

II. At the end of the desensitization period, the experimental group will exhibit significantly lower general anxiety (as evidenced by mean scores on the "General Anxiety Scale for Children") than will the control group.

III. At the end of the desensitization period, the experimental group will exhibit significantly more positive attitudes toward school (as evidenced by mean scores on the "Attitude Toward School Scale") than will the control group.
IV. There will be a positive correlation between verbal ability (as evidenced by Language I.Q. scores of the Short Form Test of Academic Aptitude), pretest-posttest differences on the "General Anxiety Scale for Children," "Test Anxiety Scale for Children," and the "Attitude Toward School Scale" for both the experimental and control groups.

Definition of Terms

Following are definitions of key terms used in this dissertation:

1. Systematic desensitization—a method of treating test anxiety. This technique is based on the principle of reciprocal inhibition, which states that no two antagonistic responses can occur within an organism at the same time. Relaxation is antagonistic to anxiety, and the goal of systematic desensitization is to superimpose relaxation to take the place of anxiety.

2. Anxiety—anxiety and fear are used interchangeably in this study, and denote the same phenomena of the experiencing of unpleasantness, feelings of bodily tension, and feelings of uneasiness.

3. Test anxiety—undue concern about written examinations, about being wrong when called upon to perform at the chalkboard, or to recite before the class, about not understanding directions, and about not knowing what is expected of oneself.
4. Anxiety hierarchy—an anxiety hierarchy, according to Wolpe, is "a list of stimuli on a common theme, ranked in descending order according to the amount of anxiety they evoke" (14, p. 107).

5. Verbal ability—the ability to use language, as measured by the language portion of the Short Form Test of Academic Aptitude, which is composed of items which are primarily verbal in nature.

Basic Assumptions

The "Test Anxiety Scale for Children," "General Anxiety Scale for Children," "Attitude Toward School Scale," and Short Form Test of Academic Aptitude are self-report instruments. As is the case with self-report instruments, the honesty and cooperation of the subjects are necessary assumptions. It is assumed, also, that the instruments used are sufficiently valid and reliable.

The teachers of the two classes involved in this investigation have stated that the two groups have little contact with each other. It is therefore assumed that interaction between the groups is unlikely to affect the results of this study.

Limitations of the Study

This study was limited to those pupils in two heterogeneous fifth-grade classes in an elementary school. It was further limited by the size of the sample (the number of
pupils in the two classes were thirty-two and twenty-seven, respectively), the limited geographical area, and the limited socioeconomic status of lower- to middle-class pupils. Caution should be utilized in assuming generalizations to samples drawn from dissimilar populations.


CHAPTER II

RELATED RESEARCH

Background and Significance

The method of systematic desensitization, as a technique in the treatment of phobic and anxiety disorders, was first published by Joseph Wolpe in 1958 in his book Psychotherapy by Reciprocal Inhibition (18). Since that time, there has been a steady growth of interest in systematic desensitization, resulting in many studies and investigations.

Watson (17) was the first to challenge the belief that children were instinctively fearful of furry animals, and put his idea to a scientific test. Four- and five-month-old hospital-reared babies, who had not been exposed to emotional stimuli normally found in homes, were observed, and their responses recorded when they were exposed to a lively black cat, a rabbit, and Airedale dogs. The children manifested no fear responses when exposed to the furry animals, but instead reached out to touch the animals. Watson concluded that the stimuli prior to learning are limited in eliciting emotions.

Watson (17) also demonstrated how children learn to fear previously neutral objects which become associated with unpleasant experiences. Eleven-month-old Albert was shown
to have fear of a white rat. As the child reached for a white rat, a loud noise was produced behind the child's head. After the noise had been presented in combination with the animal several times, Albert exhibited startle responses. The noise was then removed, and the animal presented to Albert. The child cried and crawled away from the white rat. The fear response was conditioned to appear following a neutral stimulus. Watson then demonstrated that stimulus generalization had occurred, as Albert exhibited fear responses to objects similar to the white rat.

Jones (5) was the first to use counterconditioning in the treatment of conditioned phobias. She used feeding as the counteracting response to overcome the neurotic fears of a child named Peter. The child was not able to eat and feel fearful simultaneously. As food was placed before the child, the feared object approached the subject in gradual proximity, and the anxiety level of the child was reduced. Thus was demonstrated the principle of reciprocal inhibition. According to Wolpe, "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 these stimuli and the anxiety responses will be weakened" (18, p. 15).

Wolpe (18) developed the technique of desensitization in the laboratory, producing neurosis in cats by administering electrical shock to them in their cages. Long after
shock was discontinued, the animals could not be tempted to eat food in their cages. They were extremely resistant to any decrease in the level of their anxiety responses as long as they remained in their cages. When removed to other environments, a decrease in the anxiety level occurred, and food was accepted in inverse proportion to the resemblance of the new environment to the original cage. The animals were offered food as they were placed in rooms that successively resembled the original cage, and eating behavior was eventually restored in the experimental cage itself, as all signs of anxiety were eliminated. This investigation led to the investigation of systematic desensitization of humans.

It was found that feeding of humans could be used to counteract weak anxiety responses in humans, as in cats. Since eating food was not always the most desirable response for humans, Wolpe (18) found that the effects of deep relaxation were incompatible with the effects characteristic of anxiety, as measured by skin resistance, pulse rates, and respiration rates. Once Wolpe's subjects were completely relaxed, it was possible to present a weak anxiety-producing stimulus without the arousal of anxiety. Subsequently, as stronger anxiety-producing stimuli were presented to his subjects, they produced less anxiety than they would have produced before the presentation of the first weak stimulus. Successive presentations of the stimuli were found to further reduce the amount of anxiety. Stronger and stronger stimuli
were thus presented to the subjects until there was a decrease of anxiety with the presentation of the strongest anxiety-arousal stimulus.

The method of systematic desensitization (18) consists of three separate sets of operations. The subject is first trained in Jacobson's (4) method of deep-muscle relaxation. Next, an anxiety hierarchy is constructed, followed by systematic desensitization, or the "counterposing of relaxation and anxiety-provoking stimuli from the hierarchies" (18, p. 100).

The essential feature of the Jacobson (4) method of relaxation is the reduction of "residual tension." According to Jacobson (4), residual tension is a fine tonic contraction along with slight movements or reflexes. An individual may be in a relaxed position, but if he has not been trained in progressive relaxation, the relaxation will not be complete.

Jacobson's method consists of contraction of muscle groups, followed by the gradual relaxation of muscle groups. As the individual relaxes the muscles of his right arm, for example, he is instructed to concentrate on the tenseness of these muscles, and to relax the muscles gradually. When the untrained individual indicates that these muscles are relaxed, residual tension is then explained to him, and he is instructed to relax this muscle group further until every muscle fiber is free of tension (4).
There is no established sequence for training the various muscle groups in relaxation, but Wolpe (18) recommends that a systematic sequence be adopted. Wolpe (18) begins the relaxation procedure with the groups of muscles in the arms for demonstration purposes, and then proceeds to the head region. He states that most of the anxiety-inhibiting effects are manifested by relaxation of the muscle groups of the head (18).

The next step in the procedure of systematic desensitization is the training in visualization. Some subjects are able to visualize scenes more clearly than others, and Wolpe (18) presents scenes of relaxation for his subjects to visualize. The scene that he utilizes most frequently for this purpose is the following: "Imagine that on a calm summer's day you lie on your back on a soft lawn and watch the clouds move slowly overhead. Notice especially the brilliant edges of the clouds" (18, p. 125).

The construction of the anxiety hierarchy begins at the same time as the relaxation training, and is subject to change at any time during the treatment. Hierarchies are classified into themes, and the hierarchy theme of this study is that of test anxiety. Wolpe and Lange (20) asked the subjects in their studies to list all situations, thoughts, and feelings that they found distressing in any way. With this information the therapists constructed the
anxiety hierarchy from the least to the most anxiety-producing stimuli.

Once a weak stimulus scene ceased to arouse anxiety in the subjects, the next stronger stimulus scene was presented, and this stimulus scene evoked less anxiety than it would have done previous to the presentation of the weaker scene. Successive presentations of stronger stimuli scenes reduced the anxiety experienced by the subjects until the final or strongest stimulus scene was presented, with a decrement in anxiety. The scenes were presented in the sequence of hierarchy. The duration of the presentation of each scene was the length of time required for the individual to experience a decrease of anxiety.

Wolpe (18) developed the method of systematic desensitization with individuals. However, several investigators have demonstrated the effectiveness of systematic desensitization in the reduction of specific anxieties or phobias with groups.

Suinn (14) found the effects of the combination of group and individual systematic-desensitization sessions to be successful in the reduction of test anxiety, as reported by the college students in his study. As a result of this study, Suinn reported also that the group participating in the systematic-desensitization sessions experienced a reduction in other fears.
In 1970, Suinn studied the effects of systematic desensitization with accelerated, massed desensitization, utilizing two short-term desensitization approaches. He found that both groups showed statistically significant improvements in the reduction of test anxiety.

Emery and Krumboltz (1) designed a study to test the efficacy of reducing test anxiety in college students by using group systematic desensitization. One group of subjects participated in systematic-desensitization sessions using a standard hierarchy, whereas the second group participated in group systematic-desensitization sessions using individual hierarchies. Both groups showed a statistically significant decrease in test anxiety as compared with a control group.

In Wolpe's (19) work with individuals, he reported that the number of desensitization sessions required may vary from six to over one hundred, with a mean number of sessions for each hierarchy to have been about ten. The usual duration of desensitization sessions varied from fifteen to thirty minutes. Neither the spacing of sessions, nor whether the sessions were massed or widely dispersed, was stated to have effected the results of systematic desensitization (19).

Ihli and Garlington (3) found that group desensitization took longer to reduce test anxiety than individual desensitization. The subjects in their study received two
thirty-minute sessions of training in visualization. These sessions were followed by sessions of desensitization. The average number of thirty-minute systematic-desensitization sessions required to reduce test anxiety among individuals receiving individualized desensitization was 6.2. An average of 7.4 thirty-minute systematic-desensitization sessions was required to reduce test anxiety among the subjects who received group desensitization.

Suinn (13) has experimented with short-term approaches totaling two hours and four hours of desensitization sessions for the reduction of test anxiety. He reported statistically significant reductions in test anxiety to have occurred among both groups.

According to Hilgard and Marquis (2), there is a multiplicative relationship between drive and habit strength. Anxiety, as a drive, contributes to the total activational level of the individual when habit strength and drive are multiplied. Thus, anxiety should facilitate learning situations where only one response is elicited. Hilgard and Marquis (2) theorize that in the learning of complex situations, the effect of the increased motivational level will depend on the nature of the dominant habit, and whether the response corresponding to this habit is correct or incorrect. If the response is correct, the increased anxiety should facilitate the performance. If the response is not correct, the increase in anxiety should interfere with performance.
However, studies more typically find high-anxiety subjects to be inferior on complex tasks, regardless of the strengths of the right or wrong tendencies, suggesting that high levels of anxiety evoke interfering responses in complex learning situations.

A study by Spence (10) to determine the relation of anxiety level to performance in competitive and non-competitive paired-associates learning revealed that highly anxious subjects scored lower than low-anxious subjects on performance in complex learning situations. The experimenters first tested the prediction that the performance of the high-anxiety subjects would be superior to the performance of the low-anxiety subjects in noncompetitive verbal learning situations. A paired-associates list was presented in which there was a minimum of competition among the paired words. The highly anxious subjects required a significantly smaller number of trials and errors than did the low-anxiety subjects.

The second part of this experiment involved a paired-associates learning task consisting of lists of words that had high association values. In this list, learning involved competing-response tendencies, and the hypothesis that the highly anxious subjects would perform more poorly than the low-anxiety subjects was confirmed.

Spielberger (11) studied the relationship between anxiety and academic performance among volunteer college
students. He found that the academic performance of highly anxious freshmen involved in his study showed significantly greater grade-point average improvement after participating in group counseling than that of the highly anxious control group, who did not participate in group counseling.

Katahn, Strenger, and Cherry (6) studied the effects of a combination of group counseling and systematic desensitization on highly test-anxious college students. Compared with volunteer and non-volunteer controls, the grade-point average of the experimental group showed a significant increase, and Test Anxiety Scale scores showed a significant decrease after completion of the program.

Children in grades two through five were studied by Waite, Sarason, Lighthall, and Davidson (16) to determine whether high-anxiety children would perform differently than low-anxiety children in an experimental learning situation. These experimenters also tested the effects of differential instructions (success, failure, and neutral) on the highly-anxious and low-anxious children. Twenty-four pairs of children were selected by matching low-anxiety subjects with high-anxiety subjects in terms of grade, sex, and I.Q. scores. Three such pairs were obtained for each grade-sex group, and one of these pairs was assigned to each of three instruction groups. Paired-associates learning tasks were presented to the three experimental groups and each group received either neutral, success, or failure instructions.
The results showed no difference on performance due to the instructions, but the performance of the low-anxiety group was significantly superior to that of the high-anxiety group on the learning task.
CHAPTER BIBLIOGRAPHY


CHAPTER III

PROCEDURES AND DESCRIPTION OF THE INSTRUMENTS

Source and Selection of Subjects

Two fifth-grade classes, organized on the basis of heterogeneous grouping, were involved in this study. The pupils were randomly assigned to these classes by the principal of the elementary school prior to the fall semester. The children in these two classes were Caucasian members of a low- to middle-class socioeconomic community.

The two groups were designated as "Group A" and Group "B" prior to the study, and the group selected to serve as the experimental group was determined by blindly drawing the letter "A" or "B" from a box containing the letters "A" and "B." The letter "A" was drawn, and "Group A" was designated to serve as the experimental group and "Group B" was designated to serve as the control group. Table I illustrates the characteristics of the two groups.

TABLE I

MEAN C.A. AND LANGUAGE I.Q. FOR GROUP A AND GROUP B

<table>
<thead>
<tr>
<th></th>
<th>Mean C.A.</th>
<th>Girls N</th>
<th>Boys N</th>
<th>Total N</th>
<th>Mean Language I.Q.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A</td>
<td>10-9</td>
<td>16</td>
<td>16</td>
<td>32</td>
<td>94</td>
</tr>
<tr>
<td>Group B</td>
<td>10-7</td>
<td>13</td>
<td>14</td>
<td>27</td>
<td>96</td>
</tr>
</tbody>
</table>
Procedures

This study involved eleven group sessions, each of approximately one hour duration. The sessions were held twice weekly, on Monday and Wednesday afternoons, in the regular classrooms. The control-group members simply were instructed that they would be participants in an experimental study, while the experimental group was given the explanation (adapted from Paul (3)) which follows:

The feelings that you experience as a result of your previous test situations often lead to feelings of fear and tenseness that are inappropriate to new situations. As long as you can remember how you have felt in these situations, it is possible to work with your feelings by having you imagine yourself in the situations.

The technique we will be using is one called systematic desensitization. This technique consists of relaxation and imagining scenes in order to reduce your fears of test situations. The advantage of relaxation is that the muscle systems in your body cannot be both tense and relaxed at the same time; therefore, once you have learned the relaxation technique, it can be used to counter the fear and tenseness you experience in the test situations.

First, we will make a list of the situations in which you become progressively more fearful, building a list from the least fearful to the most fearful situation regarding tests. Then I will teach you the technique of relaxation. After you are more relaxed than ever before, you will imagine situations from the list of fears. As you imagine the situations which normally make you tense and fearful, while you are deeply relaxed, the situations are gradually desensitized until they no longer make you tense and afraid. We start with the situations which bother you the least, and gradually work up to those which bother you the most.

Following the above explanation, the pretests of the "Test Anxiety Scale for Children," "General Anxiety Scale
"Attitude Toward School Scale" (hereafter referred to as the TASC, GASC, and ATSS) were administered to both the experimental and the control groups during the first session. On the second session, the experimental group was trained in relaxation and visualization, and a test-anxiety hierarchy was constructed by the group and the experimenter.

In training the subjects to relax, the experimenter first instructed them to grip the front edge of their desks, and to observe the sensations in their hands and arms. Next, they were instructed to relax their grip on the desks, and to continue to relax the muscles of their hands and arms for about ten minutes after they ceased to feel tension. The instructions were similar for the muscle group of the forehead, tongue and pharynx, eyes, neck, shoulder, back, abdomen, legs, and feet. The subjects were directed to tense each group of muscles, and then to continue to relax each group of muscles, until every muscle fiber was free of tension.

When it was observed by the experimenter that the subjects appeared to be in a relaxed state, they were presented with a description of a calm, relaxing scene, and instructed to clearly visualize the scene presented. Several of the subjects expressed a preference to visualize relaxing scenes other than the scene presented, and this was permitted by the experimenter. The experimenter presented a scene of lying on the beach on a warm, sunny day, watching the clouds
in the sky. Several of the subjects preferred to visualize scenes of floating on a raft, or of sitting in a comfortable chair in their living room at home.

A test-anxiety hierarchy then was constructed by the subjects and the experimenter. An anxiety hierarchy is a list of stimulus situations to which the subjects react with graded amounts of anxiety. The most disturbing item is placed at the top of the list, and the least disturbing item is placed at the bottom of the list (7). The following is the test-anxiety hierarchy:

1. Taking report cards home to be signed by parents.
2. Taking a test paper home to show to parents.
3. The teacher writing your test grade in her book.
4. The collecting of test papers.
5. The time is up.
6. Noticing that the time is almost up and you are only half finished with a test.
7. Being stuck on a question you cannot answer.
8. Being in the middle of a test.
9. Starting a test.
10. A test is being passed out and you receive a copy of the test questions.
11. The teacher announces a time limit on a test.
12. The teacher instructs the class to get ready for a test.
13. The teacher announces that there will be a test.

The third through tenth sessions consisted of relaxation and systematic desensitization related to the items of the hierarchy, beginning with the least anxiety-evoking item. Item thirteen was presented after the subjects had relaxed. The presentation of this item evoked anxiety reactions from the subjects, and it was apparent that it would be necessary to add weaker anxiety-evoking stimuli to the hierarchy. The following three items were added to the list of stimuli:

14. Walking into the classroom.
15. Walking or riding to school.
16. Getting ready to go to school in the morning.

Items sixteen and fifteen were presented on the third sessions. The procedure followed during sessions four through ten was relaxation and visualization of the relaxing scene, followed by the next two higher items on the hierarchy, until each item had been presented several times.

The posttests of the TASC, GASC, and ATSS were administered to the experimental group and to the control group on the eleventh session.

Description of the Instruments

The "Test Anxiety Scale for Children" (TASC) (5), "The General Anxiety Scale for Children" (GASC) (5), and the "Attitude Toward School Scale" (ATSS) (1) were the instruments used in this study. These scales are research
instruments and have not been published. The Language section of the Short Form Test of Academic Aptitude (SFTAA), Level 3, derived from California Test of Mental Maturity Series (6), was also employed in this study.

The TASC and the GASC were developed by Sarason, Davidson, Lighthall, and Waite at Yale University (4). The TASC is an instrument designed to measure attitudes toward, and experiences in, test and test-like situations. The GASC is an instrument designed to measure attitudes toward, and experiences in, general situations. The TASC consists of thirty items to be answered "yes" or "no," and the GASC consists of forty-five items to be answered "yes" or "no." The questions are to be read orally by the examiner, and the children are instructed to write "yes" or "no" before each question after it is read by the examiner. The questions answered "yes" are scored and counted. The total number of "yes" responses is the test score. The mean of the TASC was 11.0, and the mean on the GASC was 10.2 in the studies by Sarason (5).

The TASC and the GASC are based on the theory that the anxious response is a danger signal associated with external danger, as well as internal danger, threatening the self-concept of the individual. The conflicts between the internal and external worlds of the child, and the manner in which these conflicts shape the child's concept of himself
and of his world, will determine the nature of the child's responses to his environment (5).

In constructing the scales, the authors postulated that the questions should contain the element of the anticipation of a dangerous or painful consequence. They also determined that the items would involve body reactions in test and test-like situations, and that there would be a sampling of reactions to a variety of test-like situations in the TASC (4).

The scales were administered by the authors to each class in six elementary schools, in grades two through five. Findings for the test-retest reliability of the TASC, at a two-month interval, produced a reliability coefficient of .82 for fifth-grade subjects. Split-half reliability of the TASC yielded a reliability coefficient, corrected by the Spearman-Brown Formula, of .881 for fifth-grade subjects (5). No information was available concerning the reliability of the GASC.

Numerous studies of validity were performed by the authors of the TASC and the GASC. Teachers' ratings of the anxiety level of their students correlated with the results of the test-anxiety scales at the .01 level of significance (5). The Rorschach was administered to thirty-two pairs of subjects matched for age, sex, and I.Q. scores. One member of the pair was at or above the top quartile of scores on the TASC and the GASC (Highly Anxious or HA), and his mate was at or below the bottom quartile of the TASC and the GASC.
scores (Low Anxious' or LA). Anxiety responses on the Rorschach cards are inappropriate responses, rejection of the Rorschach cards, and an inadequate total number of responses. The results of the study indicated that significantly more HA than LA subjects responded inappropriately to the cards (p = .05). Significantly more of the HA children rejected the Rorschach cards than the LA children (p = .10). Also, HA children had significantly fewer total responses to the Rorschach cards than the LA children (p = .10) (5).

Human-figure drawings, as a measure of validity, were correlated with the HA and LA children of the Rorschach study. The six variables scored, which are indicative of anxiety, were (1) mutilation, which was scored if one or more limbs or facial features were absent, (2) smile, which was scored if the corners of the mouth were turned up, (3) shading, which was scored if there was blackening in of portions of the drawings, (4) arm position down, which was scored if one or more arms made less than a 45-degree angle with the body, (5) rigidity, which was scored if the figures appeared immobile, and (6) playfulness, which was scored if the figure communicated humor. The difference was statistically significant on all six variables between the HA and LA children (5).

The GASC and the TASC were administered to twenty-four pairs of HA and LA children matched on sex, age, grade level, and I.Q. scores, to measure further the validity of the TASC.
and the GASC. The subjects were given two paired-learning tasks separated by neutral, failure, and success instructions. The results showed the LA children performed better than the HA children (at the .01 level of significance) on the tasks (5).

A positive correlation of .69 and .57 was found to exist between the TASC and the GASC, which were administered to forty fifth-grade boys and thirty-nine fifth-grade girls. The authors note the definite positive relation between the scores on the GASC and those of the TASC (5).

The ATSS was also administered to analyze the possible effects of a reduction in anxiety on attitude toward school. This scale was developed by Bonney, at North Texas State University, and is in its experimental state of development. The items were obtained from the responses of 120 fifth- and sixth-grade students to a questionnaire asking them to list what they liked most and what they liked least about their school situations. The final form of the scale consisted of forty-seven items selected by item analysis by a jury of judges. The items included school situations concerning teachers, peers, disciplinary controls, facilities, rules, and course content. In three classes of eighty children, test-retest data were obtained over a one-week time interval. The reliability coefficients were .74, .86, and .89. An analysis of variance of the ATSS, completed by 320 sixth-grade pupils, showed all but two of the items to be reliably
discriminatory between positive and negative attitudes toward school, at the .01 level of significance or better. This seems to indicate that the scale has construct validity.

In the administration and scoring of the ATSS, the child is instructed to answer each question by putting a check mark under one of the four headings at the top of each column, after reading each question. The headings are numbered, and the test is scored by assigning the number at the top of the column to each mark made by the child. The higher the score, the more positive is the child's attitude toward school (1).

The SFTAA was administered to each pupil in the present study by the classroom teachers, five months prior to this study. The Language I.Q., as determined by the scores on the Language Section of the SFTAA, was utilized in this study. The Language Section of the SFTAA consists of two subtests—Vocabulary and Analogies. The Vocabulary subtest was designed to test "verbal comprehension, knowledge of word meanings, and the ability to relate words which are not exact synonyms" (6, p. 5). The analogies subtest "requires the examinee to recognize analogic relationships" (6, p. 5).

The most recent standardization of the SFTAA was in 1957. The SFTAA was standardized on approximately 25,000 cases from eighteen geographical regions in the United States, from the primary through the secondary-school levels. The reported mean I.Q. for the Language Section is 100,
while the standard deviation is 16. The mental-age concept has been employed in computing the I.Q.'s. The reported reliability coefficient for the fifth grade is .83, computed by the split-halves method, and corrected by the Spearman-Brown Formula. The mean age of the fifth-grade sample is 125 months (7).

The SPTAA instrument was validated against other instruments measuring similar characteristics, skills, and abilities. The correlation coefficients were .854 for the Kuhlmann-Anderson Intelligence Test, .789 for the Otis Quick Scoring Mental Ability Tests, and .816 for the Pintner General Ability Tests (7).

Procedures for Analysis of Data

The statistical technique of analysis of covariance (3) was used in the analysis of the data. This procedure provided a statistical control over individual differences among subjects on the initial level of the independent variables (TASC, GASC, and ATSS pretest scores). The Fisher Test of Significance (3) was computed to evaluate the significance of the differences between the adjusted posttest means of Group A and Group B. Individual scores on the scales are recorded in Appendix D to facilitate the observation of individual changes between pretest and posttest scores. In addition, the Pearson product-moment correlation coefficient (3) was employed to determine the relationships between
Language I.Q. scores, as evidenced by the scores on the Language Section of the SFTAA, and the differences between pretest and posttest scores on the other three variables (GASC, TASC, and ATSS) under consideration.
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CHAPTER IV

RESULTS

The results of the analysis of covariance of mean scores on the TASC for the experimental and control groups are presented in Table II. Significant differences were not found between the experimental and control groups with respect to test-anxiety reduction.

### TABLE II

**SUMMARY OF ANALYSIS OF COVARIANCE FOR TASC SCORES**

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>103.517</td>
<td>1</td>
<td>103.517</td>
<td>2.388*</td>
</tr>
<tr>
<td>Within Groups</td>
<td>2427.620</td>
<td>56</td>
<td>43.350</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2531.138</td>
<td>57</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Not significant at .05 level.

The results of the analysis of covariance computed to compare the posttest adjusted means of the two groups on the TASC were not found to be significant at the .05 level. Thus, systematic desensitization was not found to reduce the level of test anxiety.

An analysis of covariance was computed for the scores of the GASC. The results of the analysis of covariance of mean scores on the GASC for the experimental and control
groups are presented in Table III. Significant differences were not found between the experimental and control groups with respect to general anxiety reduction.

TABLE III
SUMMARY OF ANALYSIS OF COVARIANCE FOR GASC SCORES

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>22.934</td>
<td>1</td>
<td>22.934</td>
<td>.500*</td>
</tr>
<tr>
<td>Within Groups</td>
<td>2566.475</td>
<td>56</td>
<td>45.829</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2589.570</td>
<td>57</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Not significant at the .05 level.

The results of the analysis of covariance computed between the adjusted mean differences of the GASC posttests of the experimental and control groups were not significant at the .05 level. Thus, systematic desensitization was not found to be instrumental in the reduction of general anxiety.

An analysis of covariance was computed for the scores of the ATSS. Table IV is a summary of the analysis of covariance of the scores for the ATSS.

The results of the analysis of covariance indicated that the difference between the adjusted means of the ATSS posttests of the experimental and control groups was not significant at the .05 level.

Systematic desensitization was not found to be instrumental in changes of attitude toward school.
TABLE IV
SUMMARY OF THE ANALYSIS OF COVARIANCE FOR THE ATSS SCORES

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>48.813</td>
<td>1</td>
<td>48.813</td>
</tr>
<tr>
<td>Within Groups</td>
<td>16511.347</td>
<td>56</td>
<td>294.845</td>
</tr>
<tr>
<td>Total</td>
<td>16560.160</td>
<td>57</td>
<td></td>
</tr>
</tbody>
</table>

*Not significant at the .05 level.

A summary of the pretest means, posttest means, and adjusted means for the TASC, GASC, and ATSS for the experimental and control groups is presented in Table V. There is a difference between the pretest means and posttest means.

TABLE V
PRETEST MEANS, POSTTEST MEANS, AND ADJUSTED MEANS ON THE GASC, TASC, AND ATSS FOR GROUP A AND GROUP B

<table>
<thead>
<tr>
<th>Measure</th>
<th>Group A Means (Experimental)</th>
<th>Group B Means (Control)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GASC pretest</td>
<td>24.625</td>
<td>23.222</td>
</tr>
<tr>
<td>GASC posttest</td>
<td>21.063</td>
<td>18.519</td>
</tr>
<tr>
<td>GASC adjusted</td>
<td>20.472</td>
<td>19.218</td>
</tr>
<tr>
<td>TASC pretest</td>
<td>18.031</td>
<td>15.519</td>
</tr>
<tr>
<td>TASC posttest</td>
<td>12.125</td>
<td>12.519</td>
</tr>
<tr>
<td>TASC adjusted</td>
<td>11.068</td>
<td>13.772</td>
</tr>
<tr>
<td>ATSS pretest</td>
<td>149.281</td>
<td>151.963</td>
</tr>
<tr>
<td>ATSS posttest</td>
<td>144.688</td>
<td>148.185</td>
</tr>
<tr>
<td>ATSS adjusted</td>
<td>145.450</td>
<td>147.281</td>
</tr>
</tbody>
</table>
and between the pretest means and adjusted means of the GASC and the TASC, occurring in both the experimental and control groups. The differences in these means appeared to indicate a decrease in test anxiety and in general anxiety in both groups. The mean changes of the ATSS appeared to indicate a less positive attitude toward school among the subjects of both the experimental and control groups. However, since all of these changes are nonsignificant, no conclusions can be drawn as to the efficacy of systematic desensitization.

The Pearson product-moment correlation coefficients, showing the correlations between the Language I.Q. scores and the pretest-posttest mean differences on the GASC, TASC, and ATSS are shown in Table VI.

**TABLE VI**

**SUMMARY OF THE CORRELATION COEFFICIENTS BETWEEN LANGUAGE I.Q. AND SCORE CHANGES FOR THE GASC, TASC, AND ATSS FOR GROUP A AND GROUP B**

<table>
<thead>
<tr>
<th>Language I.Q.</th>
<th>GASC Score Changes</th>
<th>TASC Score Changes</th>
<th>ATSS Score Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A</td>
<td>0.027*</td>
<td>-0.070*</td>
<td>-0.208*</td>
</tr>
<tr>
<td>Group B</td>
<td>0.159*</td>
<td>-0.114*</td>
<td>0.369*</td>
</tr>
</tbody>
</table>

*Not significant at the .05 level.

The correlation coefficients computed between the differences of the pretest and posttest means of the GASC, TASC, and ATSS, and the Language I.Q. scores of Group A and Group B were not significant at the .05 level. Thus, verbal
ability was not found to be related to changes in the scores on the three instruments (GASC, TASC, and ATSS) under consideration.

Evaluation of the Hypotheses

Hypothesis I stated that at the end of the desensitization sessions the subjects in the experimental group would exhibit a significantly greater mean-score decrease on the TASC than would the participants in the control group. The results of the analysis of covariance failed to support this hypothesis. No significant difference was found between the adjusted mean scores on the TASC for the desensitization group and corresponding scores of the group receiving no desensitization.

Hypothesis II stated that at the end of the desensitization sessions the subjects in the experimental group would exhibit a significantly greater mean-score decrease on the GASC than would the participants in the control group. The results of the analysis of covariance failed to support this hypothesis. No significant difference was found between the adjusted mean scores on the GASC for the desensitization group and the corresponding scores for the group receiving no desensitization.

Hypothesis III stated that at the end of the desensitization sessions the subjects in the experimental group would exhibit a significantly greater adjusted mean-score
increase on the ATSS than would the participants in the control group. The results of the analysis of covariance failed to support this hypothesis. No significant difference was found between the adjusted mean scores on the ATSS for the desensitization group and the corresponding scores of the group receiving no desensitization.

Hypothesis IV stated that at the end of the desensitization sessions the experimental group would exhibit a significantly positive relationship between verbal ability and the individual pretest-posttest score differences of the GASC, TASC, and ATSS. The Pearson product-moment correlation coefficients assessing the relationship of changes in GASC, TASC, and ATSS with Language I.Q. scores failed to support this hypothesis. No significant relationship was found between Language I.Q. scores and the pretest-posttest score difference of the GASC, TASC, or ATSS, for either the experimental or control group.
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CHAPTER V

DISCUSSION

Because none of the hypotheses in this study was supported, it would not be sound to conclude that systematic desensitization is a useful technique in the reduction of test anxiety. However, the mean decrease of scores between the pretest and posttest administration of the TASC for the desensitization group was six points, whereas the mean decrease of scores between the pretest and posttest administration of the TASC for the control (no desensitization) group was three points, and this is an interesting finding. The difference between the pretest and posttest scores was in the expected direction, with a greater reduction of test anxiety among the participants of the experimental group than the control group.

Among the individual participants of the desensitization group, the scores of twenty-six of the participants indicated a decrease in test anxiety, as compared to eighteen indications of a reduction in test anxiety among the control group. The mean score of the pretest TASC of the experimental group was 18.031, and the mean score of the posttest of the experimental group was 12.125, indicating a decrease in test anxiety. The mean score of the pretest TASC of the
control group was 15.519, and that of the posttest was 12.519, also indicating a decrease in test anxiety. The decrease of test anxiety was greater among the participants of the experimental group than that of the control group, although the difference was not significant.

The decrease in general anxiety, as exhibited by the difference between pretest and posttest scores of the GASC, although not significant, also was in the expected direction. The pretest mean of the GASC for the experimental group was 24.625, and the posttest mean of the GASC for the experimental group was 21.063, exhibiting a difference of 3.562. The pretest mean of the GASC scores of the control group was 23.222, and that of the posttest scores of the control group was 18.519, exhibiting a difference of 4.703. The decrease was greater among the control group than among the experimental group, although the difference was not significant.

The pretest mean score of the ATSS of the desensitization group was 149.281, and that of the posttest for this group was 144.688. The mean of the pretest of the ATSS of the control group was 151.963, and that of the posttest for the control group was 148.185. The change in mean scores of both the experimental group and of the control group was not in the expected direction. The differences were slight and not significant, so they probably should be considered to be meaningless.
In Chapter II, several published reports of group desensitization were reviewed. Katahn, Stenger, and Cherry (1) combined group counseling with desensitization in a group of college students to decrease test anxiety. The present study avoided the confounding of desensitization with any other counseling method. The sessions were spent only in training in relaxation, visualization, and desensitization, and did not resemble the traditional group counseling situations.

Suinn combined group and individual systematic desensitization in the reduction of test anxiety among college students (3). The present investigation involved group desensitization only, to determine the effectiveness of systematic desensitization in a group setting.

In studies by Paul (2) and Taylor (4), the effects of systematic desensitization were compared to placebo effects and control effects. Paul found significant reductions in test anxiety among both the experimental and the placebo group, although the effects of test anxiety reduction were greater for the experimental group than for either the placebo or the control group. Taylor found results similar to those of Paul in his study. The present investigation studied the effects of systematic desensitization in the reduction of test anxiety with only an experimental group and a control group.

In regard to the results of the present study, there are several factors that warrant consideration. One factor
is the number of participants in the desensitization group. Among the thirty-two children in the experimental group, there were several children at each session who sought positive reinforcement from their peers by attention-getting means. This behavior interfered with the relaxation necessary for desensitization to be effective among the remainder of the subjects. In a smaller group, the reinforcement received may not be so great, and this maladaptive behavior could possibly be extinguished.

Disturbances of other children on the playground peering in the windows, noises in the hall, and messengers entering and leaving the classroom were also disrupting to the procedure. This study took place in the regular classroom, and a more isolated location might have been more conducive to relaxation.

Another factor was related to the control of the natural spontaneity of children. When each new item on the hierarchy was introduced by the examiner, anxiety was experienced by the subjects, manifested by facial grimaces, body tenseness, and verbal expressions. The verbal expressions may have influenced the anxiety level of the group. An additional factor in the failure of the desensitization group to show a significantly greater reduction of test anxiety than the control group was the attention span of the fifth-grade children. The one-hour duration of each desensitization session warrants consideration. The children were pleased
when the investigator walked into the room, and were anxious to begin each session, but a restlessness occurred among the group after the session had been in progress approximately thirty minutes. The apparent lack of desire to continue the sessions after thirty minutes may have been a factor in the anxiety level of the subjects.
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CHAPTER VI

SUMMARY, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

Summary

There has been a growth of interest in recent years in the behavior therapy technique of systematic desensitization. Desensitization is a procedure of counterconditioning, wherein a new conditioned response that is incompatible with the conditioned response to be extinguished, is presented and conditioned to the stimulus. Systematic desensitization has been demonstrated to be effective in the reduction of specific anxieties and phobias. Most of the systematic desensitization reported in the literature has dealt with individuals, but several investigators have studied the effects of systematic desensitization with groups.

The problem of the present investigation was to determine the effectiveness of systematic desensitization on the reduction of test anxiety, and on the improvement of attitude toward school among fifth-grade elementary-school children. The purpose of this study was to determine whether this method of systematic desensitization would be effective in the reduction of test anxiety and in the improvement of school attitudes among a group of elementary-school children.
It was hypothesized that group systematic desensitization would be more effective than no systematic desensitization in the reduction of test anxiety and general anxiety, and in the increment of positive attitudes toward school. Furthermore, it was hypothesized that there would be a positive correlation between Language I.Q. scores and changes in test anxiety, general anxiety, and attitudes toward school among the participants of the desensitization group.

The sample consisted of two fifth-grade classes in one elementary school. The experimental group consisted of thirty-two fifth-grade children in one self-contained class, and the control group, which received no systematic desensitization, consisted of twenty-seven children in the other self-contained class. Pretests and posttests of the TASC, GASC, and ATSS were administered to both groups. Language I.Q. tests were administered to both groups by the school personnel prior to this study.

Systematic desensitization was administered to the experimental group for a total of eight sessions (twice weekly, for a period of four weeks). Each session was of approximately one hour duration, taking place in the regular classroom. Two sessions prior to the administration of systematic desensitization consisted of the administration of the TASC, GASC, and ATSS pretests, training in relaxation and visualization, and the construction of the anxiety hierarchy. The posttests of the TASC, GASC, and ATSS were administered on
the session following the desensitization sessions. The experimental group met with the examiner for a total of eleven sessions, each of approximately one hour duration, twice weekly, for a period of five and one-half weeks. The pre-tests of the TASC, GASC, and ATSS were administered to the control group immediately following the administration of these pre-tests to the experimental group, and the post-tests of the above instruments were administered to the control group immediately following the administration of the post-tests to the experimental group. Changes in test anxiety, general anxiety, and attitude toward school were assessed statistically by the analysis of covariance. The correlations between the Language I.Q. of the subjects and changes in test anxiety, general anxiety, and attitude toward school were assessed statistically by means of the Pearson product-moment correlation coefficients.

The results did not support the hypotheses. Subjects who participated in the systematic desensitization did not demonstrate significantly greater changes in test anxiety scores, general anxiety scores, or attitude toward school scores than did the control group. Furthermore, the changes in test anxiety, general anxiety, and attitude toward school did not correlate significantly between the Language I.Q. scores of either the experimental or the control group.

In the discussion of the results, it was noted that there was a reduction in test anxiety and in general anxiety,
although the reduction was not significant. This reduction was exhibited by mean-score changes on the TASC and GASC of both the experimental and the control groups, the changes appearing somewhat greater for the experimental group.

Conclusions

Methodological weaknesses of the present study may have prevented the hypotheses from being supported. These factors may have limited the validity of the results of this study. However, the results obtained lead to the formulation of the following conclusions:

1. The process of systematic desensitization as applied in this study does not lead to a significant reduction in the level of test anxiety.

2. The process of systematic desensitization as applied in this study does not lead to a significant reduction in the level of general anxiety.

3. Systematic desensitization as applied in this study does not significantly affect the attitude toward school of elementary-school children.

4. Language I.Q. scores do not appear to be a contributing factor in the changes in test anxiety, general anxiety, and attitudes toward school following systematic desensitization.
Implications

Although no significant differences were obtained in the reduction of test anxiety, general anxiety, and attitudes toward school between the experimental group and the control group, there were indications that the method of systematic desensitization may be a valuable adjunct to counseling in the elementary schools. The development of more effective procedures of selection of subjects, location of the sessions, and the reduction in the size of the groups may lead to a useful method for the reduction of test anxiety. It may be discovered by further research that pervasive emotional problems may be a factor which can interfere with the effectiveness of systematic desensitization, and the reduction of the most disturbing anxiety of the subject may be necessary before lesser anxiety-producing stimuli can be desensitized.

The method employed in the administration of the instruments may have been an influential factor on the results of the study. All three of the instruments were administered during a single session, and the element of fatigue may have affected the responses of the subjects. The experimenter read the items of each of the instruments to the subjects. Several of the subjects verbalized their responses to the questions of the instruments, and these verbalizations may have been an influencing factor on the responses of the subjects. Individualized, spaced administration of the instruments may yield more accurate scores.
Screening interviews might possibly be a helpful procedure in determining which subjects might benefit from systematic desensitization. The subjects not willing or less able to relax, or to visualize the stimuli scenes, might be eliminated from desensitization sessions, until further training can be provided for them in visualization and relaxation. If individual differences will be considered in the administration of the technique of systematic desensitization, it may be an economical, expedient method of reducing test anxiety and other debilitating anxieties and phobias.

Recommendations

The following recommendations are offered in view of the results of the present investigation:

1. Replication of the present study with a methodological design to provide a more effective control of the variability of the subjects in visualizing scenes and in the ability to relax.

2. Replication of the present study with smaller groups of subjects in a quiet, undisturbed environment.

3. Replication of the present study after subjects have been screened as to their most prevalent fears and phobias.

4. Replication of the present study employing individualized, spaced administration of the instruments.
5. Research to determine the optimum number of elementary-school-age children in a group for the utilization of systematic desensitization in the reduction of test anxiety.

6. Research to determine the factors present that may account for some subjects experiencing a reduction in test anxiety, while others do not.

7. The presentation of video tapes of sessions of systematic desensitization prior to the sessions, to demonstrate the procedure to the group. Modelling of this nature may facilitate the acquisition of the new behavior through the observations of others performing the desired behavior. Modelling of this type may also be effective in the reduction of fears or suspicions concerning the procedures experienced by the participants.

8. Replication of the present study, with a reduction in the length of each individual session.

9. Replication of the present study followed by the administration of the GASC, TASC, and ATSS one month after the completion of the desensitization sessions. Since changes did occur in test anxiety and in general anxiety, the possibility exists that changes may have continued to occur following the desensitization sessions.
APPENDIX A

TEST ANXIETY SCALE FOR CHILDREN

HOW I FEEL ABOUT SCHOOL

1. Do you worry when the teacher says that she is going to ask you questions to find out how much you know?

2. Do you worry about being promoted, that is, passing from the fifth to the sixth grade at the end of the year?

3. When the teacher asks you to get up in front of the class and read aloud, are you afraid?

4. When the teacher says that she is going to call upon some boys and girls in the class to do arithmetic problems, do you hope that she will call upon someone else and not on you?

5. Do you sometimes dream at night that you are in school and cannot answer the teacher's questions?

6. When the teacher says that she is going to find out how much you have learned, does your heart begin to beat faster?

7. When the teacher is teaching you about arithmetic, do you feel that other children in the class understood her better than you?
8. When you are in bed at night, do you sometimes worry about how you are going to do in class the next day?

9. When the teacher asks you to write on the blackboard in front of the class, does the hand you write with sometimes shake a little?

10. When the teacher is teaching you about reading, do you feel that other children in the class understand her better than you?

11. Do you think you worry more about school than other children?

12. When you are at home and you are thinking about your arithmetic lesson for the next day, do you become afraid that you will get the answers wrong when the teacher calls upon you?

13. If you are sick and miss school, do you worry that you will do more poorly in your schoolwork than other children when you return to school?

14. Do you sometimes dream at night that other boys and girls in your class can do things you cannot do?

15. When you are at home and you are thinking about your reading lesson for the next day, do you worry that you will do poorly on the lesson?
16. When the teacher says that she is going to find out how much you have learned, do you get a funny feeling in your stomach?

17. If you did very poorly when the teacher called on you, would you probably feel like crying even though you would try not to cry?

18. Do you sometimes dream at night that the teacher is angry because you do not know your lesson?

19. Are you afraid of school tests?

20. Do you worry a lot before you take a test?

21. Do you worry a lot while you are taking a test?

22. After you have taken a test do you worry about how well you did on the test?

23. Do you sometime dream at night that you did poorly on a test you had in school that day?

24. When you are taking a test, does the hand you write with shake a little?

25. When the teacher says that she is going to give the class a test, do you become afraid that you will do poorly?

26. When you are taking a hard test, do you forget some things you knew very well before you started taking the test?

27. Do you wish a lot of times that you didn't worry so much about tests?
28. When the teacher says that she is going to give the class a test, do you get a nervous or funny feeling?

29. While you are taking a test do you usually think you are doing poorly?

30. While you are on your way to school, do you sometimes worry that the teacher may give the class a test?
APPENDIX B

GENERAL ANXIETY SCALE FOR CHILDREN

1. When you are away from home, do you worry about what might be happening at home?
2. Do you sometimes worry about whether other children are better looking than you are or whether your body is growing the way it should?
3. Are you afraid of nice or rats?
4. Do you ever worry about knowing your lessons?
5. If you were to climb a ladder, would you worry about falling off it?
6. Do you worry about whether your mother is going to get sick?
7. Do you get scared when you have to walk home alone at night?
8. Do you ever worry about what other people think of you?
9. Do you get a funny feeling when you see blood?
10. When your father is away from home, do you worry about whether he is going to come back?
11. Are you frightened by lightning and thunderstorms?
12. Do you ever worry that you won't be able to do something you want to do?

13. When you go to the dentist, do you worry that he may hurt you?

14. Are you afraid of things like snakes?

15. When you are in bed at night trying to go to sleep, do you often find that you are worrying about something?

16. When you were younger, were you ever scared of anything?

17. Are you sometimes frightened when looking down from a high place?

18. Do you get worried when you have to go to the doctor's office?

19. Do some of the stories on television scare you?

20. Have you ever been afraid of getting hurt?

21. When you are home alone and someone knocks on the door, do you get a worried feeling?

22. Do you get a scary feeling when you see a dead animal?

23. Do you think you worry more than other boys and girls?

24. Do you worry that you might get hurt in some accident?

25. Has anyone ever been able to scare you?

26. Are you afraid of things like guns?
27. Without knowing why, do you sometimes get a funny feeling in your stomach?

28. Are you afraid of being bitten or hurt by a dog?

29. Do you ever worry about something bad happening to someone you know?

30. Do you worry when you are home alone at night?

31. Are you afraid of being too near fireworks because of their exploding?

32. Do you worry that you are going to get sick?

33. Are you ever unhappy?

34. When your mother is away from home, do you worry about whether she is going to come back?

35. Are you afraid to dive into the water because you might get hurt?

36. Do you get a funny feeling when you touch something that has a real sharp edge?

37. Do you ever worry about what is going to happen?

38. Do you get scared when you have to go into a dark room?

39. Do you dislike getting in fights because you worry about getting hurt in them?

40. Do you worry about whether your father is going to get sick?

41. Have you ever had a scary dream?

42. Are you afraid of spiders?
43. Do you sometimes get the feeling that something bad is going to happen to you?

44. When you are alone in a room and you hear a strange noise, do you get a frightened feeling?

45. Do you ever worry?
APPENDIX C

ATTITUDE TOWARD SCHOOL SCALE

Name______________________________________________________________

Date______________________________________________________________

Teacher's Name_____________________________________________________

Directions: Please answer each of the questions below by putting a check mark (X) under one of the four headings given in the columns to the right of the questions.

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<tr>
<td></td>
<td>nearly</td>
<td>some-</td>
<td>seldom</td>
<td>never</td>
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<tr>
<td></td>
<td>always</td>
<td>times</td>
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</table>

1. During school hours I would rather be in school than anywhere else.

2. Whenever I find or make something like a booklet or picture, or write a story, or have a good test paper, I take it home.

3. Whenever I find or make something which I think the other students and the
4. During play periods,  
   everyone has a fair  
   chance to play and do  
   well  
   
5. My abilities are recognized  
   and given a fair place in  
   this school.  
   
6. When a student doesn't like  
   something in this school,  
   there is someone who will  
   listen to him.  
   
7. When I see a way that I can  
   help out another student, I  
   try to do it.  
   
8. I believe my school work is  
   fairly judged or graded by  
   my teachers.  
   
9. My teachers are eager for me  
   to learn new things.  
   
10. My teachers expect me to do  
     my best in all of my school  
     work.  
   
11. When a problem comes up in  
     our school groups, we discuss  
     with the teachers how best  
     to deal with it.
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<th></th>
<th>Statement</th>
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<th>Some Times</th>
<th>Seldom</th>
<th>Never</th>
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<td>I like to go to school.</td>
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<tr>
<td>13</td>
<td>I feel free to ask my teachers anything I want to.</td>
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<tr>
<td>14</td>
<td>I get along O.K. with boys. (only girls answer number 14).</td>
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<tr>
<td>15</td>
<td>I get along O.K. with girls. (only boys answer 15)</td>
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<td>16</td>
<td>I am glad to see other students do well in their school work.</td>
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<tr>
<td>17</td>
<td>I feel that my teachers like me.</td>
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<tr>
<td>18</td>
<td>My parents are pleased with my school work.</td>
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<td>19</td>
<td>I feel that I am succeeding in school.</td>
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<td>20</td>
<td>I like my teachers.</td>
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<td>21</td>
<td>I feel free to get up out of my seat without asking permission of the teacher to talk to another child about school work, or to borrow a pencil, a book or something.</td>
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</table>
22. My teachers seem

cheerful and happy.

23. Most other students

that I know in this

school like me.

24. In class discussions, I

raise my hand to

volunteer information.

25. I am encouraged to work

on topics or projects of

special interest to me.

26. I feel free to speak out in

class and tell other

students what I think of

things they have said or

done.

27. Most of the other students

like to see me do well in

school.

28. My teachers do all they

can to help me understand

what I am supposed to learn.

29. Our required home work is

about right.

30. When I break a school or

group rule, spill or

break something, I feel

free to admit it to my

teachers.
31. When I need to, I can work quietly in this class without being disturbed.

32. I hope I can go to school for many more years.

33. I am proud of my school.

34. I enjoy our play periods.

35. My teachers understand how I feel about things.

36. I have sat near or worked with other students whom I wanted to be with.

37. A student in this class can be different from others in some ways and not be made fun of or avoided.

38. When a student annoys others or interferes with what the group is trying to do, he is controlled or punished.

39. A smart student who is very good in his school work is admired in this class.

40. A student who has a sense of humor is really appreciated in this class.
<table>
<thead>
<tr>
<th>Statement</th>
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<th>Seldom</th>
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<td>41. In this classroom I have felt relaxed and at ease.</td>
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<td>42. My class work is interesting.</td>
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<td>43. The rules of this school are enforced with fairness for everyone.</td>
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<td>44. When it comes to being strict, the teacher of this class is about right.</td>
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<td>45. There are plenty of books for our needs in the school library.</td>
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<td>46. I feel that what I am learning in school will be valuable to me in later years.</td>
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<td>47. I try hard to make a good record in all of my school subjects.</td>
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APPENDIX D

TEST ANXIETY HIERARCHY

1. Taking report cards home to be signed by parents
2. Taking the test paper home to show to parents
3. The teacher writing your test grade in her book
4. The collecting of the test papers
5. The time is up
6. Noticing that the time is almost up and you are only half finished with the test
7. Being stuck on a question you cannot answer
8. Being in the middle of the test
9. Starting the test
10. The test is being passed out and you receive a copy of the test questions
11. The teacher announces a time limit on the test
12. The teacher instructs the class to get ready for a test
13. The teacher announces that there will be a test
14. Walking into the classroom
15. Walking or riding to school
16. Getting ready to go to school in the morning
APPENDIX E

RATIONALE PRESENTED TO SUBJECTS
IN DESENSITIZATION GROUP

The feelings that you experience as a result of your previous test situations, often lead to feelings of fear and tenseness that are inappropriate to new situations. As long as you can remember how you have felt in these situations, it is possible to work with your feelings by having you imagine yourself in the situations.

The technique we will be using is one called systematic desensitization. This technique consists of relaxation and imagining scenes in order to reduce your fears of test situations. The advantage of relaxation is that the muscle systems in your body cannot be both tense and relaxed at the same time; therefore, once you have learned the relaxation technique, it can be used to counter the fear and tenseness you experience in the test situations.

First we will make a list of the situations in which you become progressively more fearful, building a list from the least fearful to the most fearful situation regarding tests. Then I will teach you the technique of relaxation. After you are more relaxed
than ever before, you will imagine situations from the list of fears. As you imagine the situations which normally make you tense and fearful, while you are deeply relaxed, the situations are gradually desensitized until they no longer make you tense and afraid. We start the situations which bother you the least, and gradually work up to those which bother you the most.
## APPENDIX F

PRE-POSTTEST RAW SCORES OF TASC AND LANGUAGE I.Q.

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APPENDIX G

PRE-POSTTEST RAW SCORES OF GASC AND LANGUAGE I.Q.

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APPENDIX H

PRE-POSTTEST RAW SCORES OF ATSS AND LANGUAGE I.Q.

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BIBLIOGRAPHY

Books


Articles


Jones, Mary Cover, "Elimination of Children's Fears," *Journal of Experimental Psychology*, 7 (August, 1924).

Katahn, M., S. Stenger and Nancy Cherry, "Group Counseling and Behavior Therapy With Test Anxious College Students," *Journal of Consulting Psychology*, 30 (December, 1966), 544-549.


Reports


Unpublished Materials

Bonney, Merle, unpublished notes, Department of Psychology, North Texas State University, Denton, Texas, 1973.