A STRESS-INOCULATION TREATMENT PROCEDURE
FOR TEST ANXIETY IN ELDERLY STUDENTS

DISSERTATION

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By

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The major purpose of this study was to evaluate the efficacy of a stress-inoculation treatment and an equally credible attention-placebo control in alleviating self-reported test anxiety and in facilitating intellectual performance in nontraditional (aged 50 and over) college students. Many studies have demonstrated the efficacy of cognitive-behavioral approaches in the treatment of test anxiety among young college students. The literature suggests that persons returning to school after a long absence who have subsequently enrolled as college students experience greater test anxiety and decrements in test performance in evaluative situations than their younger counterparts.

Two studies were conducted which assessed alternative methods for reducing self-reported anxiety and facilitating fluid and crystallized intellectual abilities in nontraditional students enrolled in community college courses. Each utilized a stress-inoculation treatment procedure with attention-placebo and waiting-list controls. The results of the two studies were combined and analyzed as
a set. In the combined study, students (n = 36), aged 49 through 67, volunteered for the study and were randomly assigned to groups. Treatment rationales for the groups (stress-inoculation and attention-placebo) were equally credible within and between groups in Study 1 and Study 2.

Results of the combined analyses of these studies suggest that the stress-inoculation procedure and the attention-placebo procedure might have effected reductions in self-reported anxiety, although these results are not statistically significant. Data are discussed with reference to nonspecific treatment effects and the effects of anxiety reduction on fluid and crystallized intellectual performance in the elderly.
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A STRESS-INOCULATION TREATMENT PROCEDURE
FOR TEST ANXIETY IN ELDERLY STUDENTS

It is anticipated that the number of students attending institutions of higher education will grow steadily for the next decade and beyond (Havighurst, 1976). The phenomenon of test anxiety has long been known to have a negative effect on academic performance (Alpert & Haber, 1960; Mandler & Sarason, 1952; Paul & Eriksen, 1964; Sarason, 1975; Spielberger, 1966), and some researchers have suggested that older (60 and over) persons not only suffer from the effects of test anxiety (Whitbourne, 1976) but also may experience this anxiety to a greater degree than do their younger counterparts (Ross, 1968). Several treatment strategies have been found to be effective in the alleviation of test-related anxiety in college students. The majority of these treatments have been behavioral in nature, including group desensitization (Johnson & Sechrest, 1968), anxiety-management training (Richardson & Suinn, 1974), and stress-inoculation training (Hussian & Lawrence, 1978). Various treatments have resulted in less emotional reactivity in testing situations (Maes & Heimann, 1970), improved conditions (Sarason, 1973), and lowered levels of self-reported anxiety and discomfort (Meichenbaum, 1972). The test-anxiety treatment literature clearly shows
reported and observed improvements in persons who suffer from evaluative anxiety. Until recently, however, there has been a lack of outcome research with an elderly population which has returned to an educational setting.

Kookén and Hayslip (1981) compared the effects of a stress-inoculation treatment program to a waiting-list control and found that elderly (aged 60 and over) students appeared to benefit from the treatment procedure, a change evidenced by reduced self-reported anxiety levels. The current study attempted to test the efficacy of a stress-inoculation training procedure (Kookén & Hayslip, 1981; Meichenbaum, 1977) while maintaining adequate attention-placebo controls. An attempt was made to measure the effect of reduced anxiety on the performance of an intellectual task. Finally, the study attempted to assess the treatment-generated outcome expectancies generated by the subjects' participation in a discussion or attention-placebo group.

Education and the Elderly

It has been suggested that coping with the accelerated social changes of the 20th century would be considerably aided by an emphasis on education throughout the entire life span (Havighurst, 1976). At present, the focus on education comes in the first two decades of life (Birren & Woodruff, 1973a). In addition to the positive social benefits of such an orientation, the older, nontraditional individual (aged 50 and over) stands to make gains in several areas due to continued
education throughout the life span. Older (nontraditional) students are defined for purposes of the present study as being aged 50 and over and having been working in nonacademic environments for at least 20-30 years. Clearly, educational intervention in older age would reduce educational deficits that exist in older students today. It is well documented that such an educational deficit exists for today's older cohort group (Baltes & Labouvie, 1973). Continued education in old age would not only alleviate current deficits but would also serve as a stimulus for continued enrichment in the individual (Eklund, 1969). The benefits of education in the elderly individual might well be preventative in nature. For example, a retired individual could avoid some of the potential difficulties associated with retirement by substituting other productive interests in place of a career. A retirement training program could specifically address the needs of this individual via continuing educational involvement.

As we progress into the 1980's, it is thought that the number of older adults attending institutions of higher education will steadily grow (Havighurst, 1976). From the 1920's to the present, the older population in the United States has grown faster than the population as a whole, and this trend will continue through the 1980's. As the cohort of youth of college age grows smaller over the next few years (Little, 1972), the population of older students
attending college will grow even more. Many undergraduate programs in the country are expanding to accommodate older adults who have become strangers to college environments who are interested in upgrading their occupational skills and their abilities (Whitbourne, 1977). It has been found that the higher a person's educational level, the more likely it is that that individual will seek further education in the future (Johnstone & Rivera, 1965). Unlike their elders who have few years of formal academic training, the better educated young adults of today will continue to seek more educational opportunities as they grow older (Riley & Foner, 1969). As the population of elderly persons seeking an education grows, educators must become aware of and come to grips with the problems that face these students. If the negative effects of such difficulties as evaluative anxiety and age-related cognitive deficits can be minimized, the elderly student has a much better chance to gain the full benefits of continuing his or her education.

Treatment of Test Anxiety

Test anxiety has been seen as a form of state anxiety, defined as an emotional reaction that carries with it tension, physiological arousal, and worry (Sarason, 1972). It has been stated that individuals who are very susceptible to test anxiety are more self-critical and are more likely to emit self-statements that result in performance deficits.
Wine (1971) states that the test-anxious individual is more likely to engage in self-derogatory, self-evaluative thinking. This pattern of thoughts interferes with the performance of the task at hand. The attentional focus of the individual accounts for the performance differences between high-test-anxious persons and low-test-anxious persons. If the test-anxious individual attends to task-relevant cognitions during the administration of the examination, performance improves. If self-derogatory task-irrelevant statements occupy the person's attention, performance declines (Wine, 1971).

Mandler and Watson (1966) view these self-deprecatory task-irrelevant cognitions as an interruption of an organized behavioral sequence. Such interruptions "serve as a condition sufficient to evoke anxiety" (Mandler & Watson, 1966, p. 266).

The major consequence of interruption and the absence of relevant or suitable behavioral strategies will be continuing visceral arousal and disruption of any other ongoing behavior sequences. One reason for the disorganized aspect of anxiety-dominated behavior is that with interruption and arousal a search for relevant substitute behaviors is initiated. As long as such a search—seen often as inefficient attempts at initiating a variety of different behaviors—is unacceptable, as long as the sequence is incomplete,
further arousal will continue, more disorganization will result, and the typical picture of interference due to anxiety will emerge. (Mandler & Watson, 1966, p. 266)

Marlett and Watson (1968) point out that the nature of the interfering cognitions impedes performance. These cognitions include ruminating over the possibility of failure, worrying about the performance of others taking the test, and vacillating between alternatives.

It has been documented that self-verbalizations such as those mentioned by Marlett and Watson (1968) exert some control over emotional arousal. Rimm and Litvak (1969) had subjects read statements which were affectively loaded, such as "My grades may not be good enough this semester. . . . I might fail out of school. . . . That would be awful" (p. 184). Other subjects were given neutral statements to read, such as "inventors are imaginative. . . . Edison was an inventor. . . . Therefore, he was imaginative" (p. 184). Subjects who read the affectively loaded sentences exhibited higher arousal on a respiration measure than did the controls who read the neutral sentences. This study is support for the assumption made by Ellis (1962) and others that self-statements elicit emotional responses.

In addition, research on the effect of self-verbalizations on performance has been carried out. Schill, Monroe, Evans, and Ramanaiah (1978) tested the effects of irrational
self-talk on the performance of a mirror-tracing task. Subjects in each group were led to believe that concentration on an irrational statement, a rational self-statement, or a neutral statement would result in facilitation of the mirror-tracing task. As was predicted, performance on the task was poorest among those subjects who concentrated on irrational self-statements, such as "Since most people are good at this, I should be too, or else I'm an idiot" (p. 5). The rational sentence group's performance was superior to either of the other groups, repeating statements such as "Mistakes don't mean I'm stupid. They give me a lot of information which hopefully I can use to become better at this" (p. 5). These statements were found to facilitate performance on the mirror-tracing task. This study is also empirical support for the notion that cognitions give rise to emotions.

The majority of recent studies that have investigated the treatment of test anxiety have been behaviorally oriented. Hussain and Lawrence (1978) note that test anxiety has been treated by direct and vicarious counterconditioning (Mann & Rosenthal, 1969), group desensitization (Johnson & Sechrest, 1968; Mitchell & Ingham, 1970), covert positive reinforcement (Cautela, 1970; Guidry & Randolph, 1974; Kostka & Galassi, 1974; Wisocki, 1973), relaxation training (Johnson & Spielberger, 1968), anxiety management training programs (Richardson & Suinn, 1974), physical
exertion and positive images (Driscoll, 1976), cognitive modeling (Sarason, 1975), and self-instructional training (Meichenbaum, 1972).

Further support for the hypotheses that interfering cognitions play a large role in test anxiety comes from a study designed to explore the behavior of students at various moments during the actual administration of the test (Galassi, Frierson, & Sharer, 1981). The study measured the content and frequency of positive thoughts, negative thoughts, evaluative thoughts, feelings of potency, bodily sensations, and subjective units of disturbance in students taking a test. The researchers found that as test anxiety increases so does the frequency of negative thoughts the student internally generates. The content of such negative thoughts is characterized by wishes to escape the situation, worry about the difficulty of the test, concern about having sufficient time to complete the examination, and rumination about the likelihood of obtaining a poor grade. Low-test-anxious students differed significantly from high-test-anxious students across all the dependent measures, a finding that furthers the hypothesis that negatively oriented cognitions increase subjective feelings of test anxiety. The authors note that bodily sensations and negative thoughts increased significantly toward the end of the test and that in the final 10 minutes, these increased to a higher level. They suggested that test-anxiety treatment should include a
warning to the subject that this is a normal occurrence and that it should be anticipated and dealt with without panic.

In many recent studies, cognitive-behavioral procedures have been found to be effective in treating test anxiety. Two of the above studies have suggested that cognitive processes are central in test anxiety (Meichenbaum, 1972; Sarason, 1973). A procedure that is dedicated to cognitive change seems well suited to treat this problem. Ross (1968) and Whitbourne (1977) have directly suggested the importance of interfering cognitions in the test-anxious elderly student.

Stress-inoculation training (Meichenbaum, 1977; Meichenbaum & Goodman, 1973) is a coping-skills training procedure which is designed to modify the internal dialogue of the individual suffering from anxiety. The use of cue-controlled relaxation skills has been taught to the persons being trained, in order to help them control their physiological arousal in the stressful testing situation. Stress-inoculation training has been divided into three phases. The first phase is designed to offer the test-anxious person an explanatory framework on which to base an understanding of the problem he or she faces. This explanation is generally provided in the form of the Schacterian theory of emotion (Schacter, 1966). Schacter summarizes his position in the following way.
... an emotional state may be considered a function of a state of physiological arousal and of a cognition appropriate to this state of arousal. The cognition, in a sense, exerts a steering function. Cognitions arising from the immediate situation as interpreted by past experience provide the framework within which one understands and labels his feelings. It is the cognition which determines whether the state of physiological arousal will be labeled 'anger,' 'joy,' or whatever. (Schacter, 1966, p. 196)

The test-anxious person is helped to understand that the anxiety reaction in a testing situation consists of two major elements discussed by Schacter: (a) physiological arousal and (b) anxiety-eliciting self-statements that interfere with performance. The treatment procedure in stress-inoculation training is designed to aid the individual in combating these two major elements. The second phase of stress-inoculation training involves providing the person with a set of specific skills to employ when faced with a stressful testing situation. Physiological arousal can be coped with by giving the person skills in physical relaxation. These skills can be taught utilizing a cue-controlled relaxation procedure (Bernstein & Borkovec, 1973) in which the individual learns to pair physical relaxation with a cue word such as "calm." Cognitive training has consisted of teaching
the individual to identify negative self-evaluations and other interfering thoughts and to then systematically change these cognitions to more adaptive ones. The third phase of stress-inoculation training, the application training phase, gives the individual an opportunity to utilize the coping skills learned. The subjects are placed in an evaluative situation and are asked to practice the skills they have been taught during the first two phases of training.

Holroyd's 1976 study demonstrates the efficacy of a cognitive treatment procedure in treating self-reported test anxiety in undergraduate students. An additional feature of this study is the use of an equally credited pseudotherapy, or attention-placebo control. The cognitive-attentional treatment approach was compared to an arousal control, a combined cognitive and arousal control, and pseudotherapy control. The cognitive-attentional group was the only group that reduced self-reported anxiety levels significantly more than the pseudotherapy group or the arousal groups. A 1-month follow-up yielded similar findings. This study is significant in that it utilized adequate attention-placebo controls. Holroyd also noted an improvement in performance on the Digit Symbol subtest of the Wechsler Adult Intelligence Scale (WAIS) and in grade-point-average (GPA) performance over one semester.
Hussian and Lawrence (1978) studied the effectiveness of a generalized and a test-specific stress-inoculation training program on a population of highly anxious college students. These two treatment groups were compared to a discussion control and a waiting-list control group. Their results indicate that test-specific stress-inoculation training is more effective than the discussion or waiting-list control group in alleviating test anxiety. In addition to lowering self-reported anxiety scores, stress-inoculation was found to reduce trait anxiety. The authors suggest that the nature of the coping statements learned by the subject may be a critical variable in the treatment procedure.

Although the results of this study are encouraging, several criticisms could be made of the design employed by the authors. First, no measures were administered to assess general credibility and expectancy for success induced by the stress-inoculation and discussion control groups. Kazdin and Wilcoxon (1976) state that to control for the nonspecific effects such as subject expectancy for improvement, it is essential to use equally credible rationales for treatment and control conditions alike. If this is not controlled, one's power to generalize about the efficacy of a particular treatment is limited. Secondly, the third phase of stress-inoculation training, the application-training phase, used an imaginal presentation of the stress-provoking testing situation. While this is
acceptable, it is possible that actual exposure to a testing situation would prove to be a more effective way to aid the individual's learning specific coping strategies. The current study utilizes the administration of an intellectual task in the application-training phase of the stress-inoculation procedure.

Barabasz and Barabasz (1981) studied the effects of a rational-emotive therapy procedure on skin conductance and self-reported anxiety under an imagined testing condition. The authors had the subjects visualize an evaluative situation and measured physiological responses and self-reported anxiety ratings. This study compared the rational-emotive group to an equally credible attention-placebo control. The rational-emotive therapy (RET) group evidenced improvement on a test anxiety questionnaire and on skin conductance measures after treatment. This study clearly demonstrated the efficacy of a cognitive treatment procedure, while ruling out the alternate explanations of attention-related improvement and expectations of improvement.

D'Alelis and Murray (1981) examined the effects of cognitive therapy on test anxiety in college students and found significant reduction in self-reported anxiety in a four-session group and an eight-session group. No differences in performance on a cognitive task or in grade point average were noted, however. These authors cite several studies
that have obtained similar results (Finger & Galassi, 1977; McCordick, Kaplan, Finn, & Smith, 1979) in that although self-reported anxiety has been reduced, performance has not been effected by the treatment. Holroyd (1976) made the most notable exception to this set of findings, as his treatment groups improved Digit Symbol performance and grade-point-average performance over one semester. D'Alelis and Murray (1981) suggest that differences in subject populations may have accounted for Holroyd's (1976) results, in contrast to those finding no performance differences. They suggest that pure volunteers, the population utilized by Holroyd, may be more responsive to treatment than recruits from a subject pool. As the present study utilizes pure volunteers, the effects of the treatment on performance will be evaluated.

Kookan and Hayslip (1981) investigated the efficacy of a stress-inoculation treatment procedure for test anxiety in elderly (aged 60 and over) students and found that self-reported anxiety was decreased after stress-inoculation training. In addition, increases (although not significant statistically) in fluid intelligence scores were also noted in the stress-inoculation group, whereas no changes were apparent in the waiting-list control group. These results lend support to the idea that cognitive-behavioral strategies can have a positive impact on test anxiety in elderly students and that decreased levels of self-reported anxiety may accompany increases in fluid abilities.
In that study, the stress-inoculation group was to be compared with a waiting-list control group and an attention-placebo group. Subject attrition eliminated the attention-placebo group, and as a result, the effects of therapist attention, presentation of a credible therapeutic rationale, and treatment-generated outcome expectancies were left open to question. Thus, the results of the study can not be interpreted as evidence for efficacy of the specific treatment modality, that is, the stress-inoculation treatment procedure. The factors leading to the attrition in the attention-placebo group were discussed, and several recommendations for adequate attention-placebo control groups with elderly subjects were made.

First, a "common-sense" approach to a placebo treatment rationale was urged—a rationale kept free of complex psychological theorizing. Second, a recommendation was made that the treatment rationale for such a group be as nonthreatening as possible and that avoidance of a perceived attempt to unearth private thoughts be a goal. Finally, the importance of an "active" versus a "passive" treatment procedure for the attention-placebo group was stressed. With these recommendations in mind, an attention-placebo group treatment rationale was designed to overcome the attrition problem by presenting a simpler treatment rationale that engages the subjects in a format similar to the stress-inoculation group, a discussion format that allows the
subjects to explore anxiety-provoking themes in a relaxed atmosphere while incorporating an abbreviated form of cue-controlled relaxation (see Appendix EE, p. 172).

**Factors Contributing to Intellectual Deficits in the Elderly**

It has been noted that the elderly (traditionally defined as being aged 60 and over) person attributes real or perceived performance deficits to declining intellectual abilities (Okun & Siegler, 1977). Until recently, research in the area of age-related intellectual performance characteristics has supported the notion that as one grows older, performance declines (Baltes & Labouvie, 1973). It was assumed that deficits in learning efficiency and cognitive abilities were responsible for this decline in various areas such as intelligence, short-term memory, concept formation, or problem solving. Recently, several authors have noted that these performance deficits may not be due to a decrease in learning or processing abilities, but may be accounted for at least in part by noncognitive factors (Bolton, 1978; Botwinick, 1967; Furry & Baltes, 1975; Gounard & Hulicka, 1977). Cognitive factors are defined as one's intellectual capacity independent of any internal or external source of interference. Those cognitive factors that are thought to be involved in intellectual performance include production deficiency in long-term memory, retrieval deficiency in long-term memory (Gounard & Hulicka, 1977), and problem-solving abilities and
strategies. Noncognitive factors that contribute to intellectual deficits are defined as internal or external events not related to intellectual capacity that influence the individual's ability to utilize that potential. These factors include functional and pathological sensory deficits (Gounard & Hulicka, 1977), inability to tolerate frustration, insufficient or excessively high motivation, cautiousness and conservatism (Okun & Divesta, 1978), fatigue and boredom (Furry & Baltes, 1973), and susceptibility to anxiety in an evaluative setting. To date, most of the studies in the area of performance deficits have concentrated on the modification of cognitive variables to bring about increases in the elderly person's intellectual performance. Labouvie-Vief and Gonda (1976), however, point out that noncognitive factors have not been investigated in relation to intellectual performance characteristics, although research in the area of learning tasks has provided promising results. Botwinick (1967) has commented on the difficulties of isolating the effects of cognitive and noncognitive factors in intellectual performance.

How is one to determine the contribution of non-cognitive factors to the changes in performance with age? The difficulty derives not only from the intrinsic relationships between the non-cognitive factors and the cognitive ones, but also from the fact that both sets vary from one problem to another. (p. 49)
Clearly, one must consider both cognitive and noncognitive factors when dealing with elderly students. Gounard and Hulicka (1977) state the problem in this way:

The learning efficiency of the aged may be improved through the use of teaching and learning techniques designed to compensate for the negative effects of both detrimental cognitive and non-cognitive factors. (p. 417)

Bolton (1978) suggests several methods for reducing the limiting effects of cognitive and noncognitive factors, thus maximizing performance on intellectual tasks.

Research on the effects of cognitive factors. Studies investigating the modification of cognitive factors in intellectual performance have yielded mixed results, and several findings in these studies have suggested the operation of noncognitive factors. Meichenbaum (1974) suggests that a self-instructional training procedure can help the elderly person compensate for problem-solving and intellectual deficits. He postulates that by teaching the elderly person the use of "heuristic processes" and the use of "meditational devices," he or she can overcome to a large extent the age-associated deficits in intellectual functioning. These cognitive behavior components have been systematically manipulated in several studies, in order to study their effects on intellectual performance in the elderly.
Labouvie-Vief and Gonda (1976) employed cognitive strategy training in attempting to impact intellectual performance in elderly adults. A cognitive training group was taught self-guidance skills, appropriate covert verbalizations which guided performance on an intellectual task. An anxiety-training group received these instructions while learning self-statements appropriate to coping with anxiety and failure. In a third group, an unspecified training group, subjects were given practice items to work with no specific instructions. A fourth no-training group received no prior exposure to the cognitive task and worked on an irrelevant verbal fluency task. The group that showed the strongest training effects was the unspecified training group, a group in which the subjects generated their own coping strategies while practicing the task. This finding was unexpected, as it was hypothesized that the specific-strategy training group would evidence the most gains on retest. The authors point out that the elderly may not be as deficient in producing or initiating task-relevant behavior components on an intellectual task as was previously assumed.

Other studies have observed similar results. In a study by Paniccuci (1974), subjects in the treatment group were specifically trained to perform the Letter Sets Test (French, Ikstrom, & Price, 1963), whereas subjects in a "familiar" group were allowed to practice the task without
being provided specific skills in performing the task. The subjects in the "familiar" group performed better than those subjects who were specifically trained in the intellectual task. Paniccuci speculates that the subjects who were trained may have been slowed by an interference phenomenon.

The fact that the older subject can efficiently use enactive skills, as shown by the performance of older subjects in the familiar condition, may mean that the training strategies used in the training condition may have caused interference. (Paniccuci, 1974, p. 74)

Paniccuci's subjects reported that they had difficulties when actually taking the test in choosing between their own strategies and the ones provided to them by the experimenter. Other studies have yielded similar results (Hofland & Willis, 1981; Plemons, Willis, & Baltes, 1978; Roberts & Labouvie, 1980; Willis, Bleizner, & Baltes, 1981).

Horn, Donaldson, and Engstrom (1981) confirmed the loss of fluid abilities with age and state that most of the loss appears to occur between the ages of 30 and 60 and that it is approximately 5 I.Q. units, or one-third of a standard deviation, per decade. For elderly persons over the age of 50, the loss of fluid ability can be expressed as approximating 10 I.Q. points from the abilities that existed in younger years. Horn et al.'s study seems to point out that several factors are responsible for this overall decline.
The memory involved in holding information in awareness while also manipulating it or doing other things does seem to be implicated in Gf decline. . . . Also, the processes at work in initially making sense of information, as when one intentionally classifies information, seems to decline in adulthood and represent an important part of the decline of fluid intelligence. (Horn et al., 1981, pp. 73-74)

Clearly, the role that interfering cognitions play in "making sense of information" is paramount in fluid intelligence declines, on the bases of these data. Speed of obtaining solutions did not appear to be an important variable in aging loss of fluid abilities.

There is little doubt that cognitive factors play a role in performance deficits, but little is known of the interaction with less understood noncognitive factors. For example, Plemons, Willis, and Baltes (1978) examined the modifiability of fluid intelligence in aged subjects. These subjects were trained to perform a figural-relations task which requires identifying a missing element in a series of patterns. Eight training sessions were used to acquaint the subjects with the task. Posttest results confirmed the hypothesis that performance would improve in the trained groups. These results suggest that specific-strategy training can enhance fluid abilities in the elderly person. However, it was noted that significant
retest effects occurred, which suggests a variable other than training as being responsible for the changes noted. The authors speculated that test sophistication could possibly account for these retest effects.

An alternate explanation for the results obtained by Labouvie-Vief and Gonda (1976), Plemons, Willis, and Baltes (1978), and Paniccuci (1974) would involve noncognitive factors. Familiarization with the upcoming cognitive task without the interference of training may have resulted in decreased anxiety levels for the subjects. As they performed the task in practice, subjects may have rehearsed coping strategies that enabled them to perform the task more efficiently without interfering cognitions or physiological arousal. Indeed, the third phase of stress-inoculation training, the application-training phase, allows such practice to occur.

Research on the effects of noncognitive factors. Several studies point out the significance of anxiety in interfering with intellectual performance in the elderly. Whitbourne (1978) found anxiety was related to memory performance among different age groups, including elderly students. "Furthermore, these elderly participants with low recall had higher measured test anxiety, suggesting that their anxiety may have interfered with their memory performance" (p. 208). The author goes on to suggest that alleviation of anxiety in a testing situation should result in improved performance.
Measures should be taken such as providing reassuring or supportive instructions, to optimize the elderly's performance in the testing situation. Age differences in memory or learning can then be more clearly attributed to cognitive deficits rather than to potentially interfering personality factors. (Whitbourne, 1976, p. 208)

Hofland, Willis, and Baltes (1981) studied the effect of two variables, practice and speed, on fluid intellectual performance in the elderly. They assumed that fluid abilities would increase across trials as a function of noncognitive, or performance, factors, such as lack of test sophistication, slower response speed, lack of motivation, and test anxiety. This investigation was broken down into two studies. The first study of test-retest effects showed that performance steadily increased on fluid tasks across all eight trials. State anxiety was also measured across trials, and a significant decrease from the first to the eighth trial was found. A follow-up study measured the effect of extending time limits on fluid tasks and likewise found an increased fluid performance in a group under less time pressure.

Together, the studies suggest the importance of examining performance factors in assessment of intraindividual variability in fluid intellectual functioning in later adulthood. Significant improvement
was found under both practice and time-relaxed power conditions. It appears that given favorable assessment conditions, the elderly are able, with no direct instruction, to activate cognitive skills already within their repertoire and to significantly improve their performance. (Hofland, Willis, & Baltes, 1981, p. 584)

In both studies, a case can be made for the reduction of anxiety across trials as a significant factor in the improvement noted in fluid intellectual ability in the older subjects. In the first study, a state-anxiety inventory demonstrated a reduction in anxiety across trials. In the second study, decreased anxiety levels due to the extended time limits can be inferred from an increase in errors of commission. In both groups, a strong correlation seems to exist between lowered levels of anxiety and increases in measured fluid abilities.

Eisdorfer (1968) has shown that higher levels of autonomic arousal are present in elderly subjects and that this arousal could be responsible for decreases in intellectual abilities. Eisdorfer takes issue with the assumption that older persons come into an evaluative situation at a low level of autonomic arousal and then move along the inverted U-shaped curvilinear relationship between performance and arousal as do younger persons.
Our contention is that the aged may not be at a low state of arousal. Once aroused autonomically, perhaps because of a faulty ability to suppress end organ response or because of an altered feedback system, aged subjects appear to function as if in states of high levels of autonomic arousal. Perhaps aged persons are less capable of tolerating heightened arousal. In any event, increasing anxiety or further exogenous stimulation has a detrimental effect on performance, as opposed to the incremental effect that we would anticipate from an organism stimulated at lower levels of arousal. It would be predicted, then, that where arousal or anxiety is diminished by experimental manipulation older persons should improve their performance. (Eisdorfer, 1968, p. 215)

To test this hypothesis, Eisdorfer, Nowlin, and Wilkie (1970) conducted a study in which heightened autonomic arousal in elderly persons ($\mu = 68.6$ years) was modified with a drug (Inderal). The subjects whose heightened arousal was moderated with the pharmacologic agent performed better on a learning task than those subjects whose autonomic arousal was left unchanged.

More supportive evidence for the overarousal hypothesis in the elderly can be found in a study by Powell, Eisorfer, and Bogdonoff (1964). They found that at the very beginning of the study, elderly persons ($\mu = 71.4$ years)
had higher levels of plasma-free fatty acids in their bloodstream than did younger subjects (μ = 30 years). This indicated a higher level of autonomic nervous system (ANS) arousal for the elderly subjects. After the completion of an intellectual task, arousal persisted longer for older subjects than for younger subjects.

A later study (Troyer, Eis dorfer, Bogdonoff, & Wilkie, 1966) measured the free fatty acid responses in elderly persons (μ = 67.8) during the performance of a learning task. The researchers found that under certain conditions, higher plasma-free fatty acid levels were associated with more errors of omission. They observed that

... such behavior and its correlated physiological control mechanisms may well serve as a protective function in the adaptation of the aged individual to stress. If, as it seems, the aged person has a delayed but heightened arousal pattern to the laboratory learning task, then denial of the task and withdrawal from participation may be a valuable stabilizing mechanism in the interaction of aged persons who feel unable to master their environment.

(Troyer, Eisdorfer, Bogdonoff, & Wilkie, 1966, p. 69)

It is hoped that investigation of evaluative anxiety in the elderly will uncover ways of dealing with this problem, making it unnecessary for the older individual to withdraw from participation in evaluative or stressful
situations. If continuing education is a salient goal for older persons, coping skills that allow them to realize their potential in an educational setting are very important.

Test Anxiety in Older Persons

Several investigators have documented the problem of test- or performance-related anxiety among older students (Knapp, 1970; Ross, 1968; Whitbourne, 1976). Ross (1968) compared the performance of young and older students on a memory task. Each group of students was told that previous performances of the task were deficient and that they should strive to improve on subsequent tasks. Under these challenging instructions, the older subjects performed at a significantly lower level than their younger counterparts. The younger subjects' performances showed less debilitation due to the induced test anxiety. In addition, the older subjects in this study were observed making many self-derogatory remarks prior to beginning the task, and several subjects refused to participate in the study further after being given the challenging instructions. It has been hypothesized in other studies (Sarason & Ganzer, 1963; Spielberger, 1972) that such interfering cognitions play a role in debilitating the performance of the test-anxious individual. Ross (1968) concluded that older subjects were more anxious in the testing situation than the younger subjects. This study suggests that the older
person's susceptibility to stress is increased substantially when he or she is being evaluated on a cognitive task.

In a similar study, Knapp (1970) reported that older subjects who were exposed to a failure situation made lower scores on a paired associates learning task than did younger subjects. After being exposed to the stressful failure feedback, the older subjects were far more likely to make errors of omission on the task. This result was attributed to a tendency of the older subjects to become more cautious after a failure on a cognitive task. It was hypothesized that the younger subjects were driven by a motive to achieve and the older subjects by a strong motive to avoid failure. It is possible that realizing that his or her skills might be lessening posed a serious threat to the individual's view of himself or herself as a competent, able person. Butler and Lewis (1977) have postulated the "senility myth" to explain the tendency of all age groups to attribute memory loss or other cognitive deficiencies in the older person to overall deterioration and decline. The elderly person who overgeneralizes about difficulties on a cognitive task will begin to make derogatory self-statements and will avoid further confirmation of the fear that he or she is deteriorating. Whitbourne (1976) found that older subjects demonstrated significantly higher levels of debilitating test anxiety than did younger subjects on a free-recall memory
experiment. In addition to demonstrating this anxiety on an anxiety measure (Alpert & Haber, 1960), subjects refused to participate in the study or tried to avoid performing the memory task. This reluctance to perform the task was interpreted in the following way.

... it seems clear that they had perceived a situation in which their cognitive functioning was being evaluated as threatening. Such a situation confronted them with the recognition that their mental abilities were perhaps declining. This may be especially serious for the type of individual who joins an institute for continuing education in an attempt to maintain his or her cognitive functioning at the level of earlier adulthood. (Whitbourne, 1976, p. 207)

Mueller et al. (1980) studied the differences in performance on a verbal task in older subjects (average age of 70.5 years) and high- and low-test-anxious undergraduate subjects. The older subjects showed slower reaction times than younger subjects in performing the task, and, in general, the older subjects closely resembled high-test-anxious undergraduates in their performance of the task and their anxiety levels (self-reported). The authors interpreted these results as evidence for the role of anxiety in performance deficits in elderly subjects and as corroboration for the hypotheses advanced by Whitbourne (1979).
The older persons exposed to a challenging task, especially if they anticipate or encounter difficulties, have a tendency to attribute these difficulties to their declining abilities. When they are confronted with what they consider to be "proof" that their abilities are declining, they will often strive to avoid the task that is confirming their lack of ability. Okun and Seigler (1977) examined the attributions the older students make when they fail or perceive themselves as failing at a task. They observed that younger students tended to attribute early failure on a cognitive task to a lack of effort, whereas older students tended to attribute initial difficulties to deficiencies in their ability to perform the task, regardless of effort. For many older adults, the thought that their intellectual abilities were declining was one of the most negative aspects of their advancing years. These negative self-evaluations led to anxiety, and the elderly person often stopped trying to master the material. The person tended to "catastrophize" (Ellis, 1962) or overevaluate the importance of his or her perceived or real loss of ability, and a cycle of failure and anxiety began. Additionally, the fear of failing at a cognitive task and the subsequent avoidance of challenging material may have resulted in the individual depending to greater extent on others to perform tasks that the older person is capable of doing, thus contributing to further losses in self-acceptance (Whitbourne, 1979).
In summary, future performance in a continuing education course might be adversely affected by the lack of effort on the part of older students who have "given up" because an initial failure has convinced them that their abilities have declined to the extent that they cannot do the work. A cycle of failure and anxiety can be established quite easily. The older students take a poor performance to mean that they cannot do the work, that they do not belong in such a setting, and that no amount of effort will offset this deficit. They begin to downgrade themselves for their failing abilities. A perceived loss of ability in older persons often results in the individuals making a serious re-evaluation of their self-worth (Whitbourne, 1977). This leads them to the conclusion that they are worthless and that further efforts at self-improvement will only result in failure. Anxiety that springs from this self-derogation interferes with subsequent performance and leads to more failure experiences in the future. The cycle will continue to feed back on itself, unless the elements that comprise it are systematically dispelled.

It has been established that older persons can benefit in a number of ways from continuing their education and that larger numbers of older persons are currently doing so. One of the problems facing the older student is evaluative anxiety or anxiety in a testing situation.
This anxiety can interfere with performance, or worse, can cause the older student to withdraw from the educational setting. The current study is designed to investigate the efficacy of a stress-inoculation training procedure (Meichenbaum, 1977) in treating test anxiety in an older (nontraditional, aged 50 and over) student population.

**Hypotheses of the Study**

The specific hypotheses to be tested in this study are as follows.

1. It is hypothesized that the stress-inoculation treatment procedure will lead to statistically significant reductions in test anxiety, fear of negative evaluation, state anxiety, and trait anxiety, when compared to an equally credible attention-placebo control group and a waiting-list control group.

2. It is hypothesized that fluid intelligence abilities and, to a lesser extent, crystallized intelligence abilities will increase as a function of anxiety reduction in the stress-inoculation group and that the absence of anxiety reduction in the control groups will be accompanied by nonsignificant changes in fluid and crystallized abilities.

**Method**

Two experiments were carried out to investigate the hypotheses of the study. Study 1 was carried out in the Spring of 1980 at Tarrant County Community College in
Fort Worth, Texas. Study 2 was conducted in the Spring of 1982 at Arapahoe Community College in Littleton, Colorado.

Studies 1 and 2 were designed and conducted so as to be complementary and were identical in many respects. Subjects were selected for each study in much the same way. Instructions for the administration of the pretest and posttest assessment batteries were identical, as were the dependent measures used in each battery (with the exception of the addition of a fluid and crystallized intelligence measure to the pre- and posttest batteries for Study 2). Rationales and treatments comprising the attention-placebo procedures in Study 1 and Study 2 were dissimilar, however.

Subjects

Study 1. Older male and female subjects enrolled in degree and nondegree coursework at Tarrant County Community College in Fort Worth, Texas were recruited for the study. The experimenter obtained a list of the names of students over the age of 60 from the Registrar of the college. A letter (Appendix A, p. 91) was sent to all students on this list, which contained approximately 82 names, and potential participants were encouraged to volunteer for the study by telephone. Secretarial staff receiving the calls were instructed to provide callers with three time periods in which they could participate and to assign each caller the time period of his or her choice. These three time periods were randomly designated as (a) the stress-inoculation
group, (b) the attention-placebo group, and (c) the waiting-list control group. After each subject was assigned to his or her respective group, members of each group met at the designated time period and completed the pretest. The experimenter conducted the pretest batteries. During the pretesting, subjects in the group designated as the waiting-list control group were told that the two available treatment groups were filled and that treatment would commence for them in 4 weeks.

All 18 subjects who volunteered for the study (6 subjects in each group) appeared for the pretest session and the first treatment session. There were 5 females and 1 male in the stress-inoculation group, 3 females and 3 males in the waiting-list control group, and 5 females and 1 male in the attention-placebo group.

In the stress-inoculation group, of the 6 subjects who pretested, all attended the subsequent therapy and posttest sessions. Five of six subjects who attended the pretest and first session in the attention-placebo group did not return for the second session and did not further participate in the study. In the waiting-list control group, all 6 subjects who attended the pretest session appeared for the posttest session.

The mean age of the subjects in the stress-inoculation group was 60.6 years, with a range of ages from 56 to 67. The waiting-list control subjects had a mean age of 56.6
years, and their ages ranged from 55 to 60. Attention-placebo group subjects' ages ranged from 55 to 73, with the mean age of 60.8 years.

The mean number of years of education for subjects in the stress-inoculation group was 13.0 years. Waiting-list control subjects had been in school for an average of 16.6 years, whereas attention-placebo group subjects attended school for an average of 13.4 years.

These subjects gave a variety of reasons for returning to school. Those reasons most frequently cited include "to get a better job" and "meeting interesting people."

Study 2. Older male and female students enrolled in degree and nondegree coursework at Arapahoe Community College in Littleton, Colorado, were recruited to participate in the study. There was an insufficient number of students over 60 years of age with which to conduct the study. The names and addresses of students over the age of 50 who were attending Arapahoe Community College were obtained from the Director of Admissions. A letter was simultaneously sent to all students on this list (see Appendix, p. 92). There were approximately 270 names on the list. Potential participants were encouraged to volunteer by telephone. Secretarial staff who received the calls were instructed to provide callers with information about available time slots and locations of the group sessions. The time slots were randomly designated as
(a) the stress-inoculation group, (b) the attention-placebo group, and (c) the waiting-list control group.

One week after the mailing of the letters, 12 subjects had called and been assigned to the stress-inoculation group; 5 subjects had called and been assigned to the attention-placebo group; and 6 subjects had called and been assigned to the waiting-list control group. According to secretarial staff who took calls from subjects, approximately one-half of the 23 subjects who called to volunteer for the study had no preference for group time slot and were assigned to groups having the fewest number of subjects at that time. The remaining volunteers indicated a strong preference for a particular time slot and were assigned to the slot they desired.

In order to increase the sample size, the experimenter contacted approximately 250 students on the list by telephone to directly encourage their participation. These calls took approximately 7 days to complete, and 8 of those who were contacted volunteered for the study. Of those 8 subjects recruited by telephone, 6 subjects chose the time slot corresponding to the attention-placebo group, and 2 subjects chose the time slot corresponding to the waiting-list control group.

After mail and telephone recruitment, 32 subjects had volunteered to participate in the study. Twelve subjects were in the stress-inoculation group, 8 subjects were in
the attention-placebo group, and 12 subjects were in the waiting-list control group.

After each subject was assigned to his or her respective group, members of each group met at the designated time period and completed the pretest. Therapists (the experimenter and a co-therapist) did not conduct the pretest. Two individuals with testing and group experience were recruited to administer the pretest battery in Study 2. During the pretesting session, subjects in the waiting-list control group were told that the two available treatment groups were filled and that treatment would begin for them in 4 weeks.

Of the 12 subjects expected to pretest in the stress-inoculation condition, 1 subject did not appear, 3 subjects called prior to the meeting to change the time they would take the pretest battery, and 8 persons appeared for the pretesting session as scheduled. Of the 11 subjects expected to appear for pretest in the attention-placebo condition, 7 subjects actually appeared for the session. Of the 8 subjects expected to appear for the pretest in the waiting-list control group, 7 subjects actually pretested at the scheduled time.

In the stress-inoculation group, of the 8 who pretested, 3 subjects did not appear for the subsequent therapy sessions, leaving a total of 5 subjects in the stress-inoculation group. The reasons given for withdrawal from
the study include "having too little time to fit it into my schedule" and "the inconvenience of evening sessions."

In the attention-placebo group, of the 7 subjects who pretested, all attended the first session. After the first session, 1 subject decided not to return due to time constraints and another did not attend the subsequent sessions and could not be reached by telephone, leaving a total of 5 subjects in the attention-placebo group.

After the initial therapy session, it was apparent that due to attrition, more subjects were needed in the attention-placebo group. Four subjects who had originally been assigned to the waiting-list control group were randomly selected from the 7 subjects who had pretested in this group and were called to form a supplemental attention-placebo group. This left 3 subjects in the waiting-list control group. The supplemental attention-placebo group subjects received exactly the same treatment as those in the original attention-placebo group, except that the treatment sessions began one week later for the supplemental attention-placebo group.

The mean age of the 5 stress-inoculation group subjects was 54.6 years, with ages ranging from 51 to 61. The mean age for the 5 original attention-placebo group subjects was 55.6 years, with a range of 52 to 58 years. The 4 supplemental attention-placebo group members' ages averaged 54.8 years, with a range of 53 to 58 years, and the
waiting-list control group members had a mean age of 56.6 years, with a range from 49 to 61 years.

Thirteen females and 4 males volunteered for treatment and were distributed in the following way: the stress-inoculation group was comprised of 3 males and 2 females, and the waiting-list control group was comprised of 1 male and 2 females. The original and supplemental attention-placebo groups (9 subjects) were comprised of female subjects entirely.

The average educational level in years was consistent across groups, ranging from 13.5 years for the attention-placebo groups to 14.6 years for the waiting-list control group. The stress-inoculation group members averaged 13.6 years of education. With the exception of 1 subject with an eighth-grade education, the number of years each subject in the study had spent in school ranged from high school graduate (12th grade) to college graduate (16th grade).

In the stress-inoculation group, the reasons most often cited for returning to school were "to gain a general education" and "to learn more things of interest." In the attention-placebo groups, the reason most often cited was also "to learn more things of interest." Waiting-list control group subjects also wished "to learn more things of interest" and "to contribute more to society." A complete description of the samples in terms of age, level of education, and sex can be found in Table 4 (Appendix F, p. 97).
Pretest Assessment

In Study 1, pretesting was conducted by the experimenter. In Study 2, two assistants were utilized to conduct pretesting. Other aspects of the two studies for the pretesting were the same for both studies.

Subjects were first administered the Test Anxiety Scale (Sarason, 1973), which specifically measures test anxiety with a series of true and false questions about testing situations. This measure is designed to tap the test-anxious behaviors and attitudes of the subjects.

Subjects were then administered the Fear of Negative Evaluation Scale (Watson & Friend, 1968), which measures apprehension and distress over negative events. Watson and Friend (1969) state: "Fear of negative evaluation was defined as apprehension about other's evaluations, avoidance of evaluative situations, and the expectations that others would have evaluated oneself negatively" (p. 440). They found that persons who score in the upper range of the Fear of Negative Evaluation Scale are nervous in evaluative situations and are concerned about social approval. Test-retest correlation of the measure is .78.

The next measure administered to the subjects was the trait portion of the State-Trait Anxiety Inventory (STAI) (Spielberger, Gorsuch, & Lushene, 1970). This inventory measures trait anxiety, which the authors refer to as "relatively stable individual differences between people
in the tendency to respond to situations perceived as threatening with elevations in A-state intensity" (p. 27).

After completing the trait portion of the STAI, subjects were told that they would soon be given a moderately difficult reasoning task to perform. After this anxiety-engendering announcement, the state portion of the STAI was administered to the subjects. Spielberger et al. (1970) describe state anxiety as "a transitory emotional state or condition of the human organism that is characterized by subjective, consciously perceived feelings of tension and apprehension, and heightened autonomic nervous system activity" (p. 27). Test-retest reliability of the STAI trait portion ranges from .78 to .86 with a population of college undergraduates. Test-retest reliability of the STAI state portion has been found to be lower, from .16 to .54, with a median reliability coefficient of .32. The reliability coefficient for the state portion of the STAI is understandably lower because of a unique set of situational factors that exist between the test and retest sessions.

After the state portion of the STAI, form A of the Letter Sets Test I-1 was administered (French, Ekstrom, & Price, 1963). The Letter Sets Test is a speeded test of inductive reasoning and is said to measure fluid ability (Horn, 1978). Subjects are required to infer from a sequence of letters which letter of the alphabet would
logically end the sentence. Form A of the test is comprised of the first 15 letter sequences in the 30-item test. In addition, a matrices test of fluid abilities was given to the subjects (Horn, 1975). A measure of crystallized intelligence (Horn, 1975) was then given. Additionally, a remote associations measure of crystallized intelligence was given (Horn et al., 1981).

After the presentation of the treatment rationale during the first session in the stress-inoculation group and the attention-placebo group, an expectancy and credibility measure was given to each subject. This measure can be found in Table 1 (Appendix C, p. 93) and is designed to assess equality of expectancy for improvement across treatment groups. The importance of controlling for equality of credibility of the treatment rationale and expectancy for improvement has been pointed out by Kazdin and Wilcoxon (1976).

Rationale for the Order of Dependent Measures

The Test Anxiety Scale and the Fear of Negative Evaluation Scale were given first for several reasons. The measures have similar true-false formats and are approximately the same length. They are nonthreatening and serve as a good "warm-up" for the measures that follow.

The state anxiety measure preceded the fluid and crystallized intelligence measures, in order to provide
some assessment of how anxious each subject became before actually taking a test. As mentioned previously, the subjects were told before taking the state anxiety measure that they would be receiving a rather difficult measure of intelligence.

**Treatment**

In Study 1, treatment for the stress-inoculation group was carried out by the experimenter, a doctoral student in clinical psychology, who was in his second year of training at North Texas State University in Denton, Texas. The experimenter designed the treatment procedure and had experience in conducting cognitive-behavioral treatments for anxiety.

In Study 2, treatments for the stress-inoculation group and the attention-placebo groups were conducted by the experimenter and a cotherapist. Both were doctoral students in clinical psychology in the internship year, and both had been trained in the use of cognitive-behavioral therapy. The cotherapist was blind to the experimental hypotheses and received several hours of training in the use of the therapist manuals utilized in this study (see Appendices AA and DD, pp. 128 and 163). The therapists were closely matched for age, overall appearance, and experience. Both were employees at Fort Logan Mental Health Center in Denver, Colorado, when the study was completed.
Stress-inoculation group. Treatment in this group followed the description of stress-inoculation training by Rimm and Masters (1979) and Meichenbaum (1977) and utilized the treatment manual used by Neumann (1980). The stress-inoculation procedure consisted of three phases. The first session, the "education phase," consisted of providing the subjects with a cognitive-behavioral explanation of anxiety. Schacter's (1966) theory of emotion was explained to the subjects in lay terms. This explanation indicated to the subjects that their anxiety involves two elements: (a) autonomic physiological arousal (such as sweaty palms, increased heart rate, and bodily tensions) and (b) self-defeating cognitions that interfere with task performance. The A-B-C theory of emotion (Ellis, 1973) was presented as well, demonstrating the causal sequence of the testing situation, irrational beliefs held by the subject, and the autonomic arousal experienced in the situation. This rationale was first presented to the subjects in printed form (Appendix X, p. 117). After reading the rationale, subjects filled out the expectancy/credibility assessment measure, which is designed to assess the subjects' confidence in the treatment they are to receive.

After the subjects had been oriented to the details of the treatment plan, they began to learn cue-controlled relaxation procedures. These were designed to help them moderate the physiological arousal that occurs in an
evaluative situation. Training in cue-controlled relaxation followed the procedure outlined by Bernstein and Borkovec (1973) (see Appendix BB, p. 144).

After a break, subjects discussed the idea that self-statements cause emotional arousal and needlessly interfere with adequate intellectual functioning. They were asked to imagine themselves in a testing situation in which they were unprepared or to recall past testing situations in which they were anxious. Group discussion on what thoughts arise during these situations and how they could be restated more rationally were encouraged. An emphasis was placed on identifying the irrational, self-defeating nature of such statements as "If I do poorly on this test, it will prove that my memory is failing," or "It would be really horrible if my memory is poorer than it used to be." The therapist modeled more rational statements for the subject at this point and corrected errant attempts by the subjects to adaptively change their thoughts (see Table 2, Appendix D, p. 94).

At the close of the first session, subjects were given homework assignments to assist them in perfecting the skills they were learning. They were asked to practice the relaxation procedure twice a day, in the morning before lunch and just before going to bed. They were also asked to imagine themselves in a testing situation, to identify negative thoughts that arise during the imagined event, and to
substitute more adaptive thoughts in their place. Subjects were asked to note some of the negative thoughts that arose during these imagery sessions.

The second session began with further practice in cue-controlled relaxation training. This session followed a 7-muscle, deep-muscle relaxation sequence rather than the 16-muscle sequence the subjects were taught in the initial session. After cue-controlled relaxation training, subjects were asked to discuss performing their homework assignments. They were encouraged to discuss the thoughts they noted while imagining themselves in a testing situation. The coping model was restated at this point.

After a break, the subjects were taught the four sequential stages of the stress experience (Meichenbaum, 1977) and the particular self-statements that occur at these stages. Coping statements were given to the subjects for each of these stages, which are (a) preparing for a stressor or the stressful situation, (b) confronting and handling the stressful situation, (c) coping with feelings of being overwhelmed in a stressful situation, and (d) reinforcing oneself for successful performance (see Table 3, Appendix E, p. 95). Subjects were encouraged to come up with their own coping statements at each point in the four stages.

At the end of the second session, subjects were told that they would be given a test in the final session in
order to give them an opportunity to practice the coping skills they had been learning. The test was announced as a measure of intelligence, in order to elicit anxiety to some degree.

In the third session, subjects were given an opportunity to practice the coping skills they had learned in the first two sessions. Before receiving the test, subjects went through a four-muscle sequence deep-muscle relaxation procedure similar to those practiced in the first two sessions. Subjects were then encouraged to discuss homework assignments they performed during the previous week. Subjects were then given an abstract analogies task, a test of intellectual abilities that requires inductive reasoning skill. This test was viewed as an analogue to the testing situations that caused the subjects anxiety in the past. After taking the test, subjects were encouraged to discuss the coping skills they utilized during the exercise.

At the end of the third session, subjects were reminded that they would be meeting the following week for a short time. Subjects were strongly urged not to miss this final meeting, as it was important to the entire project.

Attention-placebo groups. Studies 1 and 2 utilized quite different treatment rationales and procedures for the attention-placebo group. The Study 1 attention-placebo
group was modeled after a similar group devised by Neumann (1980) (see Appendix Y, p. 120). The Study 2 attention-placebo group was designed to improve on problems encountered with the Study 1 attention-placebo group (see Appendix DD, p. 163).

The Study 1 attention-placebo group was designed to control for nonspecific factors, such as therapist attention and expectation for improvement without providing therapeutic factors that were being tested in the stress-inoculation group. All factors, such as time spent in treatment and presentation of pretest and posttest measures, were kept consistent with the stress-inoculation group. The explanation and procedure for this group were taken from a study by Neumann (1980) (see Appendices Y and CC, pp. 120 and 154).

A rationale for the procedure (Appendix Y, p. 120) was given to group members at the beginning of the first treatment session. Previous pilot testing established this rationale as equally credible to the rationale presented for the stress-inoculation group.

After completion of the assessment of the credibility of this rationale, subjects were given a form of relaxation training which involved 4-muscle groups (Appendix EE, p. 172), in contrast to the 16-muscle group sequence utilized in the stress-inoculation group. The subjects then watched a 30-minute film which covered a subject
matter completely unconnected with any aspect of evaluation or test-related anxiety. At 30-second intervals during the film, the therapist tachistoscopically projected blank slides over the content material of the film. Subjects were told during the presentation of the attention-placebo rationale that the content of the slides would not be made available to them but that the scenes depicted were highly anxiety-arousing and would be registered on the unconscious mind. After 15 minutes of film and tachistoscopic presentation, the film was stopped, and the subjects were relaxed again with the four-muscle group relaxation sequence.

After a break, subjects were introduced to the stimulus-controlled free association procedures, and note pads were given to all subjects. Slides depicting classroom and testing situations were shown, and subjects were encouraged to record free associations to each slide as it was presented. Twelve slides were presented in the first session.

Following this procedure, subjects were encouraged to discuss their free associations with other group members. No insights or interpretations were offered by the therapist during this period.

After the stimulus-controlled free association period, subjects were given two homework assignments: (a) to practice relaxation twice daily, and (b) a nightly free association time concerning any evaluative situations that
had engendered anxiety for them recently or in the past. These free associations were to be written down and brought to the next session the following week.

The second and third sessions were to proceed similarly to the first.

The Study 2 attention-placebo group was also designed to control for nonspecific factors, such as therapist attention and expectation for improvement, without providing therapeutic factors that were being tested in the stress-inoculation group. All factors, such as time spent in treatment and presentation of pretest and posttest measures, were kept consistent with the stress-inoculation group.

A rationale for the procedure was given to group members at the beginning of the first treatment session (see Appendix Z, p. 125). After completing the assessment of the credibility of this rationale, subjects were given a form of relaxation training which involves 4-muscle groups, in contrast to the 16-muscle group sequence utilized in the stress-inoculation group. The subjects were then introduced to the discussion format of this treatment procedure. They were given a "psychological" explanation of anxiety and were encouraged to discuss past experiences and perceptions of these experiences that may have led to present anxiety levels. This explanation was couched in an A-B-C format similar to Ellis' (1962) explanation of the rational-emotive hypothesis, with point A as life
experiences, point B as perception and assimilation of such experiences, and point C as the felt anxiety under stressful circumstances—that is, the result of point B. This explanation was designed to loosely approximate the format of the cognitive treatment in the stress-inoculation group.

After this explanation and some discussion, the subjects were asked to imagine a testing situation and to recall feelings that such an examination evokes. It was suggested that such feelings have occurred in other situations, and the subjects were instructed to free associate and generate impressions of these associations. The group members were then instructed to discuss the feelings and associations that arose in this exercise. Group members were encouraged to express the topic of anxiety freely, and few limitations were set to govern content of the discussion.

After the discussion had run its course and 5 to 10 minutes remained in the session, the subjects were given two homework assignments: (a) to practice relaxation and (b) a nightly free association time concerning evaluative anxiety or related anxiety-evoking circumstances. These free associations were to be written down and brought to the next session the following week.

The second and third sessions proceeded similarly to the first, with the exception that the expectancy and
credibility measure was administered at the end of the second and third sessions, rather than at the beginning of the sessions. In the third session, subjects were given an abstract analogies task and were told that the purpose of the test was to assist them in recalling past experiences.

Neumann (1980) details further attributes characteristic of the attention-placebo group in the following way. The attention-placebo group has been designed to parallel treatment in the stress-inoculation group in several respects: (1) therapists used, (2) total time spent in therapy, (3) homework assignments, and (4) emphasis on similar components of the problem which are treated by both approaches. The rationale behind each approach thus focuses on two components of testing anxiety which will be changed during treatment. The first is an arousal component which will be treated through the use of cue-controlled relaxation. . . . The second is a cognitive component that is to be treated by self-statement modification and group discussion in the [stress-inoculation] group, and by . . . free association and group discussion in the attention-placebo group.

The attention-placebo group's 'therapeutic inertness' may be questioned because of the inclusion of relaxation training and group discussion as a part
of the treatment package. However, the potential therapeutic benefits have been minimized as much as possible while keeping other similarities between the group intact (e.g., therapist contact time, homework assignments). For example, relaxation training in the attention-placebo group has been abbreviated to such an extent in all sessions that it is unlikely to be beneficial to subjects. Further, subjects will not be given specific instructions on how to use the relaxation training in a theoretically meaningful way as they are in other therapies in which relaxation is involved.

The use of group discussion in the attention-placebo group may also be questioned on the same grounds. However, the therapeutic involvement of the therapists with regard to the benefits achieved by this part of treatment should be no more than that achievable by self-help only group. To be considered a promising treatment approach, it seems imperative that a therapy should be able to show greater effectiveness than support which might be readily available in the natural environment (i.e., outside of therapy). Thus, any observed differences favoring the stress-inoculation group over the attention-placebo group may be viewed as a conservative estimate of its effectiveness over non-specific
factors alone. If no differences are found, further use of the stress-inoculation approach with this population would clearly not be indicated, since a treatment approach with negligible therapeutic benefits would have been shown equally helpful. (Neumann, 1980, pp. 39-43)

Waiting-list control group. Subjects in the waiting-list control group were pretested with all other groups initially and were told after the pretreatment assessment battery that the groups had been filled. They were asked to meet as a group during the same week the stress-inoculation group and the attention-placebo group received the posttreatment assessment battery. At this meeting, they were given the posttreatment assessment battery and were told that the reason for the additional testing was to be sure no changes in their anxiety levels had occurred since the initial pretreatment assessment. After posttreatment assessment, subjects in this group were assigned a time to meet for stress-inoculation training. The author offered to hold three sessions in subsequent weeks following the treatment description for stress-inoculation training. None of the subjects requested these sessions.

Posttest Assessment

In Study 1, 1 week after the final group treatment session, all six stress-inoculation group members met for the posttest assessment. All six waiting-list control
subjects also appeared for posttest assessment after the 3-week waiting period.

In Study 2, 1 week after the final group treatment, all five stress-inoculation group members met for posttest assessment. Six of nine subjects in the attention-placebo group in Study 2 met for posttest, and two of three subjects in the waiting-list control group met for posttest assessment. Those who did not appear for the posttest assessment session were contacted by telephone and were then mailed posttest assessment batteries. In Studies 1 and 2, the posttest batteries were administered exactly in the same manner as in the pretest assessment.

Follow-Up Assessment

One month after posttest assessment, subjects in the stress-inoculation and attention-placebo groups in Study 2 were mailed a set of follow-up assessment batteries. The follow-up assessment battery consisted of a third alternate form of the measures taken at pretest and posttest in all groups. An attempt to administer a follow-up battery in Study 1 was made, but attrition after the posttest session nullified this attempt.

Data Analysis

Credibility/expectancy measure. A one-way analysis of variance was performed to test for differences in session one credibility/expectancy ratings between subjects in Study 1 and Study 2. Analyses of the session one
credibility/expectancy ratings within each study were conducted to test for differences between the stress-inoculation groups and the attention-placebo groups by means of a univariate t test. A univariate analysis of variance was utilized to test for significant change across sessions in Study 2 on this measure. Two one-way repeated measures analyses of variance were then performed between groups in Study 2 for the initial credibility/expectancy rating, the session two rating, and the session three rating.

Analysis of major dependent variables. Study 1 and Study 2 were analyzed separately and then were combined for analysis. The combined groups yielded 11 subjects in the stress-inoculation condition, 9 subjects in the attention-placebo condition, and 9 subjects in the waiting-list control group. The effects of each treatment procedure were assessed with univariate and multivariate analyses. Hotelling's $T^2$ (Winer, 1972) was used to assess pretest to posttest change across groups for all dependent measures as a set. Analyses were performed to assess change across all dependent measures in each study separately and in the combined data.

For exploratory purposes only, univariate repeated measures analyses of variance were utilized to make between group comparisons on all dependent measures. Independent variables in the 3 X 3 design were treatment groups
(stress-inoculation, attention-placebo, and waiting-list control) and measurement occasion (pretest, posttest, and follow-up). Due to missing follow-up data for the waiting-list control group in Study 2, $3 \times 2$ analyses were run in addition to the $3 \times 3$ analyses.

Analyses of covariance with pretest scores as the covariate were also performed on all dependent measures in each study and in the combined data.

Supplementary analyses. A one-way analysis of variance was conducted to compare pretest means across Study 1 and Study 2. A multivariate analysis of variance was conducted to detect differences due to therapist effects in Study 2. Exploratory correlational analyses among pretest, posttest, and follow-up measures were conducted, utilizing Pearson's measures of association.

Results

Credibility/Expectancy Measure

Analysis of the session one credibility/expectancy measures, comparing the stress-inoculation group and the attention-placebo group in Study 1, was conducted by means of a univariate $t$ test. The results of this analysis reveal no significant differences in credibility/expectancy for the stress-inoculation treatment rationale and the attention-placebo treatment rationale in Study 1 ($t(1, 10) = -.30, p > .05$).
A one-way analysis of variance was conducted to test for differences in treatment rationale credibility/expectancy ratings between subjects in Study 1 and Study 2. No significant differences are found ($F(1, 34) = 2.25, p > .05$).

A univariate analysis of variance was utilized to test for significant change across sessions in Study 2 on the credibility/expectancy measure for the stress-inoculation and attention-placebo groups. A significant change is demonstrated ($F(1, 17) = 4.18, p = .03$). Inspection of means reveals that the change in both groups is toward increased credibility scores. Means of Study 2 credibility scores across all sessions are presented in Figure 1, Appendix Q, p. 110. In addition, two-way repeated measures analyses of variance were performed to assess the significance of differences between groups in Study 2 for the initial session credibility/expectancy rating, the session two rating, and the session three rating. No significant differences are found.

Analyses of Pretest Differences

A one-way analysis of variance was performed to test for differences between pretest means of the dependent measures common to Study 1 and Study 2 (see Table 9, Appendix K, p. 102). No significant differences between the dependent measures at pretest in the two studies are found.
Analyses of Therapist Effects

A multivariate analysis of variance was performed to assess if therapists in Study 2 produced differential treatment effects. Hotelling's $T^2$ reveals no significant differences between therapist effects ($T^2 = 2.67, p = .13$).

Analyses of Major Dependent Variables

The effects of the stress-inoculation treatment and the attention-placebo treatment on the major dependent variables in Study 1 and Study 2 were analyzed with multivariate and univariate procedures. Hotelling's $T^2$ (Winer, 1972) was used to assess pretest to posttest change across all dependent measures. Between-group comparisons were examined by means of univariate repeated measure analysis of variance as well as analysis of covariance.

Multivariate Analysis

An analysis with Hotelling's $T^2$, using residualized scores (posttest minus pretest), shows significant treatment effects across all dependent measures ($T^2 = 6.46, p = .03$) in Study 1. A similar analysis for Study 2 is nonsignificant ($T^2 = .86, p = .61$). Finally, an analysis with Hotelling's $T^2$, using residualized scores, was performed on the combined data in Study 1 and Study 2, and the result is a nonsignificant treatment effect across dependent measures ($T^2 = 1.28, p = .33$).
Univariate Analyses—Study 1

The dependent measures were separately analyzed via a 2 (groups) X 2 (occasions) analysis of variance (ANOVA). These measures were (a) the Test Anxiety Scale, (b) the Fear of Negative Evaluation Scale, (c) the Trait Anxiety Inventory, (d) the State Anxiety Inventory, (e) the Letter Sets Test (fluid intellectual ability), and (f) the Vocabulary Test (crystallized intellectual ability).

Significant main effects for occasion are found for the Test Anxiety Scale ($F(1, 5) = 8.13, p = .01$), the Trait Anxiety Inventory ($F(1, 3) = 11.04, p = .007$), and the Vocabulary Test (crystallized intelligence measure) ($F(1, 5) = 5.62, p = .03$). A group X occasion interaction demonstrating improvement (a lessening of anxiety) of the stress-inoculation group from pre- to posttest on the Trait Anxiety Inventory is significant at the .02 level ($F(1, 10) = 6.68, p = .02$). The measure with interactions approaching significance is the Test Anxiety Scale ($F(1, 10) = 3.98, p = .07$).

Univariate Analyses—Study 2

The dependent measures were separately analyzed via a 2 (groups) X 2 (occasions) ANOVA. These measures were the same as those in Study 1, with two additions: (a) the Remote Association Test and (b) the Matrices Test. Group means for pre- and posttest scores for Study 2 are presented in Table 7, Appendix I, p. 100. Univariate $F$'s are presented in Table 8, Appendix J, p. 101.
Significant main effects for occasion are found for the Test Anxiety Scale \( F(2, 14) = 5.96, p = .03 \) and the Vocabulary Test \( F(2, 14) = 5.11, p = .04 \). Main effects for occasion for the State Anxiety Inventory \( F(2, 14) = 3.89, p = .07 \) approach significance. A near significant main effect for groups is found on the Test Anxiety Scale \( F(2, 14) = 3.44, p = .06 \). Main effects for groups are obtained on the Fear of Negative Evaluation Scale \( F(2, 14) = 9.07, p = .003 \). No group \( X \) occasion interactions are statistically significant.

Univariate Analyses--Combined (Studies 1 and 2)

The dependent measures separately analyzed were the same as those in Study 1. Group means of pre- and posttest scores for the combined data are presented in Table 9, Appendix K, p. 102. Univariate \( F \)'s for combined data are presented in Table 10, Appendix L, p. 103.

Significant main effects for occasion are found for 5 of the 6 dependent measures: the Test Anxiety Scale \( F(2, 26) = 16.81, p < .001 \); Fear of Negative Evaluation Scale \( F(2, 26) = 6.21, p = .02 \); Trait Anxiety Inventory \( F(2, 26) = 6.73, p = .02 \); State Anxiety Inventory \( F(2, 26) = 10.46, p < .001 \); and Vocabulary Test \( F(2, 26) = 9.57, p < .001 \) and yield significant \( F \) values.

A significant main effect for groups is found for the Trait Anxiety Inventory \( F(2, 26) = 3.65, p = .04 \) and for the Vocabulary Test \( F(2, 26) = 3.82, p = .03 \). For the
Trait Anxiety Inventory, Neuman-Keuls tests reveal that the waiting-list control group evidenced significantly lower mean scores than the two treatment groups. The treatment groups are not significantly different from one another on this measure. Analyses with Newman-Keuls tests on the Vocabulary Test show the attention-placebo group to have significantly higher mean scores than the stress-inoculation group or waiting-list control group. The latter two groups are not significantly different from one another. No significant group X occasion interactions are found in this analysis, although the Test Anxiety Scale interaction \( F(2, 26) = 2.82, p = .08 \) approaches significance, with scores differentially declining in each group (stress-inoculation being superior).

When a 3 (group) X 3 (occasion) repeated measures analysis of variance is used to assess the effects of treatment on pretest, posttest, and follow-up scores in Study 2, no main effects for group, occasion, or group X occasion interactions are found for the Test Anxiety Scale, Fear of Negative Evaluation Scale, Trait Anxiety Inventory, or State Anxiety Inventory.

On the Letter Sets Test (fluid intellectual abilities), a significant main effect for occasion is found \( F(2, 10) = 11.29, p = .002 \). An analysis with Newman-Keuls tests shows the follow-up scores to be significantly different from pretest or posttest scores on this measure \( p < .05 \).
Inspection of the pretest, posttest, and follow-up measures shows follow-up scores to be higher in both the attention-placebo and the stress-inoculation groups. Means of the pretest, posttest, and follow-up scores for the Letter Sets Test in Study 2 are presented in Table 12.

Table 12

Cell Means for Letter Sets Test in Study 2

<table>
<thead>
<tr>
<th>Group</th>
<th>Pretest</th>
<th>Posttest</th>
<th>Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stress-inoculation</td>
<td>10.3</td>
<td>9.3</td>
<td>14.0</td>
</tr>
<tr>
<td>Attention-placebo</td>
<td>9.3</td>
<td>9.7</td>
<td>14.5</td>
</tr>
</tbody>
</table>

On the Vocabulary Test (crystallized intellectual abilities), a significant main effect for occasion is found ($F(2, 10) = 12.68, p = .002$). An analysis with Newman-Keuls tests shows the follow-up measure scores to be significantly different than pretest or posttest scores on this measure ($p < .05$). Inspection of pretest, posttest, and follow-up means shows follow-up scores to be lower in the two treatment groups (see Table 13).
Table 13
Cell Means for Vocabulary Test in Study 2

<table>
<thead>
<tr>
<th>Group</th>
<th>Pretest</th>
<th>Posttest</th>
<th>Follow-Up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stress-inoculation</td>
<td>14.0</td>
<td>12.0</td>
<td>8.3</td>
</tr>
<tr>
<td>Attention-placebo</td>
<td>13.75</td>
<td>13.25</td>
<td>10.5</td>
</tr>
</tbody>
</table>

Analyses of Covariance

Analyses of covariance with pretest as the covariate were run on all dependent measures in Study 1, Study 2, and across combined data. No significant treatment effects are found in this analysis. Results of analyses of covariance for combined data are presented in Table 14, Appendix N, p. 105.

Individual Differences Analyses—Study 1

Spearman correlation coefficients between gain scores on all dependent measures were performed on both the stress-inoculation and waiting-list control groups. In the stress-inoculation group, a correlation of .86 (p = .012) is found between Test Anxiety Scale gain scores and Trait Anxiety Inventory gain scores. In those subjects who received stress-inoculation training, where Test Anxiety Scale scores are lower after treatment, Trait Anxiety Inventory scores are also lower. A similar relationship is found between Test Anxiety Scale gain scores and Fear of Negative Evaluation gain scores (r = .84, p = .018).
A significant correlation of -.81 (p = .025) is also found between Trait Anxiety Inventory gain scores and Letter Sets Test gain scores. As Trait Anxiety Inventory scores lower in the stress-inoculation group, fluid intelligence scores tend to rise (r = -.81, p = .05).

Examination of these correlations in the waiting-list control group reveal a significant correlation (r = .75, p = .042) between Test Anxiety Scale scores and Letter Sets Test gain scores. No other significant relationships exist between gain scores on the major dependent variables in the waiting-list control group.

Across both groups, pretest levels of Test Anxiety Scale scores are correlated with the other dependent measures, and significant relationships are found. Pretest levels of Test Anxiety Scale scores are significantly correlated with Trait Anxiety Inventory pretest scores (r = .74, p = .003), Fear of Negative Evaluation pretest scores (r = .70, p = .005), and State Anxiety Inventory pretest scores (r = .51, p = .04).

Individual Differences Analyses—Study 2

Spearman correlation coefficients between gain scores on all dependent measures were performed on the treatment and control groups. Test Anxiety Scale gain scores are significantly correlated with Fear of Negative Evaluation Scale gain scores (r = .67, p = .001) and Trait Anxiety Scale gain scores (r = .45, p = .03). There is a negative
correlation between the Matrices Test gain scores and the Test Anxiety Scale gain scores \((r = -0.44, \ p = 0.03)\). Matrices Test gain scores are positively correlated with Vocabulary Test gain scores.

Gain scores on the Letter Sets Test are negatively correlated to gain scores on the Trait Anxiety Inventory \((r = -0.49, \ p < 0.001)\). Letter Sets Test gain scores are positively correlated with Vocabulary Test gain scores \((r = 0.55, \ p < 0.001)\).

In Study 2, pretest levels of the Test Anxiety Scale scores are correlated with other dependent measures, and significant relationships are found. Pretest levels of Trait Anxiety Inventory scores are significantly correlated with Fear of Negative Evaluation Scale scores \((r = 0.82, \ p < 0.001)\) and Trait Anxiety Inventory scores \((r = 0.79, \ p < 0.001)\).

Correlational Analyses of Individual Differences—Combined Data

There are a large number of significant correlations between all gain scores in the combined analyses. Correlations for all dependent measure gain scores are presented in Table 16, Appendix P, p. 109.

Discussion

Immediate Treatment Effects

In the following discussion of the results of this study, a number of relevant findings and issues will be
explored. After a statement of the major purpose of this study, analyses supporting the combination of data in Studies 1 and 2 are presented. The findings' bearing on each hypothesis are discussed as well as support for the efficacy of both treatment procedures. Alternate explanations of these treatment effects follow, as well as a discussion of specific and nonspecific effects. Issues important to the construction of attentional placebo controls with an older student population are considered. A rationale for improving upon the design of Study 1 is presented, followed by consideration of methodological flaws and limitations. Recommendations for further research and a summary of findings of the study complete this section.

The major purpose of this study was to evaluate the efficacy of a stress-inoculation treatment and an equally credible attention-placebo control in alleviating self-reported test anxiety and in facilitating intellectual performance in older college students. Two studies are combined to produce the final results. It was essential that the subjects in each of these studies not differ from one another in statistically significant ways, either on pretest measures or demographic characteristics. Statistical analyses reveal no differences between Study 1 and Study 2 subjects on any of the pretest dependent measures. Differing age criteria exist for Study 1 (age 60 cut-off) and Study 2 (age 50 cut-off), and a statistical analysis
reveals significant differences between the ages of subjects in the two studies. Study 1 subjects average 58.5 years of age, whereas Study 2 subjects have a mean age of 55.3 years. An age difference of 3.2 years, although significant statistically, is a finding which may have little practical meaning for the purposes of this study. There does not appear to be meaningful differences between Studies 1 and 2 in terms of the number of years of education (13 years versus 13.6 years in the stress-inoculation groups; 16.6 years versus 14.6 years in the attention-placebo groups) for group members.

Credibility/expectancy measure ratings (first session) are not significantly different between the groups in Study 1, in Study 2, or between combined treatment groups in the two studies. Across the three sessions in Study 2, there is significant change toward improvement on this measure in both groups. As Kazdin (1980) points out, an equally credible attention-placebo group is necessary to rule out alternate explanations of the efficacy of a specific treatment procedure—in this case, the stress-inoculation procedure.

The results of the present analyses do not support the hypothesis that a stress-inoculation treatment procedure would bring about statistically significant reductions in test anxiety, fear of negative evaluations, trait anxiety, or state anxiety. When the data are examined, it appears
that both treatment procedures lead to some improvement in levels of test anxiety and trait anxiety, although these changes are not statistically significant. The hypothesis that reduced anxiety levels would lead to increases in fluid and crystallized performance are not supported in the combined analyses. Significant differences are noted in levels of fluid and crystallized intellectual abilities on follow-up in Study 2, as well as trends toward increases in fluid abilities in Study 1. These results cannot be considered as supporting evidence for the above hypothesis.

Several findings appear to support the idea that subjects in both treatment groups received some benefits. In the analysis of combined data, the Test Anxiety Scale group X occasion interaction approaches significance (p = .08). Visual inspection of the means on this scale for both groups across sessions (Figure 2, Appendix R, p. lll) shows more pretest to posttest improvement in the stress-inoculation group than in the attention-placebo or waiting-list control groups. Analyses of covariance reveal trends which suggest stress-inoculation group superiority in test anxiety (reduction in anxiety).

A main effect for groups for the Trait Anxiety Inventory is found (p = .04). Examination of the pre- to posttest means on this scale shows more improvement in the stress-inoculation group than in the other groups. This change is in the hypothesized direction.
Follow-Up Effects

There is significant attrition in the follow-up assessment, and a N size of 10 is obtained. There are no follow-up data for waiting-list control subjects in Study 2, thus effectively reducing the analysis to a 3 X 2 design. There are major limitations that bear on the interpretation of the obtained results of follow-up data. However, the findings on fluid and crystallized intelligence measures are intriguing.

Increases in fluid intelligence scores at follow-up might be due to several factors. The follow-up measure was administered by mail. Previous assessment sessions had taken place in a group setting. At home, there may have been less perceived time pressure, and it is possible that subjects at follow-up took more time on the measure than in previous assessment sessions. It is also within the realm of possibility that subjects may have "cheated" on the measure by asking others for help.

Practice effects may also be responsible for positive changes in fluid intelligence at follow-up. The follow-up Letter Sets Test measure is an amalgam of pretest and post-test measures, and familiarity with the items could result in increased performance levels.

Another contributing factor to this increase in performance on the Letter Sets Test on follow-up might be related to demand characteristics in a group setting versus
an individualized, home setting. Time pressure coupled with suggested strategies from the testing assistant may have made it difficult for the subjects to search over a self-generated list of strategies and "menu style" pick an efficacious approach to the problems. This selection process may have been easier in the nonthreatening home environment.

Treatment effects may have been responsible for these changes in fluid abilities. As has been mentioned, small reductions in scores were found in the Test Anxiety Scale and the Trait Anxiety Inventory in the combined analysis which were not statistically significant. This small reduction could have facilitated fluid intellectual performance.

Changes in crystallized abilities are, however, in the direction of a decrease in skills on the follow-up analysis. It is unlikely that the subjects cheated on this measure, as the words could have been easily looked up in a dictionary, resulting in perfect performance. This makes cheating a less likely alternate explanation for increases in fluid intelligence scores as well.

It is possible to speculate that these subjects perceived the Vocabulary Test as nonthreatening and were less aroused. This low arousal level may have contributed to decrements in performance on this measure.
Correlational data yield some trends in various analyses that suggest a relationship between reductions in anxiety and changes in fluid and crystallized intelligence. In Study 1, there is a trend toward increases in fluid ability after the stress-inoculation treatment, whereas trait anxiety scores are reduced by the stress-inoculation treatment. In Study 2, a negative correlation indicates an inverse relationship between test anxiety and fluid intelligence abilities. As test anxiety is reduced, fluid intellectual abilities increase.

Cohen et al. (1980) have found a relationship between trait anxiety scores and cognitive performance on a combination of fluid and crystallized intelligence scores. "The results of this investigation showed that performance of older persons on tasks involving both fluid and crystallized components of intelligence is adversely affected among those persons reporting heightened levels of trait anxiety" (Cohen et al., 1980, p. 5). A trend toward increases in fluid intelligence scores on follow-up in Study 2 corroborates these findings, as trait anxiety and test anxiety scores are lowered (nonsignificantly). These findings suggest that anxiety reductions in test anxiety could be effective in enhancing the fluid abilities of an older student, in contrast to the findings of Labouvie-Vief and Gonda (1976). Their study found an anxiety treatment package to be ineffective in enhancing fluid abilities,
although nonspecific exposure to the task was effective. It may be that "nonspecific exposure" is an important component of anxiety reduction and that changes in fluid scores in the aforementioned study were due to the effects of this reduction. Further research in this area is necessary to fully understand the relationship between fluid performance and anxiety.

**Specific and Nonspecific Treatment Effects**

In the absence of significant interactions, it appears that there is change in all groups across the measurement occasions in several of the dependent measures (State-Trait Anxiety Inventory, Test Anxiety Scale, Fear of Negative Evaluation, Vocabulary Test, Letter Sets Test). Unless the effects of therapist attention, presentation of a credible therapeutic rationale, and treatment-generated outcome expectancies are controlled by use of an equally credible attention-placebo group, any treatment effects generated by a procedure with supposedly "active" ingredients cannot be attributed to that procedure. In the case of an attention-placebo group and a treatment group attaining similar treatment effects, as appears to be the case in this study, a number of alternate explanations can be entertained. It is possible that nonspecific treatment factors such a therapist attention, presentation of a credible therapeutic rationale, and treatment-generated outcome expectations in both treatment groups are responsible
for the changes noted. Treatment success due to placebogenesis might also be explained as suggestion, persuasion, and generation of hope. Placebogenesis can also be caused by evaluation effects such as response bias (Shapiro & Morris, 1978). As these factors are not controlled in Study 1, it is not surprising that the addition of these controls limits the scope of the findings initially favoring the stress-inoculation group. Studies lacking such controls report positive treatment effects more frequently than studies with attention-placebo and other controls (Pouls, 1958; Fox, 1961).

Placebogenesis in the attention-placebo group and the stress-inoculation group might be due to high levels of self-efficacy expectations. It can be argued that the credibility/expectancy for improvement measure provides an estimate of each subject's self-efficacy expectations. Bandura (1977) states that

psychological procedures, whatever their form, alter the level and strength of self-efficacy. . . . expectations of personal efficacy determine whether coping behavior will be initiated, how much effort will be expended, and how long it will be sustained in the face of obstacles and aversive experiences.

(p. 191)

Both the stress-inoculation and attention-placebo groups perceived the treatment rationale to be highly credible and expected to improve as treatment progressed.
Another explanation for approximate equivalent treatment efficacy in these groups is that changes on the dependent measures are due to therapeutic ingredients unique to each. "Different mechanisms, or means, may effect the same therapeutic ends" (Kazdin & Wilcoxon, 1976, p. 737).

In the discussion-control procedure, a "natural" social environment was created, a condition that perhaps provided a therapeutic atmosphere in which positive change could take place. Such an environment has been hypothesized as a mechanism for the process of "spontaneous remission," improvement which takes place in the absence of an active therapeutic treatment procedure (Bergin & Lambert, 1978). The attention-placebo control condition generated topics which are related to life experiences involving anxiety. For example, a woman in the group related an account of her parents telling her at an early age that she was incapable of attaining much in her life, and she described anxiety and depression over this incident. Other persons in the attention-placebo control group discussed issues that were heavily affectively loaded. Each self-disclosure generally elicited support and feedback from other group members, even in very small groups. Such conditions of support and feedback, along with other factors that develop naturally in such groups, may have created a therapeutic atmosphere.
In the stress-inoculation group, the relaxation procedures and cognitive restructuring may have brought about the pre- to posttest change, due to the active nature of these ingredients. During the stress-inoculation sessions, subjects identified the irrational ideas that were responsible for test anxiety and increased their skills in generating more adaptive self-statements. The subjects also reported progress in their ability to relax after practicing cue-controlled relaxation at home.

Implications for Cognitive Change in the Elderly

Cognitive-behavioral therapies have been proposed for treatment of depression in the elderly (Cohen, 1980), and there is reason to believe that this treatment modality would be effective with other emotional disturbances affecting this age group. The results of the present study suggest that a stress-inoculation procedure might be effective in treating test anxiety and generalized anxiety in the elderly, particularly in those individuals who suffer from high levels of such anxiety. Early studies concerning test anxiety established that individuals with high levels of test anxiety have a tendency to attribute their problems to internal causes, whereas individuals with little test anxiety do not. The elderly subjects in these studies demonstrated a number of dysfunctional self-statements, some of which are unique to their age groups. Cohen (1980) points out that one of these self-statements is "I'm too
old to change." Other self-statements these subjects tended to make are "It would be terrible if I fail this course. My family will find out how unintelligent I really am," and "If I do poorly in this course (or test), it will prove that I am less capable now that I am older."
The first session in the stress-inoculation training package deals with this issue. An integral part of the training is learning that one causes one's own anxieties, fears, and depressions. In these test-anxious elderly subjects, the idea that one could change a feeling by thinking about the situation in another way was quite novel.

For example, a belief that became evident during treatment can be stated in the following way: "If I can't perform as well now as I could in the past, I am a failure." Catastrophization over difficulties experienced in the classroom that were not an area of difficulty earlier in the client's life became a prime target for cognitive restructuring in these groups. As loss of function may be perceived as an inevitability as one gets older, this form of catastrophization appears to be quite common in the older student and must be dealt with in any cognitive-behavioral treatment with this age group.

As previously mentioned, the treatment package provides the elderly student with an active, controlling skill. Several studies have demonstrated the positive
effects of introducing elements in the environment over which the elderly person has control (i.e., Langer & Rodin, 1976). In this case, control over thoughts which were previously "automatic" and unnoticed may have given these subjects a sense of efficacy in a situation which had previously elicited feelings of helplessness and failure.

**Attention-Placebo Controls in an Older Population**

A great deal of research has been conducted in the area of attention-placebo controls. However, there is little in the literature which addresses the special problems posed by the use of an attention-placebo group with an older population. The content of the treatment rationale and procedure must be geared to an elderly individual who may not have been exposed to various psychological theories and who may lack sophistication. "Esoteric" treatment rationales such as the "subliminal desensitization" rationale utilized in Study 1 (Appendix Y, p. 120) may not produce expectancies for improvement that will "hold" the subject in treatment or result in improvement on dependent measures.

In Study 1, the stress-inoculation group was to be compared with a waiting-list control group and an equally credible attention-placebo group. Attrition in the attention-placebo group after the first treatment session made it impossible to include this control in the study.
Several factors could be responsible for attrition in the attention-placebo group in Study 1. It is possible that the aforementioned "esoteric" nature of the subliminal desensitization procedure, with its emphasis on the unconscious nature of behavior, made understanding difficult for elderly persons who had little or no exposure to such a model prior to treatment.

An alternate explanation for attrition in the attention-placebo group would interpret this attrition as the inevitable outcome of an ineffective treatment procedure. Attrition can be viewed as a dependent variable which indicates failure of a treatment procedure to produce positive outcome in spite of the fact that both treatments were perceived as credible after presentation of the rationale. Attendance in subsequent sessions in the Study 1 attention-placebo group could have been determined by the subjectively experienced effects of the procedures followed in the first session for each group. Exposure to the procedure could have had an adverse effect on the subjects' outcome expectations. Although the subliminal desensitization rationale has been found to be credible in younger cohort groups (Neumann, 1980), it seems to be less effective with older persons.

In Study 2, however, credibility/expectancy assessments were performed after sessions two and three, and the attention-placebo group improved on this measure. It is
unlikely that this procedure generated negative treatment efficacy and outcome expectations.

Another possible explanation for the attrition in this group concerns the active nature of the stress-inoculation procedure as contrasted to the passive nature of the procedure in the attention-placebo group. As Neumann (1980) points out, the stress-inoculation procedure demands active participation in the treatment process, whereas the attention-placebo group members were told they only needed to passively experience the treatment to improve. If older subjects expected to take an active role in the treatment offered, a passively oriented therapy technique would not generate strongly positive outcome expectancies.

Yet another possible cause of the attrition in the Study 1 attention-placebo group could be experimenter bias. The author conducted both treatment groups, and knowledge of and investment in the experimental hypothesis may have made it impossible to present and defend both rationales in an equitable way. An attempt to control this confound was made, in that the rationales were presented in written form and read by the experimenter verbatim.

Rationale for Study 2

In Study 2, possible therapist bias and other deficiencies were corrected. The experimenter and a cotherapist ran approximately one-half of each treatment group, and
analysis with a multivariate analysis of variance across all dependent measures in Study 2 reveals no differences between the therapists in regard to outcome across all dependent measures. This serves to make the alternate explanation of experimenter bias a less likely hypothesis to consider when interpreting these data.

The attention-placebo group in Study 2 (see Appendix DD, p. 163) was designed in order to provide a less "esoteric" and a more "common-sense" treatment rationale and procedure. The treatment approach was more active in nature, and discussion and "experiential reintegration" were strongly encouraged.

Study 2 has other features which improve upon Study 1 when the data from both studies are combined. When a manuscript detailing the results of and the conclusions drawn from Study 1 alone was presented to the editors of the Journal of Educational Psychology, advisory editors' comments included several criticisms of the methodology of the study: (a) the lack of an attention-placebo control and (b) the small n sizes of each group (six per cell) (Ball, 1982).

It is very difficult to obtain elderly subjects for a study of this nature. Study 2 was designed in part to supply the attention-placebo group that was missing in Study 1 and to generally have large n sizes across all groups. When it became apparent during selection of the
subjects for Study 2 that the n size for groups in Study 2 was going to be insufficient as well, modifications in group structures assigned were made, and a combination of the two studies was effected.

There are complementary cell sizes in each of the studies, as a result of this decision. The lack of an attention-placebo control group in Study 1 is balanced by nine attention-placebo group members in Study 2. The small n size (three) in the Study 2 waiting-list control is balanced by six waiting-list control group subjects in Study 1. The stress-inoculation group sizes are almost equivalent in Studies 1 and 2 (six and five, respectively).

The majority of the subjects selected for test anxiety studies come from large classes comprised largely of young adult college students. This large subject pool makes an approximation of true random subject selection and assignment to condition possible. With older college students, the large class of potential subjects does not exist. In the areas in which these studies were conducted, the large universities did not have significant numbers of older students. The majority of older students appeared to be attending classes in community colleges, and they were not concentrated in classes by age. Therefore, the only practical means of subject selection was to recruit via the mail or telephone. Such recruitment does not yield large percentages of volunteers. Bergin & Lambert (1978)
point out that low percentages of persons having psychological problems seek out mental health treatment. There is reason to believe that there is more reluctance to seek out mental health services in the older persons than in a younger age group (Gatz et al., 1980). Elderly persons may generally resist the idea of therapy and may tend to be more skeptical once therapy has begun. Low volunteer rates and high attrition rates may be in part caused by negative attitudes toward such interventions in elderly students.

In an editor's comments from a review of a manuscript describing the results of Study 1, the anonymous reviewer states:

... in the results it is not clear whether the differences that approach significance are really weak effects that would be sustained with larger sample sizes or potent effects that were overshadowed by a statistically unpowerful test.

(Ball, 1982)

This issue remains a concern, to a certain extent, in the combined analyses of the present study. It is possible that treatment effects were stronger than can be revealed by the analyses of such a small number of subjects.

It is also possible that test anxiety may not detrimentally effect fluid and crystallized intellectual ability as greatly as has been thought. Recent studies
(Mueller, Kausler, & Faherty, 1980) have pointed out that test anxiety may not affect the elderly a great deal more than younger persons, a finding that is in contrast to the conclusions set forth by Whitbourne (1976). These studies have methodological flaws, such as being entirely based on self-report measures and having some dependent measures with questionable relationships to test anxiety. Thus, it may be that noncognitive factors do not play as great a role in intellectual performance in the elderly as was previously thought. Further research should be conducted to explore these relationships.

**Methodological Flaws and Limitations of Conclusions**

There are methodological flaws inherent in the present study. The fact that the two studies were conducted in different time periods (1980 and 1982) gives rise to the possibility of differences between the groups due to historical confounds. Studies 1 and 2 were also conducted in different geographic locations within the United States (Texas and Colorado). The cities in which the studies were carried out are similar in size, and the community colleges from which the subject populations were drawn are quite similar, however. Univariate analyses of variance show no differences between Study 1 and Study 2 subjects on pretest scores. This finding reduces the possibility that the above confounds have significantly affected group means across studies.
As has been mentioned, in that students were required to volunteer for the study and attrition had been a significant problem selection bias may have been a factor. Those subjects who stayed in the study may have differed in a number of ways from those who dropped out or those who did not volunteer at all. Of those older subjects who were solicited for the study, some that did not volunteer may have been highly test anxious. Peer pressure, negative outcome expectations, and negative self-labeling may have been responsible for the low volunteer rate. The subjects who participated, as a rule, were highly educated; most had from 1 to 4 years of post-high-school education. Due to experimental factors, these persons would seem more likely to have some repertoire of skills and coping with test anxiety, even if they tended to label the experience as anxiety-provoking. This set of coping skills may have limited treatment effects in the subjects who volunteered.

The small n sizes in Study 1 and Study 2 are a major problem in this investigation. As groups were split up and each half was treated by a different therapist, some groups in Study 2 consisted of as few as two persons, a group size which is less than ideal in terms of group process and potential feedback for the participants. This flaw might be in part responsible for the lack of significant treatment effects in Study 2, as well as the lack of therapist effects found.
The follow-up measure in Study 2 was mailed out, a procedure which gives rise to several possible sources of error. As discussed earlier, "cheating" may have occurred, and an entirely different test-taking set is engendered in a home setting versus a group setting. In addition, there is a no-return rate of 47%, as 10 of the 19 subjects who received the questionnaires responded to them. Of course, this reduced the already small n sizes even more.

Other flaws in the study can best be described as procedural. In both studies, the classrooms in which the group sessions were held were not comfortably furnished for the treatment procedures. The chairs available were not conducive to the relaxation training and were not designed for long periods of sitting.

Several sessions in both studies were disrupted by violent spring weather. Severe thunderstorms and a spring blizzard made attendance difficult for some and concerned others who were able to attend the sessions. Limitations imposed by the institutions sponsoring these studies made night sessions necessary, a further problem for the older students involved with the study.

Findings which can be construed as evidence for the hypotheses of the study are tentative, at best. Small and uneven n sizes make it difficult to draw definite conclusions about the efficacy of the treatment procedures.
Recommendations

The testing situation created with the dependent measures battery may not have generated the same level and intensity of anxiety as would a "real-life" final test. The tests utilized to create stress and measure fluid and crystallized abilities may not have seemed relevant or meaningful to the subjects, and thus, debilitating cognitions leading to anxiety did not arise. A clearer picture of the level of anxiety in a testing situation, as well as the effects of that anxiety on performance, would be obtained if the dependent measures battery were tied to mid-term or final tests in the courses that were being taken at the time. The dependent measures in this study may not have been ecologically valid, in that the tests utilized in the study do not have "real-life" consequences attached to them.

Further research in this area could be utilized to fully explore the factors responsible for change when older students are treated for test anxiety. A treatment-element approach could be useful in parcelling out the components of the stress-inoculation treatment procedure that are responsible for change, or if the components prove to be equally credible, answering more fully the question of the role of nonspecific treatment effects.

For example, three treatment groups could be assembled. Group 1 would be designated the stress-inoculation group
and would consist of the combination of cue-controlled relaxation and cognitive restructuring. Group 2 would utilize the cue-controlled relaxation training only, while Group 3 would consist of rational restructuring only. Highly credible rationales would be developed for each procedure. Analysis of such a design (if there were treatment effects) would provide either clear evidence for one component or another, or the total package, or if improvement were equal across groups, nonspecific factors.

It would also be valuable to perform a study of this nature utilizing groups of older and younger college students. Direct comparisons of levels of test anxiety and response to treatment could be made.

Hoyer (1974) has questioned the use of between-groups designs for studying outcome in an elderly population. Older persons exhibit more interindividual variability than do younger persons, and between-groups research cannot provide information about intraindividual changes over time. In this study, when intraindividual variability is taken into account, the results tend to support the hypothesis that treatments (reduction in anxiety) are responsible for improvement on various dependent measures. For the most part, significant gain scores tend to corroborate nonsignificant trends in the between-group analyses, with the latter potentially obscuring treatment effects by failing to take intraindividual variability into consideration.
Viewed from an alternative perspective, an examination of the data gathered in this study suggests that inter-individual variability may have undermined the overall effects of the treatment in the stress-inoculation group on several dependent measures. This variability, along with the small group sizes may account in part for the lack of significance (treatment effects) on the dependent measures. Future studies of a between-groups nature should utilize larger sample sizes, although obtaining a large enough sample of subjects for such a study is extremely difficult. Perhaps the best possible way to study the effectiveness of the stress-inoculation treatment in this population would be to supplement between-groups data with data obtained from small n investigations suggested by Hoyer.

As there are more older (nontraditional) students returning to an educational setting, the needs of this population will grow. Community colleges and 4-year educational institutions are offering courses that will attract the older student as younger student admissions steadily decline. At the community colleges in which these studies were conducted, there was great interest in developing services for the older student, and group treatment programs for test anxiety were in the process of being developed. In choosing a treatment procedure, it should be kept in mind that an extremely important factor in outcome is the credibility of the rationale of the
treatment and the expectations the procedure generates for improvement. It is possible that this factor is more responsible for change than the actual "active" ingredients of the treatment procedure.

**Summary**

The results of this study do not support either of the main hypotheses, that a stress-inoculation treatment procedure would significantly reduce self-reported anxiety and fear of negative evaluation or that such reductions would lead to improvement on fluid and crystallized intelligence abilities. There are nonsignificant trends in the data which tentatively suggest that both a stress-inoculation procedure and an equally credible attention-placebo group might be effective in bringing about reductions in self-reported anxiety.

Nonsignificant trends toward improvements in fluid intelligence under certain conditions are noted. The data suggest that a credible treatment procedure can be effective in alleviating dysfunctional test anxiety in older students. Further research is needed to explore the "active" ingredients in cognitive-behavioral treatment procedures and to differentiate the effects of such a procedure from potentially potent nonspecific, placebogenic effects. Efforts should be made to investigate fully the relationship between credibility and expectancy for improvement and outcome in studies of this kind.
February 29, 1980

Dear TCJC Student,

We would like to announce that Tarrant County Junior College and North Texas State University are co-sponsoring a program specifically designed with the older student in mind. The program is directed toward helping those who get "nervous" during examinations, by providing them with relaxation techniques which we hope will make taking exams easier. The program is voluntary and will be carried out this semester. It costs nothing to participate.

We feel that a program in relaxation techniques can be very beneficial for many students. If you feel that test taking is an unpleasant experience, we think that a program of this nature can be very helpful.

If you are interested in participating, or would like more information, call the Dean of Student Development Office, 534-4861 Ext. 604. You may select the time most convenient to you from the choices available. A good response is anticipated so a call within the next week will ensure a better time selection.

Sincerely,

Mitchell D. McKewin
Dean of Student Development

Robert Kookan, Project Leader
North Texas State University
March 10, 1982

Dear Arapahoe Community College Student:

We would like to announce that Arapahoe Community College and North Texas State University are co-sponsoring a program specifically designed with the older student in mind. We are developing a program directed toward those who get "nervous" during examinations by providing them with relaxation and stress management techniques which we hope will make taking examinations easier and a more enjoyable experience. The program is voluntary and will be carried out this Spring Quarter. It costs nothing to participate.

This program in relaxation training and stress management has been demonstrated to be beneficial to older college students. If you feel that test taking is an unpleasant experience, and that anxiety interferes with your performance, we think that a program of this nature can be very helpful.

If you are interested in participating, or would like more information, call the Counseling Center. You may select the time most convenient to you from the choices available. A good response is anticipated, so a call within the next week will ensure a better time selection. The phone number is 794-1550, ext. 221.

Sincerely,

Leahbeth H. Barnard
Director of Counseling

Robert A. Kooken,
Project Leader
North Texas State University
Appendix C

Table 1

Credibility/Expectancy Assessment Device

1. What do you feel is the likelihood of this approach being successful at helping you?

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not likely</td>
<td>Very likely</td>
<td></td>
<td></td>
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</tbody>
</table>

2. If you had the choice of switching to a group following another approach, what would be your chances of switching to that group?

<table>
<thead>
<tr>
<th></th>
<th>1</th>
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<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Definitely would switch</td>
<td>Definitely would not switch</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

3. If you had a friend with the same problem that you have, would you suggest he or she join a group using this approach?

<table>
<thead>
<tr>
<th></th>
<th>1</th>
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<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Definitely would not suggest</td>
<td>Definitely would suggest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. After hearing the rationale behind this approach, how logical do you feel this approach is?

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Very logical</td>
<td>Very illogical</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. How successful do you feel this type of treatment would be with another type of problem; for example, strong anxiety about speaking before a group?

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Completely unsuccessful</td>
<td>Completely successful</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Appendix D

### Table 2

Self-Defeating Thoughts and Their Positive Counters in a Testing Situation

<table>
<thead>
<tr>
<th>Self-Defeating Thoughts</th>
<th>Positive Counters</th>
</tr>
</thead>
<tbody>
<tr>
<td>If I do poorly on this test, it will prove my memory is failing.</td>
<td>If I do poorly on this test, I'll have to try harder on the next.</td>
</tr>
<tr>
<td>It would be really horrible if my memory were poorer than it used to be.</td>
<td>It would not be a catastrophe if I can't remember as well as I could. I'll try a little harder.</td>
</tr>
<tr>
<td>I can't do this work. I've been out of school too long.</td>
<td>I may have some trouble at first. Practice will improve my performance.</td>
</tr>
<tr>
<td>People will laugh at me if I fail.</td>
<td>Everyone is probably having as much trouble with this material as I am. I would certainly understand if one of them failed.</td>
</tr>
<tr>
<td>I'm a stupid fool if I fail. I'll hate myself for it. It will prove I'm no good.</td>
<td>How I do on this test has nothing to do with my worth as a person.</td>
</tr>
</tbody>
</table>
Appendix E

Table 3

Examples of Coping Self-Statements Rehearsed in Stress-Inoculation Training
(from Meichenbaum, 1977)

Preparing for a Stressor

What is it you have to do?
You can develop a plan to deal with it.
Just think about what you can do about it. That's better than getting anxious.
No negative self-statements: Just think rationally.
Don't worry: Worry won't help anything.
Maybe what you think is anxiety is eagerness to confront the stressor.

Confronting and Handling a Stressor

Just "psych" yourself up--you can meet this challenge.
You can convince yourself to do it. You can reason your fear away.
One step at a time: You can handle the situation.
Don't think about fear; just think about what you have to do. Stay relevant.
This anxiety is what the doctor said you would feel. It's a reminder to use your coping exercises.
This tenseness can be an ally; a cue to cope.
Relax; you're in control. Take a slow deep breath.
Ah, good.
Table 3--(continued)

<table>
<thead>
<tr>
<th>Coping with the Feeling of Being Overwhelmed</th>
</tr>
</thead>
<tbody>
<tr>
<td>When the fear comes, just pause.</td>
</tr>
<tr>
<td>Keep the focus on the present; what is it you have to do?</td>
</tr>
<tr>
<td>Label your fear from 0 to 10 and watch it change.</td>
</tr>
<tr>
<td>You should expect your fear to rise.</td>
</tr>
<tr>
<td>Don't try to eliminate fear totally; just keep it manageable.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reinforcing Self-Statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>It worked, you did it.</td>
</tr>
<tr>
<td>Wait until you tell your therapist about this.</td>
</tr>
<tr>
<td>It wasn't as bad as you expected.</td>
</tr>
<tr>
<td>You made more out of your fear than it was worth.</td>
</tr>
<tr>
<td>Your damn ideas--that's the problem. When you control them, you control your fear.</td>
</tr>
<tr>
<td>It's getting better each time you use the procedures.</td>
</tr>
<tr>
<td>You can be pleased with the progress you're making.</td>
</tr>
<tr>
<td>You did it!</td>
</tr>
</tbody>
</table>
Table 4
Demographic Data for Study 1 and Study 2

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean Age</th>
<th>Years of Education</th>
<th>Sex Male</th>
<th>Sex Female</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Study 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stress-inoculation</td>
<td>6</td>
<td>60.6</td>
<td>13.0</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Attention-placebo</td>
<td>6</td>
<td>60.8</td>
<td>13.4</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Waiting-list control</td>
<td>6</td>
<td>56.6</td>
<td>16.6</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Study 2</strong></td>
<td></td>
<td></td>
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Appendix G

Table 5

Means of Pretest and Posttest Scores for Study 1

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Appendix H

Table 6

Repeated Measures Analyses of Variance on Pretest and Posttest Scores for Study 1

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<td>Waiting-list Post</td>
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### Appendix J

Table 8

Repeated Measures Analyses of Variance on Pretest and Posttest Scores for Study 2

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## Appendix K

Table 9

One-Way Analyses of Variance on Pretest Scores for Study 1 versus Study 2

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## Appendix L

### Table 10

Repeated Measures Analysis of Variance on Pretest and Posttest Scores for Study 1 and Study 2 Combined

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Table 11
Means of Pretest and Posttest Scores for Study 1 and Study 2 Combined

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Appendix N

Table 14
Analyses of Covariance on Posttest Scores for Study 1 and Study 2 Combined

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Table 15
Analyses of Variance of Gain Scores

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Study 2

| Test Anxiety Scale            | 4.60       | 4.22| 0.33| 0.92| .42|

Appendix 0
Table 15—(continued)

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<td>Waiting-List</td>
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Table 16
Correlations of Dependent Measure Gain Scores for Study 1 and Study 2 Combined

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Note. **p < .001.
Figure 1. Means of credibility/expectancy scores across sessions one, two, and three for Study 2.
Figure 2. Test Anxiety Scale means of pretest and posttest scores for Study 1 and Study 2 combined.
Appendix S

Figure 3. Fear of Negative Evaluation Scale means of pretest and posttest scores for Study 1 and Study 2 combined.

*Adjusted posttest means—pretest as covariate
Appendix T

Figure 4. Trait Anxiety Inventory means of pretest and posttest scores for Study 1 and Study 2 combined.

*Adjusted posttest means—pretest as covariate
Figure 5. State Anxiety Inventory means of pretest and posttest scores for Study 1 and Study 2 combined.
Appendix V

Figure 6. Letter Sets Test means of pretest and posttest scores for Study 1 and Study 2 combined.

*Adjusted posttest means--pretest as covariate
Figure 7. Vocabulary Test means of pretest and posttest scores for Study 1 and Study 2 combined.
Appendix X

Treatment Rationale: Stress-Inoculation Training Group

Anxiety and fear are thought to be made up of two major elements: (1) physical tension and (2) negative, self-defeating thoughts. The physical tension seems to take several forms, such as stomachs being tense, or "butterflies," pounding hearts, sweaty palms, or heavy breathing. Negative thoughts (or what we say to ourselves) also take many forms. Sometimes we think about catastrophies—we think about "messing up" and how awful it will be if we do. We worry about our performance in various situations and wonder if we have done well or what doing poorly may mean about us. Many times when we have these thoughts we find ourselves not paying attention to the things in the situation that are important. Often we downgrade ourselves for doing poorly, and when we have these negative thoughts, they sometimes seem to get in the way of what we have to do. Many of the negative thoughts we have are inaccurate or inappropriate, as well as getting in the way of what we are doing.

In our treatment approach, we work on ways to control how the person feels, on ways of controlling anxiety and tenseness. We do this by first teaching the person to relax. Relaxation helps the person to reduce this anxiety and tenseness and frees one so that he or she can think more clearly.
In addition to learning relaxation skills, we teach the person how to control his or her thinking processes and attention. The control of our thinking, or what we say to ourselves, comes about by first becoming aware of when we are producing negative thoughts and not paying attention to what is important. Thus, a big part of our treatment involves teaching people to recognize when they are doing this. We teach the person that recognizing these thoughts will act as a signal for him or her to produce different, more adaptive thoughts.

Specifically, our treatment involves teaching anxious persons several coping skills, ways to deal with the anxiety. The first coping skill is cue-controlled relaxation. We first have the members of the group relax deeply, through a series of muscle-relaxation exercises. We teach them how to bring on this muscular relaxation by repeating a word to themselves. This word might simply be "relax" or "calm".

The second coping skill we teach group members is called self-statement modification. Here we teach them to identify their negative self-statements by having the group members discuss with the leaders the things they are thinking in a testing situation. The group then discusses more positive self-statements they could make in these situations. Through repeatedly practicing and discussing these things within the group, the group members learn to (1) relax themselves before they enter the problem situation;
(2) identify the negative self-statements they make once they are in the situation; (3) again relax themselves and substitute positive self-statements for negative ones; and (4) reward themselves for making the more positive, adaptive self-statements.

The results of this two-pronged approach is a total treatment package which works to resolve both emotional and cognitive aspects of the problem.
Appendix Y

Treatment Rationale: Attention-Placebo Group
Study 1

The techniques of subliminal perception are in widespread use by the media, advertising and public relations agencies, and by the federal government itself. Each of you has most likely been victimized or manipulated by the use of subliminal stimuli directed into the unconscious by the mass merchandizers of media. While some examples of how this has been done will be presented, I would like to refer those of you who are interested to several books by Wilson Brian Key which discuss this topic more extensively. These books are widely available, if you wish to purchase them.

Probably one of the most famous examples of the way man's ability to perceive events subliminally which has been used by advertisers is the subliminal presentation of advertising messages. The standard technique used is one in which a projector flashes messages superimposed over motion pictures in theaters or upon film being transmitted through television. This projector has a high-speed shutter which periodically flashes messages onto the screen for only a small fraction of a second. This time interval is too short for you to consciously see the message, yet you do see the message at the subconscious level. The thought of the message is thus planted in your subconscious mind where you may feel the urge to act on the subliminally seen message.
In one study, during a 6-week test of the machine in a theatre, over 45,000 movie goers received subliminally presented messages like, "Are you hungry? Eat popcorn." During that 6-week period, the theater's popcorn sales increased by a dramatic 58%. Audience reactions to these subliminal messages have been exhaustively studied in other settings as well. Research has shown that a significant number of people in any audience will obey the commands given subliminally. It seems that audiences may be influenced relatively easily by such methods, but only as long as the message or images planted in their subconscious minds do not command them to violate deeply held ethical or moral convictions. In this respect, subliminal perception seems to work in ways similar to hypnosis or suggestion.

A few years ago, we became interested in the possible therapeutic uses of subliminal perception within a relaxation model for treating anxiety. In the relaxation procedure, the person lets himself or herself relax and then is asked to imagine himself or herself in one of the situations which makes him or her anxious. This relaxing-imagining sequence is repeated over and over again during treatment until the person eventually learns to become less and less anxious when imagining anxious situations. This has been shown to be a very effective way to reduce anxiety. The drawback of the relaxation procedure is that the person undergoing such treatment will usually become anxious or
uncomfortable at various points during the treatment sessions. This occurs because the person must consciously imagine the scenes and, therefore, must consciously experience anxiety as well.

In our treatment procedure, we avoid such discomfort. Generally, the people in our groups do not consciously experience any anxiety. This is because rather than having them imagine the scenes consciously, they are presented to them subliminally, or in other words, the scenes are presented to the subconscious rather than the conscious mind. This is done through the projector presenting anxiety-provoking slides while the person is watching a movie.

Recently, however, the psychologists have been using this subliminal relaxation procedure in combination with another technique which has significantly increased the power of the therapeutic package to reduce anxiety to manageable levels. The technique was actually developed many years ago by Sigmund Freud. He called it free association.

Some of you may be familiar with free association. What Freud did was to have his patients lie on a couch and say the first thing that came to mind, taking care not to censor anything, no matter how silly or irrelevant it may have sounded. Freud did not require associations to make sense or tie together with what had been said before. The important thing was for the patient to say simply what he or she was thinking.
The free association method is a valuable one because it encourages the person to be spontaneous and by doing this provides greater access to our subconscious mind where many of the sources of our daily difficulties lie. The second part of our treatment package involves such a free association procedure, but we have modified it in a way that differs somewhat from the way it was used by Freud. These modifications have resulted in a free association technique which is far more effective than the traditional method that he used.

One of the drawbacks of Freud's free association approach to treating anxiety is that it often resulted in the person talking about things which were irrelevant to his or her problem. Often this may not be helpful, in that by talking about material which does not directly relate to the problem, the person therefore wastes a lot of time in each treatment session.

In our procedure, much of the irrelevant talk is eliminated because we help the persons to focus their free associations around their specific problem. We do this by presenting them with stimuli in the form of photographic slides which are directly or indirectly related to the problem. Because the person's free associations are partially controlled by these stimuli, it has been named stimulus-controlled free association.
Specifically, we present slides to the group and have them focus their attention to the slides' content. These slides have been selected because they relate to the person's problem but cause little anxiety (and therefore little discomfort) during the session. The slide presentation is stopped periodically and the person is allowed to record his or her free associations on a note pad. Following the slide presentation, the group gets together to discuss their free associations with one another and talk about any insight they have obtained into their problem during the stimulus-controlled free association.

Thus, our therapeutic package employs a two-pronged attack on anxiety. On one level, images and ideas are presented to the subconscious mind that subtly begin to alter the levels of anxiety the person is accustomed to feeling when facing the problem situation. On the second level, the free associations starting from images presented on the slide screen will eventually remove the control over anxiety from the subconscious mind to the conscious mind. Once the person knows the unique but subconscious causes of his or her anxiety, he or she can exercise control over these reactions. The result of this two-pronged approach is a total treatment package which works to resolve both emotional and cognitive aspects of the problem.

(From Neumann, 1980. Used with the author's permission.)
Appendix Z

Treatment Rationale: Attention-Placebo Group
Study 2

Anxiety and fear are thought to be made up of two major elements: (1) physical tension and (2) psychological factors, i.e., the conscious and unconscious attitudes and ideas we have been taught from birth. Physical tension seems to take several forms, such as stomach being tense, or "butterflies," pounding hearts, sweaty palms, or heavy breathing. The psychological factors that cause anxiety also take many forms. Each individual has a unique history which contributes to his or her emotional reactions to every situation. All emotions spring from the impact of the sum total of all our experiences, and our perception of key experiences in our lives leads to the anxiety we feel. Many of these perceptions can be reinterpreted in a more adaptive way.

In our treatment approach, we work on ways to control how the person feels—on ways of controlling anxiety and tenseness. We do this by first teaching the person to relax. Relaxation helps the person to reduce this anxiety and tenseness and frees him or her up so that he or she can think more clearly.

In addition to learning relaxation skills, we will explore past experiences of group members which may have contributed to their anxious reactions in testing situations.
It has been long recognized by psychologists that discussion of such feelings and experiences leads to psychological reorganization, particularly when done freely in a group setting.

Specifically, our treatment involves teaching anxious persons several skills—ways to deal with anxiety. The first skill is cue-controlled relaxation. We first have the members of the group relax deeply, through a series of muscle-relaxation exercises. We teach them how to bring on this muscular relaxation by repeating a word to themselves. This word might simply be "relax" or "calm".

The second skill we teach group members is called experiential reintegration, which is a term that describes the process of freely discussing experiences and beliefs that have resulted in anxiety in a variety of situations, and particularly in testing situations. The group will discuss past experiences which have involved anxiety and negative self-evaluations and work on helping one another through examination and reinterpretation of these experiences. Through repeatedly practicing and discussing these things within the group, the group members learn to (1) relax themselves before then enter the problem situation and (2) to have a new psychological "set" once they are in the situation that has been created by the supportive atmosphere created by the group and the process of examining and reinterpreting past experiences that lead to anxiety.
The results of this two-pronged approach is a total treatment package which works to resolve both physical and psychological aspects of the problem.
Appendix AA

Therapist Manual: Stress-Inoculation Group

Session One

1) Introduce yourself to the group members (your name and status—doctoral student in clinical psychology) and have them introduce themselves to the group. During these introductions ask each person to briefly state why he or she has come to this group.

2) Pass out copies of the treatment description and have subjects complete the questionnaire.

Give the following instructions:

"Before we get started, let me pass out a description of what we will be doing during our sessions and the rationale for it. Please read this description at this time. When you are finished reading the description, I will answer any questions you may have. If you have any difficulties reading the questionnaire because of the small type, etc., please raise your hand, and I will assist you. Attached to the back of the description is a brief questionnaire I would like you to complete after you have finished reading it. Please put your name of the questionnaire at this time. Please wait until you have finished reading the description and until I have had the chance to answer any questions before you complete the questionnaire."

After the subjects have read the descriptions, answer any questions they may have and then have them complete the questionnaire. Initially, you should attempt to answer the questions by restating the material in the descriptions they have read.

Collect descriptions and questionnaires.
3) Introduce cue-controlled relaxation, and train the subjects in cue-controlled relaxation.

"Now that you have some idea of what we're going to be doing and why, I would like to begin the training in cue-controlled relaxation. One advantage of learning to relax is that our muscles can't be both tense and relaxed at the same time. Therefore, this relaxation procedure will allow you to learn to cope with the anxiety you may feel while anticipating or taking a test. Through this training you will learn to bring this arousal down to manageable levels. First, we'll dim the lights and go through a procedure where we will first tense and then relax the various muscle groups in your body. To do this you will need to get into a very comfortable position in your chair. After we've gone through the deep muscle relaxation procedures, I will teach you to associate a cue word with your relaxation. I will ask you to take a deep breath, and as you slowly let it out, you will eventually be able to relax away a large part of any anxiety you are experiencing simply by telling yourself to 'relax'."

At this point, the therapist should demonstrate exhaling while telling your self to relax.

"Now each of you find a comfortable position."

Encourage subjects to get into a comfortable position in their chairs or sofa. After the subjects are in position, tell them to do the following. Do not tell them to relax until you have done this.

"I would like each of you to now assess the amount of tension you are experiencing right now on a 10-point scale, where 1 represents being completely relaxed and 10 represents the greatest amount of anxiety and tension you have ever experienced. You do not have to tell us what number you have assigned, just assign the number and remember what it is. Okay, has everyone done that?"

Proceed with the CCR training.

After CCR training, again have the subjects assess their anxiety level on a 10-point scale. Inquire as to how
many points they were able to reduce their anxiety levels with the relaxation training. Tell them that with practice, they will get better at it and will be able to achieve their relaxed state much more quickly.

4) Give subjects a 5-minute break.

5) Introduce the group to self-statements and the rationale for the self-statement modification.

"Recall the program description you read earlier in the session. Remember how it described anxiety reactions as being made up of two components: an arousal component and a cognitive, or thinking, component. We began by working on the arousal component with the cue-controlled relaxation procedures before the break. Now, I would like to begin work on the thinking component of anxiety. The thinking part of anxiety can be stated in A-B-C form. At point A, there is an event or an experience that begins the chain of events that cause anxiety. In this case, point A would be an upcoming examination or a test you are in the process of taking. At point B are the thoughts, or beliefs, you have about the testing situation, what you tell yourself about the test and the possible outcomes. There are all sorts of beliefs one can carry into a testing situation. Let me give you examples of two sets of beliefs one can carry into a testing situation. First, this set of beliefs: 'It will be absolutely horrible if I fail this test. I will prove that I am a real failure if I do poorly.' Compare that belief, or self-statement, to this one: 'It would be unfortunate if I did poorly on this test. I would be annoyed if I failed.' What kinds of feelings would result from saying these things to yourself?"

Ask the subjects to discuss these self-statements and what feelings they might evoke.

"You can see the effects your ideas and thoughts can have on the way you feel. A rational belief, like the second one in our example, will actually help you to do better. An irrational belief, like the first one, "I will be a failure if I fail," only interferes with taking the test. The result of your beliefs or thoughts end up at C in our A-B-C model. Point C is the emotional
consequence of the beliefs you carry into the testing situation. In the first statement, the emotional consequence, or C, would be a high level of anxiety. The second statement would not result in such a high anxiety level, and performance would not suffer nearly as much on the test."

Pause for a moment and let the subjects reflect on these thoughts. Then say:

"Now we would like to introduce you to how we will work on this thinking component. We would like to have you think back to the last test you took. If you haven't taken a test recently, imagine yourself in a testing situation. Try to recall some of the things you were thinking—the things you were saying to yourself before the test, during the time you were taking the test, and after the test. Do that now. (Pause) You may find it helpful to sit back, close your eyes, and try to experience the thoughts, feelings, and things you were saying to yourself at that time. Just picture the scene in your head as if you were running a movie in your mind, and get into those thoughts."

Pause for a moment and let the subjects reflect on these thoughts. Then say:

"Now we would like you to share these feelings and thoughts with the other members of the group. What were some of your thoughts when you were in that situation?"

You will need to be very supportive here and reinforce the subjects for volunteering this information (e.g., "Okay, good . . ."), even if the thoughts they are sharing do not fall into the typical negative self-statement category. Remember, what we are doing here is teaching the subjects to identify negative self-statements; we don't necessarily expect them to be able to identify these things immediately. It is hard to anticipate just exactly what types of thoughts the
groups will share here. The important thing is to encourage them to share their feelings and thoughts. After the subjects have identified thoughts that may be classified as negative self-statements, you might proceed by saying something like:

"All of these things you have mentioned are pretty typical of some of the thoughts you might experience when dealing with a testing situation. However, some kinds of thoughts seem to be more directly related to the anxiety we might experience in these situations than do others. A number of you mentioned the kinds of thoughts I'm talking about. For example, . . . (identify some of the negative self statements that were volunteered by the group). Let's talk about these sort of thoughts some more."

If none of the subjects have identified thoughts that may be classified as negative self-statements, you might say:

"All of these things you have mentioned are pretty typical of some of the thoughts we might experience when dealing with a testing situation. However, there are other kinds of things that we say to ourselves during these situations that are more directly related to the anxiety we might experience in these situations. Let's talk about these kinds of thoughts."

If some of the subjects have identified positive or coping self-statements, you will want to point these statements out to the group.

"Some of you mentioned some thoughts that were actually pretty positive and adaptive. For example, . . . (identify the positive self-statements volunteered by the group). One of our goals in these sessions is to get you to make more of these types of self-statements, to think more of these kinds of thoughts and less about negative thoughts. Let's talk about this idea some."

Regardless of the results of the above exercise, the idea is to use the results to act as a springboard to
further explain the idea of self-statements and their relationship with anxiety.

"One of the purposes of our meetings will be to explore and share our feelings and thoughts as we have just been doing. We will develop our ability to notice our thinking processes and to become aware of our self-statements (the things we say to ourselves). As we go on, I think you'll notice the important role our thinking plays in influencing the anxiety we experience in many situations and how it influences our behavior in these situations. One of the things we will be doing is to learn to identify the B, the beliefs, or negative self-statements that occur when we are in situations that make us anxious. They may start before we get into the situation. For instance, we may do a lot of catastrophizing or terribilizing before taking a test. We might say to ourselves: 'What if I mess up? I know it will be a horrible thing,' or 'If I do poorly on this test, no one in the class will like or respect me.' We have a tendency to blow things out of proportion, to exaggerate the consequences of what we think a failure means about us personally or about our worth as a person. In the past, I have spent a lot of time building up my anxiety like this, and it almost always gets in the way of my doing better on the test. It's paradoxical in a way. Past a certain point, caring too much about doing well on a test interferes with doing well. The negative self-statements may occur as we are taking the test itself. 'I really haven't done well so far. I'm sure I'm going to do poorly on the rest of the test,' or 'These questions are all trick questions, and I just think I'm doing well, while I'm really failing.' Can you think of anything like this you have said to yourself in a test?"

Encourage discussion of these statements.

"Negative self-statements can also be destructive after taking a test. For example, we might walk out of the classroom saying something to ourselves like: 'Doing poorly on that test proves I'm too stupid and slow to do this kind of work. I'm just going to give it up. No amount of studying will help a dunce like me.' What about that statement will self-defeating?"

Encourage discussion on this point.

"The funny thing is that, if we could step back and objectively analyze these self-statements, many of
them are inaccurate and inappropriate. They often cause us a lot of worry and make us even more tense and anxious. Therefore, these negative self-statements are self-defeating. We defeat ourselves and often spoil our chances of behaving as we would like to be making them. In addition to being self-defeating, they are self-fulfilling as well. If we allow ourselves to think that we will fail, we increase our chance of doing just that. Can you see the value of stopping these negative self-statements, no matter how much you may believe them?"

Ask for and answer any questions the subjects may have. Have the subjects think back to the discussion you had earlier in the session (where they recalled the testing situation during the behavioral pretest or a previous testing situation), and see if they can now recall any other negative self-statements they were making in these situations. Again, reinforce the members for sharing their thoughts here, but specifically try to get them to identify negative self-statements. Then ask them to identify positive self-statements they could have made in these instances. Keep group discussion focused on this task until you feel that they understand the concepts of negative and positive self-statements. You may have to use more examples if they have difficulty doing this.

6) Introduce the structured exercises.

"As we have said several times, what generally happens in situations where we are anxious is that we have made a lot of negative self-statements rather than positive ones. In other words, it's not the situation itself that makes us anxious, but the things we tell ourselves during the situation. A lot of these irrational ideas and thoughts, the phrases and
sentences we tell ourselves during the situation have become habitual. We often don't question them or dispute them, and they influence our emotions and our behavior. But we can become aware of these habitual thinking styles and change them. I'm going to read an example of this and ask for your comments."

Read the structured exercise example. Read the situation first, and ask the subjects what they would think to themselves in this situation. Then read self-statements and ask for comments. After each self-statement is read, ask the subjects what the emotional consequence of the statement would be. Ask the subjects to dispute or restate the negative self-statements they identify.

7) Assign homework and dismiss the group.

"Okay, there are several final reminders, and they are very important. In order to facilitate what we are doing here, I want you all to practice the relaxation technique at least once a day. You can do this when you are alone. If you practice the technique at night in bed before you go to sleep, make sure you have finished the exercises before you go to sleep. Try to relax all the muscle groups we relaxed earlier, but pay special attention to those groups that you find are typically the most tense. And don't forget the breathing exercises. Practicing these relaxation exercises is very important as it will enable you to relax at a deeper level and at a more rapid rate."

"We would also like for you to imagine yourself in a testing situation and concentrate on the ideas that go along with the testing situation. Work on trying to change the thoughts that interfere with your attention. Take a notebook as you leave tonight, and use it to note down the thoughts you identify during this exercise. Bring this set of notes with you the next time we meet."

"Thank you very much for coming and participating this afternoon. Please try to make the next two meetings. It is very important that you do. It would be very
difficult for you to catch up if you were to miss a session. That's all for tonight; see you next at _________."

Session Two

1) Summarize procedure and rationale.

"Since much of what was said last time was probably new for you, first of all tonight, I'll remind you briefly of the procedures we are using and the reasons we are using them. During the first part of tonight's session, we'll again do some cue-controlled relaxation training. Just like last time, we'll first go through some procedures designed to teach you to relax deeply. Remember, we can't be tense and relaxed at the same time. So by learning to relax, you'll learn to cope with situations which tend to make you anxious and tense. You'll learn to bring this arousal down to reasonable and manageable levels. With practice, as you've been doing this past week, you'll learn to be able to relax away a large part of any anxiety you're experiencing, simply by telling yourself to 'relax' and letting yourself do so."

"Remember, though, that anxiety reactions are made up of a thinking component, in addition to the arousal component we'll be working on with the cue-controlled relaxation training. The second part of tonight's session will be focused on this thinking component, on the self-talk or self-statements we make to ourselves in the testing situation. When these self-statements are negative, they tend to produce anxiety. In other words, they are self-defeating and self-fulfilling. We'll again discuss ways to challenge these negative self-statements and replace them with ones that are more positive--ones that will help us to cope with these feelings--ones that are more accurate evaluations of our behavior."

"Are there any questions to begin with?"

2) Dim the lights and proceed with CCR training, using the 7-muscle procedure.

"Okay, let's go through the cue-controlled relaxation exercise. These will be similar to those we used last time, except we'll tense some of the muscle groups together to help you become deeply relaxed more quickly."
So listen closely. Now, each of you find a comfortable position."

Encourage subjects to get into a comfortable position in their chairs. Then proceed with the CCR training using the 7-muscle group procedure.

3) Discuss last week's homework assignment of practicing relaxation training and any problems they might have encountered in practicing. (Depending on the time available, you may start the next step before the break or wait until after the break to begin.)

4) Discuss last week's second homework assignment in which subjects were asked to monitor and record their thoughts throughout the week. Focus the discussion on the negative self-statements reported and consider positive self-statements which may be used to correct them. Reinforce the group members who are already making the corrective self-statements.

5) Give the subjects a 5-minute break.

6) Present the coping model for dealing with anxiety to the subjects. Answer questions that arise during the discussion and explanation.

"I want to explain in some detail the strategy or coping technique we want you to learn to apply when you are in testing situations. You see, the techniques we're practicing here, the cue-controlled relaxation and the self-statement modification training, really tie together in a nice package that you can use before, during, and after these situations. For example, before you are in the situation and you find yourself becoming anxious, you can relax away a large part of this arousal by telling yourself to relax and letting yourself do so. As you relax, begin to become aware
of the thoughts that are contributing to your anxiety. 'Wouldn't it be horrible, etc.?' Talk yourself out of these kinds of thoughts, dispute them, and in their place, substitute more adaptive thoughts, thoughts that will be useful in getting you ready for the upcoming test or evaluation. What kind of preparatory thoughts can you have that are adaptive?"

Encourage discussion at this point. Reinforce any kind of suggestions that are made, but correct any statements that are not appropriate.

"Here are some other statements you might make before the test as you are getting ready for it."

"You can develop a plan to deal with it."
"Don't worry; worry won't help anything."
"Just think what you can do about it."
"What is it that you have to?"
(from Meichenbaum, 1977)

"The next phase of dealing with anxiety comes as you actually begin to take the test itself. There are specific things that you may say to yourself at this time to heighten your anxiety. We have discussed some of these already. They might include: "I can't remember a thing now. I'm a total idiot," or "Look how fast everyone else is working, and I'm going so slowly. They must know more about it than I do." These thoughts are almost always inaccurate and are almost always responsible for our doing worse on a test. What are some more adaptive statements one might make in a test itself?"

Encourage discussion.

"Here are some other self-statements you can make while you are beginning a test."

"You can convince yourself to do it."
"Just reason the fear away."
"One step at a time; you can handle the situation."
"Don't think about fear or how horrible it will be if you fail."
"Relax, you're in control. Take a slow deep breath."
(from Meichenbaum, 1977)

"There are times during the test when the stress and anxiety are the worst, when you feel like you are being overwhelmed. This point might come when you have missed
three or four questions in a row. Typically, we say things to ourselves like "I can't do this; I'm too scared now after missing so many," or "It's hopeless; I'm not even going to try to finish." Again, these kind of statements keep us from doing well on the test. What kind of statements would be adaptive at a crisis point, when you are very anxious at a crucial point in the test?"

Encourage discussion.

"Other statements we might say to ourselves in this situation could be:

"Keep the focus on the present: What is it you have to do?"
"You shouldn't expect to eliminate fear totally; just keep it to a minimum or manageable."
"You should expect your fear to rise in this situation." (from Michenbaum, 1977)

"Finally, after we have successfully dealt with our fear, it is a good idea to reward ourselves, to verbally pat ourselves on the back for having overcome our fears."

Encourage discussion on what sorts of statements one might make to reward a successful completion of a test without undue anxiety.

"Other statements we might say to ourselves in this situation might be:

"Very good. You have finally overcome that tendency to freeze up."
"It worked; you did it."
"It's getting better every time you use the procedure."
"terrific job. You are really doing well with this." (from Meichenbaum, 1977)

"Let's go over the technique again. First, reduce the anxiety down by telling yourself to relax. Next, listen to yourself talk, and when it's negative, challenge it with self-talk that is more positive. And finally, reward yourself for making the positive self-talk and for having coped with the situation."

"This is really a powerful tool, and the more you practice each part, the easier it will be for you. With practice, it will become the natural thing to do in these situations."
Make sure the subjects understand the model before proceeding.

7) Go over more of the structured examples and ask for discussion of the various statements one might make to oneself in such a situation.

8) Have subjects complete the credibility/expectancy questionnaire. Make sure each subject puts his or her name on the questionnaire. Also tell them to read each question and each scale carefully before they mark down their answers.

9) Assign homework and dismiss the group.

Session Three

1) Summarize procedure and rationale.

"The things we've been doing the past couple of weeks have been designed to teach you a strategy or coping technique that you can apply when you are in a testing situation. We went over this strategy in some detail in our last session, but let me briefly summarize it again for you. Since this is our last session, make sure you ask questions about what I am telling you, if you have any. Essentially, the coping package is made up of three different parts. The first step involves reducing the anxiety you may be experiencing in these situations (or before and after these situations) by telling yourself to relax and letting yourself do so. At the same time, and this is the second step, you should be tuning in to the self-statements you are making, and when they are negative, challenge them with self-statements that are more positive. The third step consists of rewarding yourself for making the positive self-statements and for having coped with that situation."

Make sure that you answer any questions they may have, and if you feel they may not be completely following you, you may want to summarize the coping model again.
2) Dim the lights and proceed with CCR training, using the 4-muscle procedure.

"Okay, let's go thorough the cue-controlled relaxation exercises. These will be similar to those we used last time, except we'll tense even more of the muscle groups together than we did then. So listen closely as we go through the procedure. Now each of you find a comfortable position."

Encourage subjects to get into a comfortable position in their chairs or sofa. Then proceed with the CCR training, using the 4-muscle group procedure.

3) Discuss tonight's relaxation exercise and last week's homework assignment of practicing relaxation training. Here, you should inquire about how well the subjects were able to relax on their own before you started the formal tensing-relaxing exercises. Discuss any problems they may have encountered when doing this. Especially encourage the use of deep breathing exercises to help them relax quickly, and model these techniques for them. Also, stress that they should be learning to tune in to feelings of tension in their bodies and focus on relaxing the muscle groups that typically are the most tense in anxiety-provoking situations. Also, discuss last week's homework assignment of practicing relaxation training and urge them to continue practicing the techniques in the future.

4) Discuss last week's homework assignment in which subjects were asked to monitor their self-statements in imagined testing situations. As in last week's session, focus
the discussion on negative self-statements reported and consider positive self-statements which may be used to correct them. Reinforce the group members who are making the corrective self-statements.

5) Give the subjects a 5-minute break.

6) Introduce the subjects to the upcoming test in the following way.

"Now we are going to pass out an intelligence-type test for you to take. There are several types of tasks on this test, so read the directions carefully. The items are fairly difficult, so apply yourself. If you are anxious now, or if you become anxious during the test, practice the coping skills we have been learning. Remember the package of relaxation and positive self-talk. Take a few moments now to prepare yourself for the task."

Pause a few minutes and allow the subjects to relax. Then say:

"Here is the test. Work as quickly as you can. We will tell you when the time is up."

Hand out the Gc-Gf sampler. Allow minutes for the subjects to complete it. Then say:

"Please stop taking the test now. Hand them to the front. Let's talk for a few minutes about how that went. Any comments?"

Encourage subjects to discuss how they coped during the test. Spend as much time on this as necessary.

7) Have the subjects complete the credibility/expectancy questionnaire. Make sure each subject puts his or her name on the questionnaire. Then say:

"This is the last session we will meet to discuss these techniques for coping with anxiety. However, we will meet for approximately 30 minutes next week at this time
to complete some more questionnaires. It is very important that you not miss next week's session. Would anyone object to my calling them next week to remind them of this final meeting?"

"Thank you very much for your participation in this set of meetings. I have really enjoyed working with you in these meetings."

Give each subject a memo for the session in the next week.
Appendix BB

Cue-Controlled Relaxation Instructions:
Stress-Inoculation Group

Read the following procedure word for word in its entirety during the first session. The pace should be deliberate and even with pauses at the dotted lines. During the tensing phase of the instructions, have the subjects tense their muscles for 5 - 10 seconds.

1. Right hand and lower arm--

   "Settle back as comfortably as you can. . . . Just let yourself relax to the best of your ability. . . ."

   "Now, clench your right hand into a fist; clench it as hard as you can. Build up the tension in your hand and forearm and study the tension. . . . Now, relax. Let the fingers of your hand become loose and notice the difference. . . ."

   "Once more, clench your right fist really tight. . . . Hold it, and notice the tension and study it. . . . Now, relax. Again notice the change. . . . Just let your fingers straighten out and relax those muscles. . . ."

2. Left hand and lower arm--

   "Now, repeat that with the left fist. Clench your left hand into a tight fist. Make the fist tighter and tighter and study the tension. . . . Now, relax. . . ."
"Repeat that once more. Clench your left fist tight and tense. . . . Now, relax. Study the change that takes place as you relax these muscles.

3. Right upper arm--

"Now, bend your right arm at the elbow, make your hand into a fist, and tense your forearm and upper arm as tight as you can. . . . Study the tension feelings. . . . Now, relax. . . . Straighten out your arm, and let the tension go. . . . Reduce the tension as much as you can, and let these muscles become even more relaxed. . . ."

"Once more, bend your right arm at the elbow, and tense these muscles again; hold the tension and observe it carefully. . . . Now, relax, straighten your arm, and let all of the tension go. . . ."

4. Left upper arm--

"Next, bend your left elbow, make your left hand into a fist, and tense your forearm and upper arm. Build up that tension in your upper arm and study it. . . . Now, relax. . . . Each time, pay close attention to your feelings when you tense up and when you relax. . . ."

"Again, tense these muscles, making your upper arm muscle into a tight ball. . . . Study the tension. . . . Now, relax and note the change. . . ."
"Concentrate on relaxing the muscle of both arms and hands even further. . . . Look for any feelings of tension in your arms, and relax it away. . . . Just let your arms relax even more. . . ."

5. Forehead--

"Next, tense the muscles of your forehead by lifting your eyebrows up as high as possible. . . . Tense these muscles as tight as you can. . . . Now, relax. Let your eyebrows drop, and let all the tension flow out of the muscles of your forehead. . . ."

"Lift your eyebrows once more and tense these muscles. . . . higher. . . . tighter . . . relax. . . . Again, reduce the tension, and let the feelings of relaxation spread across your forehead."

6. Central section of face--

"Close your eyes tightly and make them into a squint. Squint your eyes as tightly as you can and wrinkle up your nose as you do. . . . Study the feeling. . . . Now, relax and study the change. . . . Keep your eyes closed, gently, comfortably, and notice the relaxation. . . ."

"Again, squint your eyes and wrinkle up your nose. . . as tense as you can. . . . Now, relax. . . . Study the change, and relax even more. . . ."
7. Lower face and jaw--

"Now, clench your jaws, bite your teeth together, and pull back the corners of your mouth. Study the tension throughout your jaws. . . . Now, relax. Let your lips part slightly. . . . Notice the change, and focus on the relaxation. . . ."

"Clench your jaws again, and pull back the corners of your mouth. . . . Feel the tension. . . . Relax. . . . Part your lips slightly, and let the relaxation spread. . . . Just relax. . . ."

8. Neck--

"Now, attend to your neck muscles. Just let your head roll back and forth to the right and left a few times, and loosen up these muscles. . . . Straighten your head now and bring it forward, and press your chin against your chest as tightly as you can. Hold the tension for a few moments. . . . Now relax, and let the tension go. Let your head return to a comfortable position, and study the relaxation. . . ."

"Again, bring your head forward and press it against your chest . . . tighter . . . tighter . . . relax. . . . Relax these muscles even more. . . ."

"Now, focus your attention on all of the muscles in your face and in your neck. Assess any tension you may be feeling in these muscles, and relax it away. . . . Let the
relaxation progress further and further in these muscles. . . . Just let these muscles go, and notice how they feel as compared to before. . . ."

9. Shoulders, upper back, and chest--

"Next, tense the muscles of your shoulders and upper back area by raising your shoulders and shrugging them back and up. Tense them tight; feel the tension. . . . Now, drop your shoulders and relax. . . . Let the relaxation spread deep into your shoulders, right into your back muscles. . . . Let the relaxation spread as you become more and more relaxed. . . ."

"Raise your shoulders back and up again into a tight shrug. . . . Study the tension. . . . Let your shoulders fall, and as they do, relax. . . . Release all the tension and concentrate on this feeling. . . . Let it grow even deeper. . . ."

"Now, breathe in deeply and fill your lungs as full as you can. . . . Hold your breath. . . . Feel the tension. . . . Now part your lips slightly, silently tell yourself to relax, and exhale very slowly. . . . Notice the increasing relaxation as you exhale. Let the feeling of relaxation spread as you breathe out. . . . Now, breathe normally, and let yourself become even more relaxed. . . ."

"Again, breathe in and fill your lungs completely. . . . Hold your breath and study the sensation. . . . Silently tell yourself to relax, and exhale slowly. . . . Just
experience the sensation of deep relaxation spreading through your body. . . . Think about relaxing more and more as you continue breathing. . . . Merely let go, and enjoy the relaxation. . . ."

10. Abdominal or stomach region--

"Now, let's pay attention to your abdominal muscles, your stomach area. Tighten your stomach muscles; make your abdomen hard. Notice the tension . . . and relax. . . . Let your stomach muscles loosen and notice the contrast. . . ."

"Once more, press and tighten your stomach muscles. Hold the tension and study it . . . and relax. . . . Relax your stomach fully, and let the tension dissolve as the relaxation grows deeper. . . . Study this feeling, and let it grow even deeper. . . ."

11. Right upper leg--

"Flex your right thigh by pressing down your heel as hard as you can. . . . Press hard. . . . Relax, and note the difference. . . ."

"Straighten your knee, and flex your thigh muscle again. Hold the tension. . . . Now, relax. . . . Just allow the relaxation to spread through the muscles of your upper leg. . . ."
12. Right calf--

"Now, bend your right foot toward your face so that you feel tension along your shin and in your calf. Bring your toes up as you do this, and notice the tension. . . . Now, relax. . . ."

"Bend your right foot again so that you again feel tension in your calf and along your shin. . . . relax, and let the tension flow out. . . . Just relax. . . ."

13. Right foot--

"Tense the muscles of your right foot by pointing the toe of your foot down. Now turn your foot inward, and at the same time, curl your toes. Don't tense these muscles very hard, just enough to feel tightness. . . . Now, relax. . . . Focus on the feeling in your foot as it becomes more and more relaxed. . . ."

"Tense your right foot again, just enough to feel the tightness. Hold it . . . and relax. . . ."

14. Left upper leg--

"Now, press down on your left heel and flex your left thigh muscle very tightly. . . . Build up the tension. . . . Relax. . . ."

"Again, press down on your heel and tense your thigh. . . . Study the feeling . . . and relax. . . . Concentrate on relaxing this muscle, and let yourself experience the feeling as you do. . . ."
15. Left calf--

"Point your left foot toward your face, bring up your toes, and tense the muscles of your left calf. . . . Study the feeling. . . . Relax and focus on the change. . . ."

"Now, repeat the procedure. . . . Feel the tension in your calf and along your shin. . . . Now, relax and reduce the tension. . . . Try to relax these muscles completely. . . . Just relax. . . ."

16. Left foot--

"Finally, tense your left foot. Point the toe of your foot down, turn in inward, and curl your toes. Not too tense, just enough to feel the tightness . . . and relax. . . ."

"Again, repeat the procedure. . . . Not too tight. . . . Feel the tension . . . and relax. . . ."

"Let the feeling of relaxation flow throughout the muscles of your legs. . . . Reduce all the tension . . . from your thighs all the way down to your toes. . . . Focus all of your attention on the feelings associated with relaxation flowing into these muscles. . . ."

"Keep relaxing for a while. . . . Let yourself relax further all over. . . . Make sure that no tension has crept into any of the muscles we have relaxed. . . . Reduce even the least bit of tension you might find as you assess the
various muscle groups of your body . . . your arms . . .
face . . . neck . . . shoulders, back, and chest . . . your
stomach . . . and your legs. . . . Just let your muscles go,
and notice how they feel now as compared to before. . . .
Notice how you can become even more relaxed by merely
taking in a really deep breath and slowly exhaling. Silently
tell yourself to relax as you do this. . . . Relax. . . .
Just let yourself experience and enjoy this feeling.

Cue-Association Training

(After 30 seconds, begin cue-association training.)

"Now focus all of your attention on your own breathing
and study it. . . . With each breath you take, let yourself
become even more relaxed. Each time you exhale, silently
tell yourself to relax. . . . Now, inhale a moderately deep
breath, and as you exhale, tell yourself to relax. . . .
Inhale. . . . Now, exhale . . . and relax. . . . Inhale . . .

"Now, let yourself breathe normally, but continue telling
yourself to relax each time you exhale."

(Monitor the subjects as they are doing this, and allow
them to make 15 additional pairings in this way. Pause for
a few moments, and then bring the subjects out of the
relaxed state.)

"You may gradually begin to come out of the relaxed
state, but don't hurry. Take time to stretch and gradually
recover. Make sure you are awake and aware, there is no hurry."
Appendix CC

Therapist Manual: Attention-Placebo Group
Study 1

Session One

1) Introduce yourselves to group members and have them introduce themselves to one another.

2) Pass out copies of the treatment description and have subjects complete the questionnaire. (One of you should hand out the questionnaires while the other gives out the following instructions.

"Before we get started, let us pass out a description of what we will be doing during our sessions and the rationale for it. Please read this description at this time. When you are finished reading the description, we will answer any questions you may have. If you have any difficulties reading the questionnaire because of small type, etc., please raise your hand, and we will assist you. Attached to the back of the description is a brief questionnaire we would like you to complete after you have finished reading it. Please wait until you have finished reading the description and until we have had the chance to answer any questions before you complete the questionnaire."

After the subjects have read the descriptions, answer any questions they may have and have them complete the questionnaire. You should attempt to answer the questions by restating the material in the descriptions they have read. Collect descriptions and questionnaires.

3) Introduce the subliminal relaxation procedure.

"Now that you have some idea of what we're going to be doing and why, we would like to begin the training in subliminal relaxation. Recall from what you have just read that we will first give you some training in deep
muscle relaxation. The real advantage of relaxation is
that the muscle system in your body cannot be tense and
relaxed at the same time. Because of this, we can combine
the relaxation technique with the psychological principle
of counterconditioning. What counterconditioning does
is prepare you for situations so that you no longer have
problems with unrealistic fears, anxiety, or nervousness
association with those situations. The countercondi-
tioning take place when you are presented with situations
which cause you to become anxious while you are relaxed."

"Rather than having you consciously experience these
situations, which would probably cause you some anxiety
and discomfort, we will present some situations to you
subliminally—or in other words, to your subconscious.
After you have relaxed, we will show a movie and all you
need to do is watch the movie and remain relaxed while
you are doing so. While you are watching the movie, we
will subliminally present slides concerning testing and
the evaluation of academic ability. The slides are a
combination of words and images designed to elicit the
kind of anxiety a testing situation produces in you.
These slides will be presented throughout the movie with
this projector (point to projector). The projector
is capable of presenting images on the screen at speeds
so fast that they are invisible to your conscious mind,
but they will be perceived by your subconscious."

"From time to time while you are watching the movie,
some of you may notice a brief flick or something like
that on the film, but let me emphasize that you do not
have to experience this to benefit from the procedure.
In fact, some research indicates that it is best if you
do not notice any changes. Also, you should not con-
sciously experience any anxiety while viewing the film.
This should be a comfortable experience for you. If
any of you do experience excessive anxiety, raise your
hand, and we will briefly relax you again. Are there
any questions?"

Pause and answer any questions they may have. Keep
your answers consistent with the rationale. Questions
about the specific nature of the slides should be
answered by saying that specific knowledge of the
subject matter of the slides would render the treatment
ineffective.
4) "Okay, let's go through the relaxation procedures, and then we'll view the film. First, we'll dim the lights and go through a procedure where we will first tense and then relax the various broad muscle groups in your body. To do this, you will need to get into a very comfortable position in your chair. Each of you turn so that you are facing the screen and find a comfortable position in your chair."

Proceed with the four-muscle relaxation instructions.

"Now, remain relaxed, but open your eyes so you can view the film. All you need to do is relax and watch the film. Try to remain as relaxed as you can while you watching."

5) Show subjects the movie.

Start the movie projector and show the film. Once the film has started, turn on the tachistoscope slide projector and advance to the first slides. After 30 seconds, present the slide with every click the tachistoscope box makes. Advance the slides one at a time and at a rate of one every 30 seconds.

After 15 minutes, stop the film and tell the subjects you want to be sure they are still relaxed. Repeat the four-muscle sequence relaxation procedure, but do not repeat each muscle group as you did earlier.

Restart the movie and continue showing it for 15 minutes. Continue tachistoscopic slide presentation during the movie.

6) Give the subjects a 5-minute break.

7) Introduce the stimulus-controlled free association procedure.
"During the second part of our session, we will do some stimulus-controlled free association. Remember in the original free association procedure, the person would lie on a couch and simply say whatever came to mind. But this was usually very time consuming because it resulted in the person talking about a lot of material which was not really relevant to his or her problem. In the procedure we will follow here, we will help you to focus your free associations around the area that concerns you. We will present slides to you and after each slide have you free associate. The slides have been selected because they relate to your area of concern—test anxiety—but cause little anxiety. By looking at our free associations and discussing them with the members of the group, you should be able to develop some insight into your problem and be able to achieve greater control over the things that bring about the anxiety or discomfort you sometimes experience. Do you have any questions?"

Pause and answer subjects' questions.

"We will pass out some note pads for you to record your free associations, after viewing each slide."

One of the therapists should pass out the note pads while the other continues with the instructions.

"We will now present the slides to you. When we present each slide, just focus on the content of the slide and free associate. Just concentrate on the slide and let your mind go. For example, you might find yourself thinking something like: "It looks like an examination is being handed out. . . . I wonder how I would do. . . . I'll bet it is very difficult," and so on. Don't write anything down while the slide is being presented. We will give you some time after each slide to jot these things down, so wait until we instruct you to do so. Later, we'll discuss the results of this exercise in the group. Any questions?"

Pause to answer any questions they might have.

8) Conduct the stimulus-controlled free association procedure. Have the group face the screen, turn out the lights, and turn on the "standard" carousel projector. Advance to the first slide, and allow the
subjects to view it for 1 minute. When the slide is first presented, tell them:

"Okay, now just concentrate on the slide, and let your mind go. Just let yourself free associate as you concentrate. Don't write anything down right now."

Turn the switch to the "fan" position, so that the slide is no longer presented on the screen. Tell the subjects.

"Okay now, place the number on your note pad, and jot down some of the things that crossed your mind as you were free associating. Don't worry if it doesn't seem to make sense, just write them down."

After 1 minute, allow the subjects an additional minute to try to develop some insight into their free associations. Tell them:

"Now, think about the free associations, and try to develop some insight and understanding into them. Just try to understand how and why these free associations come up. Go ahead. We'll be quiet while you do this."

After 1 minute, advance to the next slide, and then turn the projector back on. Tell them:

"All right, here's the next slide. Do the same thing with this one as you did the last. Just free associate."

Proceed through the slides using this same three-stage procedure (viewing slides and free associating, jotting down the free associations, and trying to understand them). Present 10 slides during this first session. Have the subjects number the free associations they jot down to correspond to each slide.

Tell the subjects that if any of the slides caused them to become excessively anxious, they should remember the
slide and tell you about it after the session. Tell them that you will make sure that this slide will not be included in any future sessions, since the present approach is aimed at keeping the anxiety they consciously experience at a minimum.

9) Discuss free associations within the group.

"Now we would like you to get together and discuss your free associations with each other."

Tell the subjects that insight into their problems must be an experiential process and that true insight must arise from within themselves and cannot be taught in a didactic manner by a group leader. Tell them that the purpose of the group discussion is to enhance their own insight by exposing them to others developing insight into a similar concern as theirs. As a therapist, you should function merely to stimulate group discussion and not to provide interpretation or insight. Thus, any insight or interpretations will come from the subjects themselves or the contributions of other group members.

10) Assign homework, and dismiss subjects.

Subjects will be given the following homework assignments: (1) practicing relaxation training twice daily, once before lunch and once before going to bed and (2) a nightly free association procedure surrounding any thoughts about testing they may have had during the day. Ask them to write down the content of these free.
associations and bring them to the next session for group discussion. Before they leave, tell them:

"Please try to arrive on time for every session. I really cannot stress this point enough. All of the participants are putting a lot of time and energy into this project, and it would be unfortunate if one person spoiled it. Because the program is carried out in groups, it is essential for each member of the group to be here for every session, as it will be impossible to cover old material just to allow one person to catch up from a missed session. That's all for tonight. See you next at_________."

Session Two

1) Summarize procedure and rationale.

"Since much of what was said last time was probably new for you, first of all tonight I'll remind you briefly of the procedures we are using and the reasons we are using them. During the first part of tonight's session, we'll again go through the subliminal relaxation procedure. Just like last time, we'll first go through some procedures designed to help you relax deeply. After you are relaxed, we'll have you watch a movie. While you're watching the movie, we will subliminally present highly anxiety-provoking slides concerning testing and testing situations. By presenting these images on the screen with the projector, they can be perceived by your subconscious but not by your conscious mind."

"Through the psychological principle of counterconditioning, you should become relaxed in these situations, or, in other words, the procedure should decrease your unrealistic fears, anxiety, or nervousness associated with these situations. Remember, our bodies cannot be tense and relaxed at the same time, so by remaining relaxed while you view the movie, relaxation in these situations will occur in an almost automatic way. All you need to do is focus on remaining relaxed."

"The second part of tonight's session will be focused on helping you to bring some of the subconscious causes of your anxiety to your conscious awareness. During this part of the session, we will do some stimulus-controlled free association. We will present slides to you, and after each slide, have you free
associate and let your mind and thoughts go. By looking at your free associations and discussing them with the members of your group, you should be able to develop some insight into your problem and be able to achieve greater control over the things that bring about the anxiety or discomfort you sometimes experience. Are there any questions before we begin?"

From this point until the end of the session, follow the procedure used in session one.

At the end of the session, hand out the credibility/expectancy questionnaire.

Session Three
1) Summarize procedure and rationale.

"The things we've been doing the past couple of weeks have been designed to substantially reduce or eliminate the anxiety you may experience when in a testing situation. In the past sessions, we've discussed the procedures we are using and why we are using them in some detail, but let me briefly summarize them again for you. Since this is our last session, make sure you ask questions about what I am telling you, if you have any. Essentially, we are focusing on reducing anxiety through the use of two procedures, subliminal relaxation and stimulus-controlled free association. During the first part of tonight's session, we'll again go through the subliminal relaxation procedure. Just like our past sessions, we'll first go through some exercises designed to help you relax deeply. After you are relaxed, we'll have you watch a movie, and during the movie, we'll subliminally present highly anxiety-arousing slides concerning testing and testing situations."

"Through the psychological principle of counterconditioning, you should become relaxed to these situations. Your anxiety and nervousness should decrease. All you need to do is focus on remaining relaxed during the movie, and this will occur in an almost automatic way."

"The second part of tonight's session will consist of the stimulus-controlled free association procedure which should help you bring some of the subconscious
causes of your anxiety to your conscious awareness. We'll present slides to you, and after each slide, have you free associate and let your mind and thoughts go. Any questions?"

From this point until the end of the session, follow the procedure used in sessions one and two.

2) Conclude the final session.

"That concludes all of the things we wanted to cover in our sessions. We would like to thank you for your time and energy in coming to these sessions. Before you leave, we would like you to finish this questionnaire."

Make sure the subjects put their names on the questionnaire. After the subjects complete the questionnaire, say:

"Although we have finished working directly on test anxiety, we will meet for approximately 30 minutes next week at this time to complete some more questionnaires. It is very important that you not miss next week's session. Would anyone object to my calling them next week to remind them of this final meeting?"

"Thank you again for your participation. We have really enjoyed working with you in these sessions."
Appendix DD

Therapist Manual: Attention-Placebo Group
Study 2

Session One

1) Introduce yourself to the group members (your name and status—doctoral student in clinical psychology) and have them introduce themselves to the group. During these introductions, ask each person to briefly state why he or she has come to this group.

2) Pass out copies of the treatment description and have subjects complete the questionnaire.

Give the following instructions:

"Before we get started, let me pass out a description of what we will be doing during our sessions and the rationale for it. Please read this description at this time. When you are finished reading the description, I will answer any questions you may have. If you have any difficulties reading the questionnaire because of small type, etc., please raise your hand, and I will assist you. Attached to the back of the description is a brief questionnaire I would like you to complete after you have finished reading it. Please put your name on the questionnaire at this time. Please wait until you have finished reading the description and until I have had the chance to answer any questions before you complete the questionnaire."

After the subjects have read the descriptions, answer any questions they may have, and then have them complete the questionnaire. Initially, you should attempt to answer the questions by restating the material in the descriptions they have read. Collect descriptions and questionnaires.
3) Introduce the abbreviated cue-controlled relaxation, and train the subjects in cue-controlled relaxation.

"Now that you have some idea of what we're going to be doing and why, I would like to begin the training in cue-controlled relaxation. One advantage of learning to relax is that our muscles can't be both tense and relaxed at the same time. Therefore, this relaxation procedure will allow you to cope with the anxiety you may feel while anticipating or taking a test. Through this training, you will learn to bring this arousal down to manageable levels. First, we'll dim the lights and go through a procedure in which we will first tense and then relax the various muscle groups in your body. To do this, you will need to get into a very comfortable position in your chair. After we've gone through the deep muscle relaxation procedures, I will teach you to associate a cue word with your relaxation. I will ask you to take a deep breath, and as you slowly let it out, you will eventually be able to relax away a large part of any anxiety you are experiencing simply by telling yourself to "relax".

At this point, the therapist should demonstrate exhaling while telling yourself to relax.

"Now, each of you find a comfortable position."

Encourage subjects to get into a comfortable position in their chairs or sofa. After the subjects are in position, tell them to do the following. (Do not tell them to relax, until you have done this.)

"I would like each of you to now assess the amount of tension you are experiencing right now on a 10-point scale, where 1 represents being completely relaxed and 10 represents the greatest amount of anxiety and tension you have ever experienced. You do not have to tell us what number you have assigned, just assign the number and remember what it is. Okay, has everyone done that?"

Proceed with the abbreviated cue-controlled relaxation training.
After the relaxation training, again have the subjects assess their anxiety level on a 10-point scale. Inquire as to how many points they were able to reduce their anxiety levels with the relaxation training. Tell them that with practice, they will get better at it and will be able to achieve their relaxed state much more quickly.

4) Give the subjects a 5-minute break.

5) Introduce the group to the "experiential reintegration" discussion group technique and the rationale for this procedure.

"Recall the program description you read earlier in the session. Remember how it described anxiety reactions as being made up of two components, an arousal or tension component and a psychological component. We began by working on the tension components with the cue-controlled relaxation procedures before the break. Now, I would like to begin work on the psychological component of anxiety. The psychological components of anxiety can be stated in A-B-C form. At point A, there are our life experiences and our reactions to those experiences at the time they occurred. This is the raw material that is refined in our minds into our present-day emotions. We may or may not remember all these experiences. We go through a lot of experiences in 60 or 70 years. Those that we do remember can be used as a key to part B of our A-B-C equation, our perceptions and interpretations of these events. Part B is what stays with us throughout our lives. Let me give you a simplistic example of how parts A & B might go together. Let's say a man named Jack had very demanding parents when he was growing up and that they expected perfect performances from him in everything he did. As he got older and married, his wife placed similar demands on him. Such expectations from family and peers led to a number of situations in which Jack was often frustrated and under a great deal of criticism. You can see how such a set of circumstances would lead to life experiences at Point A that would lay a fertile groundwork for anxiety in certain situations. Just when and to what extent such life experiences would
result in anxiety reactions for Jack would be determined by his perceptions, interpretations, and feelings about them. This is part of our psychological equation. In our example, let's assume that Jack interpreted his frustrations as evidence he could never do well and always felt uptight and afraid when he was being evaluated, either on tests, or in other situations."

At this point, ask the subjects to discuss these experiences and their interpretation and what feelings they might evoke in Jack.

"You can see the effects Jack's experiences had on him and how his emotions were strongly influenced by his past experiences and the way he perceived them. Point C is the emotion that is felt now, the result of A & B in the past. In Jack's case, point C would be a high level of anxiety as he sat down to take a test, anxiety due to his past and his interpretations and feelings about that past. This treatment procedure would allow Jack to bring up some of his life experiences related to anxious feelings, and through discussing these point A experiences and point B interpretations in a group setting, he could change his emotional responses in the future."

Pause for a moment and let the subjects reflect on these thoughts. Then say:

"Now, I would like to introduce you to how we will work on this psychological component. I would like to have you to think back on the last test you took. If you haven't taken a test recently, imagine yourself in a testing situation. Try to recall your feelings in that situation—concentrate on the feelings before the test, during the time you were taking the test, and after the test. Do that now. (Pause) You may find it helpful to sit back, close your eyes, and try to re-experience the feelings and thoughts you were having at that time. Just picture the scene in your head, as if you were running a movie in your mind, and get into those thoughts and feelings. (Pause) Now, I would like for you to let your mind begin to wander away from the testing situation, while holding on to the feelings you had in that situation. . . . Ask yourself, 'Where have I had those feelings before?' . . . 'What does this remind me of?' . . . Just let your mind go."
Pause for a moment and let the subjects reflect on these associations. Then say:

"Now, I would like you to share these associations and feelings with the other members of the group. What was going through your mind when you imagined that situation?"

The therapist needs to be supportive here and must be accepting of any associations elicited by this exercise. The overall style of group leadership should be Rogerian in orientation, without rigid guidelines established as to the importance of the content being expressed. If the need arises, reinforce the idea that expression of any associations elicited by the exercise are worthy of discussion and reflection. Encourage group members to share their feelings and thoughts. Try to encourage participation by every member, and directly ask silent members to share their thoughts and feelings while they were imagining themselves in a testing situation. If discussion falters, widen the topic by making anxiety in general an item for discussion, and try to relate such experiences that are brought up to evaluative anxiety.

6) Assign homework and dismiss the group.

"Okay, there are several final reminders, and they are very important. In order to facilitate what we are doing here, I want you all to practice the relaxation technique at least once a day. You can do this when you are alone. If you practice the technique at night in bed before you go to sleep, make sure you have finished the exercises before you fall to sleep. Try to relax all the muscle groups we relaxed earlier, but pay special attention to those groups that you find are
typically the most tense. And don't forget the breathing exercises. Practicing these relaxation exercises is very important, as it will enable you to relax at a deeper level and at a more rapid rate."

"I would also like for you to imagine yourself in a testing situation and concentrate on the associations that go along with the feelings and thoughts that are elicited. Take a notebook as you leave tonight and use it to note down the associations you identify during the exercise. Bring this set of notes with you the next time we meet."

"Before you go, please fill out this short questionnaire."

"Thank you very much for coming and participating today. Please try to make the next two meetings. It is very important that you do. It would be very difficult for you to catch up if you were to miss a session. That's all for today. See you________."

Session Two

1) Summarize procedure and rationale.

"Since much of what was said last time was probably new for you, first of all, tonight I'll remind you briefly of the procedures we are using and the reasons we are using them. During the first part of tonight's session, we'll again do some cue-controlled relaxation training. Just like last time, we'll first go through some procedures designed to help you to relax deeply. Remember, we can't be tense and relaxed at the same time. So by learning to relax, you'll learn to bring this arousal down to reasonable and manageable levels. With practice, as you've been doing this past week, you'll learn to be able to relax away a large part of any anxiety you're experiencing simply by telling yourself to 'relax' and letting yourself do so."

"Remember, though, that anxiety reactions are made up of a psychological component, in addition to the arousal components we'll be working on with the cue-controlled relaxation training. The second part of tonight's session will be focused on this psychological component, on the life experiences and their interpretations and attached feelings that lead to our current emotional state. We will discuss these experiences and our perception of them in the group."
2) Dim the lights and proceed with cue-controlled relaxation training, using the abbreviated version.

"Okay, let's go through the cue-controlled relaxation exercise. Each of you find a comfortable position."

3) Discuss last week's homework assignment of practicing relaxation training and any problems they might have encountered in practicing.

4) Give the subjects a 5-minute break.

5) Discuss last week's second homework assignment in which subjects were asked to monitor and record their associations to an imagined testing situation throughout the week. Stimulate and facilitate any discussion that may arise. If the subjects appear to be having difficulty coming up with enough content to finish this session, propose the following exercise.

"Up to this point, we have been concentrating on the effects of past experiences on our current behavior. I would like to now direct your attention to your expectations of yourself and your anticipations of future performance when you are being evaluated or are evaluating your own performance. Often, our expectations have a great effect on our behavior. Again, these expectations of yourself may be directly or indirectly related to testing situations--they may involve other areas of your life. Take a few moments, close your eyes, and project yourself into the future. What are your fears? Examine your expectations. Just let your mind go. . . .

Pause for a moment and let the subjects reflect on this. Then say:

"Now, we should share some of these expectations and anticipations with other members of the group. What were your thoughts?"
This exercise may be introduced into the third session, if the initial discussion topic proves a sufficient stimulus for the group.

6) At the end of the group, assign homework as in Session One. Then administer the credibility/expectancy questionnaire.

Session Three

1) Session Three will begin with the summarization of the treatment rationales used in Session Two.

2) Cue-controlled relaxation training will be administered as in Sessions One and Two.

3) Discuss this relaxation session and last week's homework assignment of practicing relaxation training. Here, you should inquire about how well the subjects were able to relax on their own before they started the formal tensing and relaxing exercises. Discuss any problems they have encountered when doing this. Discuss last week's homework assignment of practicing relaxation training and urge them to continue practicing the techniques in the future.

4) Give the subjects a 5-minute break.

5) Discuss last week's second homework assignment in which subjects were asked to monitor and record their associations to an imagined testing situation. Stimulate and facilitate any discussion that may arise.
6) Administer the credibility/expectancy questionnaire.

Then say:

"This is the last session we will meet to discuss these techniques for coping with anxiety. However, we will meet for approximately 30 minutes next week at this time to complete some more questionnaires. It is very important that you not miss next week's session. Would anyone object to my calling them next week to remind them of this meeting?"

"Thank you very much for your participation in this set of meetings. I have really enjoyed working with you in these meetings."

Give each subject a memo for the session in the next week.
Appendix EE

Four-Muscle Group Relaxation Instructions:
Attention-Placebo Group
Study 1 and Study 2

Read the following procedure word for word in its entirety during each session. The pace should be deliberate and even, with pauses at the dotted lines. During the tensing phases of the instructions, have the subjects tense their muscles for 5 to 10 seconds.

Before you begin, make sure that all subjects have turned in their chairs so that they are facing the screen.

1. Left and right arms, hands, and biceps--

"Settle back as comfortably as you can. . . . Close your eyes, and let yourself relax to the best of your ability. . . ."

"Now, we'd like to have you concentrate on the muscles of your arms. Now, clench both of your hands into tight fists, tensing your forearms as you do. Now, bend your arms at the elbows and tense your biceps, too. Tense all of the muscles of your arms as tightly as you can and study the tension. . . . Now, relax. Let your arms straighten out, and let the fingers of your hands become loose, and notice the difference. . . ."

"Let's tense those muscles again. Once more, clench your hands into fists really tightly, bend your arms at
the elbows, and build up the tension in your biceps and throughout both of your arms. . . . Hold it. Notice the tension and study it. . . . Now, relax. Again, notice the change. . . . Just let your arms and fingers straighten out and relax these muscles. . . ."

2. Face and neck--

"Now, we'd like each of you to focus your attention on the muscles of your face and neck. First, let's tense up the muscles of the face. Close your eyes tightly and make them into a squint. Wrinkle up your nose as you do. Now, bite down hard on your jaws, and pull back the corners of your mouth. Keep these muscles tight as you also tense your neck muscles by bringing your head up and pressing your chin against your chest. Hold the tension. . . . Now, relax. Let your head return to a comfortable position, and study the relaxation. . . ."

"Again, bring your head forward and press it against your chest. At the same time, tense the muscles of your face: eyes squinted, nose wrinkled up, biting down on your jaws as you pull back the corners of your mouth. Tense them all tighter. . . . Relax. . . . Let the tension flow out, and let the feeling of relaxation spread. . . . Just let these muscles go, and notice how they feel as compared to before. . . . Reduce any tension you might feel . . . ."
3. Chest, shoulders, back, and abdomen—

"Okay, now I'd like you to focus all of your attention on the muscles of your chest, shoulders, upper back, and stomach. Now, let's tense these muscles. Take a deep breath and hold it. Now, pull your shoulder blades back and together, while at the same time making your stomach hard. Hold the tension . . . tighter . . . now, relax. Exhale slowly, and release the tension from all these muscles. . . . Relax these muscles completely, and let the tension dissolve as the relaxation grows deeper. . . ."

"Once more, take a deep breath, and completely fill your lungs, pull your shoulder blades back and together, and finally, tense muscles of your stomach . . . tighter . . . tighter . . . exhale, and relax. . . . Just let the tension go, and study the change. . . . Just let yourself go, and enjoy the relaxation."

4. Left and right upper leg, calf, and foot—

"Now, focus on the muscles of your legs and feet. Flex your thighs by pressing down your heels as hard as you can. Now, keep these tight as you tense your claves and feet by curling your toes and turning your feet inward slightly. Build the tension up throughout your legs and feet. Study it. . . . Now, relax. . . . Just let your legs and feet become more and more relaxed. . . ."
"Tense these muscles again. Press down on your heels and tense your thighs. Curl your toes, and turn your feet inward slightly. Tense the muscles of your legs and feet tighter . . . tighter . . . now, relax . . . . Let the tension leave, and let the feeling of relaxation spread."

"Keep relaxing for a while . . . . Let yourself relax further all over and enjoy this feeling . . . . Make sure that no tension has crept into any of the muscles we have relaxed. . . . Reduce even the least bit of tension you might find as you assess the various muscle groups of your body . . . your arms . . . face . . . neck . . . shoulders, back, and chest . . . your stomach . . . and, your legs . . . Just let your muscles go, and notice how they feel now as compared to before . . . . Notice how you can become even more relaxed by merely taking in a really deep breath and slowly exhaling. Silently tell yourself to relax as you do this . . . . Relax . . . . Just let yourself experience and enjoy this feeling."

(After 30 seconds, begin cue-association training.)

"Now, focus all of your attention on your own breathing and study it . . . . With each breath you take, let yourself become even more relaxed. Each time you exhale, silently tell yourself to relax . . . Now, inhale a moderately deep breath, and as you exhale, tell yourself to relax . . . . Inhale . . . . Now, exhale and relax . . . .
Inhale . . . and relax. . . . Inhale. . . . Relax. . . .
Inhale. . . . Relax. . . .

"Now, let yourself breathe normally, but continue
telling yourself to relax each time you exhale."
(Monitor the subjects as they are doing this, and allow
them to make 15 additional pairings in this way. Pause
for a few moments, and then bring the subjects out of
the relaxed state.)

"You may gradually begin to come out of the relaxed
state, but don't hurry. Take time to stretch and
gradually recover. Make sure you are awake and aware.
There is no hurry."
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