INFORMATION TO USERS

This material was produced from a microfilm copy of the original document. While the most advanced technological means to photograph and reproduce this document have been used, the quality is heavily dependent upon the quality of the original submitted.

The following explanation of techniques is provided to help you understand markings or patterns which may appear on this reproduction.

1. The sign or "target" for pages apparently lacking from the document photographed is "Missing Page(s)". If it was possible to obtain the missing page(s) or section, they are spliced into the film along with adjacent pages. This may have necessitated cutting thru an image and duplicating adjacent pages to insure you complete continuity.

2. When an image on the film is obliterated with a large round black mark, it is an indication that the photographer suspected that the copy may have moved during exposure and thus cause a blurred image. You will find a good image of the page in the adjacent frame.

3. When a map, drawing or chart, etc., was part of the material being photographed the photographer followed a definite method in "sectioning" the material. It is customary to begin photoing at the upper left hand corner of a large sheet and to continue photoing from left to right in equal sections with a small overlap. If necessary, sectioning is continued again — beginning below the first row and continuing on until complete.

4. The majority of users indicate that the textual content is of greatest value, however, a somewhat higher quality reproduction could be made from "photographs" if essential to the understanding of the dissertation. Silver prints of "photographs" may be ordered at additional charge by writing the Order Department, giving the catalog number, title, author and specific pages you wish reproduced.

5. PLEASE NOTE: Some pages may have indistinct print. Filmed as received.

University Microfilms International
300 North Zeeb Road
Ann Arbor, Michigan 48106 USA
St. John's Road, Tyler's Green
High Wycombe, Bucks, England HP10 8HR
DECKER, Thomas William, 1947-
TWO APPROACHES IN THE TREATMENT OF
TEST ANXIOUS COLLEGE UNDERACHIEVERS.
The Ohio State University,
Ph.D., 1977
Education, psychology

University Microfilms International, Ann Arbor, Michigan 48106

© 1977
THOMAS WILLIAM DECKER
ALL RIGHTS RESERVED
TWO APPROACHES IN THE TREATMENT OF TEST ANXIOUS COLLEGE UNDERACHIEVERS

Dissertation
Presented in Partial Fulfillment of the Requirements
for the Degree Doctor of Philosophy in the
Graduate School of The Ohio State University

By
Thomas William Decker, B.A., M.Ed.
The Ohio State University
1977

Reading Committee:
Professor Henry Leland
Professor Donald Tosi
Professor Herman Peters
Professor Richard K. Russell

Approved By:
Herman Peters
Adviser
Faculty of Special Services
ACKNOWLEDGEMENTS

There were too many individuals who contributed to this study to begin to acknowledge them individually. However, I am especially grateful for the interest and involvement of the students who participated as subjects and the administration of University College for their cooperation. Dr. Joseph Weaver and Alexandria DeLoatch were able therapists, friends, and supporters of this project. I appreciate the efforts made by the members of the reading committee as professors who have stimulated my learning throughout my Ph.D. program.

Finally, I want to thank my entire family for the support they have freely offered, and especially Barb for her unwavering encouragement and love.
VITA

June 28, 1947 .......................... Born - Orange, New Jersey

1969 .................................. B.A., Dickinson College, Carlisle, Pennsylvania

1969-1970 ............................ Teacher, Nelson County School Board, Virginia

1971 ................................. M.Ed., University of Virginia, Charlottesville, Virginia

1970-1972 ............................. Rehabilitation Counselor, Department of Vocational Rehabilitation, Farmville, Virginia

1972-1973 ............................. District School Counselor, Licking County, Ohio

1973-1975 ............................. Assistant Dean of Students, Denison University, Granville, Ohio

1975-1976 ............................. Academic Adviser, University College Ohio State University

1976-1977 ............................. Psychological Intern, Southwest Community Mental Health Center

FIELDS OF STUDY

Major Field: Counselor Education

Studies in Counselor Education - Professor Herman J. Peters

Studies in Counselor Education - Professor Donald J. Tosi

Studies in Developmental Psychology - Professor Henry Leland

Studies in Counseling Psychology - Professor Bruce Walsh

iii
ACKNOWLEDGEMENTS .......................................................... ii
VITA ....................................................................................... iii
LIST OF TABLES ................................................................. vi
LIST OF FIGURES ............................................................... vii

CHAPTER
I. INTRODUCTION ............................................................ 1
  Study Skills Counseling ..................................................... 5
  Cue-Controlled Relaxation and Cognitive Restructuring .......... 6
  Need for the Study ............................................................ 10
  Purpose of the Study ........................................................ 11
  Hypotheses ....................................................................... 11
  Assumptions ..................................................................... 12
  Limitations of the Study ................................................... 13
  Definition of Terms .......................................................... 13

II. REVIEW OF THE LITERATURE ........................................... 16
  Theory of Test Anxiety ....................................................... 16
  Characteristics of Study and Test Anxious Students .......... 21
  Characteristics of Underachievers ....................................... 28
  Study Skills Counseling ..................................................... 31
  The Relaxation Response ................................................... 35
  Cognitive Restructuring and Rational Emotive Therapy ........ 40

III. METHODOLOGY ............................................................. 54
  Subjects ............................................................................ 55
  Instruments: Pretreatment Assessment ............................... 56
  Posttreatment and Follow-up Assessments ......................... 66
  Research Design .................................................................. 67
  Treatments ........................................................................ 69
  Therapists ......................................................................... 74
  Statistics ........................................................................... 75
  Summary ............................................................................ 76

IV. ANALYSIS OF DATA .......................................................... 77

iv
### CHAPTER

<table>
<thead>
<tr>
<th>V. SUMMARY OF RESULTS</th>
<th>106</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discussion</td>
<td>109</td>
</tr>
</tbody>
</table>

| LIST OF REFERENCES | 117 |

<table>
<thead>
<tr>
<th>APPENDIX</th>
</tr>
</thead>
</table>

| A | 126 |
| B | 128 |
| C | 133 |
| D | 134 |
| E | 138 |
| F | 140 |
| G | 141 |
| H | 143 |
| I | 145 |
| J | 146 |
| K | 149 |
| L | 153 |
| M | 174 |
| N | 178 |
| O | 181 |
| P | 182 |
| Q | 184 |
| R | 186 |
LIST OF TABLES

TABLE

1 Mean Scores for Ss Performance on the 10 Dependent Variables by Treatment and Trials ................. 79
2 Univariate F Tests of Treatment X Trials Interaction .. 81
3 Univariate F Tests of Treatment Main Effects ........ 83
4 Univariate F Tests of Trials Main Effects ............ 84
5 Between Treatment Differences in Linear Trend Across 3 Trials ............................................. 85
LIST OF FIGURES

FIGURE

1  Design of the Study ........................................ 68
2  Treatment X Trials Interaction on the TAS ................ 87
3  Treatment X Trials Interaction on the SSHA ............ 89
4  Treatment X Trials Interaction on the PBI .............. 91
5  Treatment X Trials Interaction on the AD .............. 93
6  Treatment X Trials Interaction on the SR ............ 95
7  Treatment X Trials Interaction on the AAT+ .......... 97
8  Treatment X Trials Interaction on the AAT- .......... 99
9  Treatment X Trials Interaction on the STAI-1 ...... 101
10 Treatment X Trials Interaction on the STAI-2 ...... 103
11 Treatment X Trials Interaction on the GPA ........... 105
CHAPTER I

INTRODUCTION

Achievement and success are hallmarks of our society. Every parent hopes and dreams that his child will amount to something important, that this child will have a better life than the parents in terms of education, training, salary, social strata, and profession. The massive educational structure of our society, from nursery school to post-doctoral training, supports an extremely complex base of knowledge in the social, physical, biological, medical engineering, and computer sciences; law, the arts, business administration, and education. In order to grasp the incredible diversity of our "system," we have continually structured and restructured every possible aspect of our education. Each profession has its unique system of certification in order to make itself known above and beyond other similar and often competing professions. Thus, we have union truck drivers, plumbers, and construction workers; and we have licensed psychiatrists, licensed psychologists, certified counselors, and certified social workers.

Tests measuring an individual's ability, interests, motivation, personality, and potential are frequently the blade that separates the acceptable from the unacceptable in terms of school placement, college and graduate school admission, job placement, and license to practice a trade or profession. Success in our society is often
dependent on high performance on tests; thus it is not surprising that excessive needs to achieve result. These excessive needs to achieve are translated into an internalized pressure known as test anxiety.

Extensive research has correlated anxiety and learning in educational settings demonstrating that high anxiety is associated with a lower level of academic achievement at the university level (Sarason, 1963; Paul and Eriksen, 1964; Speilberger, 1966; Mitchell and Piatrowska, 1974). Speilberger (1962) reports a college dropout rate resulting from academic failure for high test anxious students that is four times as high as that for low anxious students. High test anxious subjects had lower performance than low test anxious subjects, under highly evaluative instructions. However low test anxious subjects performed better when given highly evaluative instructions than when given neutral instructions. When both groups were instructed in a non-evaluative manner, high and low test anxious subjects performed at about equivalent intermediate levels between their performances in the high and low evaluative conditions (Mandler and Sarason, 1952; Sarason, 1960, 1975; Wine, 1971).

Available research indicates that highly test anxious individuals are low in attentional focus during test taking and study preparation time (Sarason, 1972, 1975; Mitchell and Piatrowska, 1974). Whereas low test anxious subjects tend to focus on task-relevant variables, high test anxious subjects divide their attention between
self-relevant and task relevant variables. The intrusion of irrelevant thoughts focusing on self-evaluative and self-depreciating thinking, and perception of high emotional arousal interferes with full attention to the task and results in performance decrement (Wine, 1971; Sarason, 1973, 1975; Meichenbaum, 1972). Persons scoring high in test anxiety respond to tests as a threat with distracting self-oriented thoughts, while low test anxious subjects react to such conditions with increased effort and attention to the task at hand (Sarason, 1960, 1975; Speilberger, 1966, 1975; Wine, 1971).

Research by a variety of investigators (Liebert and Morris, 1967; Morris and Liebert, 1970; Wine, 1971; Sarason, 1973, 1975; Meichenbaum, 1972) indicate highly test anxious persons in situations in which their performance is being evaluated, spend much of their time worrying about their performance and how well others are doing, ruminating over alternatives, being preoccupied with feelings of inadequacy, anticipating loss of esteem, and developing heightened autonomic reactions. In short, worry components direct attention toward oneself and away from the task at hand resulting in performance decrement.

A number of studies have shown that underachievers, that is students who perform significantly below expected performance as defined by scholastic aptitude measures, are significantly more test anxious than overachievers (Biggs, et.al., 1971; Speilberger, 1966; Mitchell and Piatrowska, 1974). A number of other studies
reviewed by Mitchell and Piatrowska (1974) have reported negative self-evaluations to be characteristic of underachievers, including self-derogatory and depressed attitudes, feelings of inferiority, insecurity, and lack of optimism. Sarason (1975) relates these factors to fear of competition, fear of failure, and ambivalence over achievement in his discussion of the self-oriented characteristics of test anxious individuals.

DeSena (1964) found that underachievers lack persistence and conscientiousness in study as reflected by low class attendance and low amount of time spent in study. In addition, DeSena and others have found underachievers to differ significantly from overachievers and normal achievers in "maturity of goals" and levels of "aspiration" measures.

Mitchell and Piatrowska (1974) in their review of numerous studies on underachievement state that test anxiety and study skills and habits show a strong and consistent relationship with achievement, and that these areas comprise prime target areas for treatment. A treatment procedure aimed at controlling the worry component and the attentional style of the highly test anxious student should improve test performance (Meichenbaum, 1974; Meichenbaum and Cameron, 1975). In addition, such a treatment procedure should help the ill-prepared student clarify how to manage his time and how to direct his attention toward task relevant study behaviors before he enters the test-taking situation.
Study Skills Counseling

There is a great deal of divergence between different study skill counseling approaches. Bedmar and Weinberg (1970) evaluated the effectiveness of various treatment programs for underachievers and found that programs associated with improved grade point average were structured rather than unstructured; lengthy rather than brief; counseling was directed at the dynamics of underachievement and study skills; and counselors were perceived as warm and empathic.

Doctor, Aponte, Burry, and Welch (1970) found that a group counseling approach to underachievement focusing on the students' attitudes, feelings, and interpersonal roles, and suggestions for improvement of study and test taking habits showed a significantly greater improvement in GPA than a no-treatment control group.

A study skill counseling approach has probably been more frequently employed than the newer behavior therapy approaches. However, it is difficult to systematically compare the methods used due to the lack of specific procedures utilized. Thus, it is difficult to go beyond a general statement about the important characteristics of effective counseling treatment for underachievers. Research has suggested that counseling in conjunction with an academic studies program, systematic planning components related to studying, study and test anxiety, and study habits and skills are associated with effective treatments for underachievers (Bedmar and Weinberg, 1970; Greiner and Karoly, 1976; Mitchell, Hall and Piatrowska, 1975; Doctor, Aponte, Burry and Welch, 1970).
In this study, a behavioral approach to study skill counseling attempts to teach the student a decision-making process consisting of the following stages: acknowledging, valuing, exploring, analyzing, implementing, experiencing/reviewing, and then acknowledging again. The goals of such a process include personal awareness, the development of discipline in the academic arena, an opportunity to share with others, and an internalization of attitudes reflecting locus of control. The behavioral aspect to such a group counseling approach includes the student evaluating his behavior just prior to and during study. Then the student develops a schedule that would make the most effective use of his time. The final stage is evaluation of the success or failure of his schedule and the factors related to the outcome. Studying for exams and taking exams is taught emphasizing planning and organizing skills. Primary to this aspect is the student's development of a strategy for both studying and test taking. This research will compare the effectiveness of this study skills counseling approach to a cue-controlled relaxation and cognitive restructuring treatment approach.

Cue-Controlled Relaxation and Cognitive Restructuring

Allen (1972) and Wine (1971) in reviewing test anxiety treatment have concluded that "single model" treatments for test anxiety by relaxation techniques such as systematic desensitization have not consistently been found to result in increased academic effectiveness. Systematic desensitization has been demonstrated to be effective by self-report measures (Paul, 1969; Johnson and Sechrest, 1966; Suinn,
Subjects may indeed learn techniques to relax, but being relaxed is not necessarily associated with improved academic performance. Systematic desensitization has a number of drawbacks inherent in the mechanics of the procedure. Hierarchy construction and presentation, ability of subjects to maintain vivid visual images of fear-eliciting stimuli, and the lengthy amount of time required for systematic desensitization reduces its effectiveness with some clients (Lent, 1976).

Cue-controlled relaxation developed by Russell and Sipich (1973) for anxiety reduction enables the subject to achieve relaxation in response to a self-produced cue-word, such as "calm" or "relax." By training the subject in progressive muscle relaxation and pairing the relaxed state with the subvocalized cue-word, a state of relaxation comparable to that produced by systematic desensitization can be attained in a far shorter amount of time (Russell, Miller, and June, 1975; Russell, Wise, and Stratoudakis, 1976). However, in each of these studies demonstrating the effectiveness of cue-controlled relaxation in reducing self-reported test anxiety, there were no significant increases in academic effectiveness as measured by GPA.

Relaxation treatments such as systematic desensitization and cue-controlled relaxation do not treat the worry component of test anxiety. Underachievers, who are frequently test anxious, are frequently preoccupied with feelings of inadequacy in addition to having
heightened autonomic reactions. Text anxious individuals often ruminate, worry, and predict personal disaster for themselves while studying or taking a test. Such cognitive processes have been shown to be associated with high emotional arousal (Rimm and Litvak, 1969; Goldfried and Sobocinski, 1975). Ellis (1962), the originator of rational-emotive therapy, states that the individual cognitively mediates his experiences, and his emotional and behavioral consequences of those experiences. RET (Ellis, 1973) is an active directive psychotherapy which views emotional and behavioral disturbances as resulting from an individual holding irrational beliefs, ideas, or attitudes about himself or a situation both real and imagined (Arnold, 1968; Lazarus, 1971; Meichenbaum and Cameron, 1974; Maultsby, 1971).

RET utilizes the cognitive processes in changing emotions. Cognitive control over affective states is supported by a number of theorists (Korzybski, 1933; Johnson, 1946; Kelly, 1955; Arnold, 1968). RET is a cognitive restructuring process which specifically alters a person's irrational beliefs which underlie emotional disturbance and self-defeating behaviors to rational beliefs that allow more self-enhancing patterns of emotion and behavior.

Cognitive restructuring combines Ellis' rational-emotive therapy with the behavioral therapy originated by B.F. Skinner and expanded by A.A. Lazarus and J. Wolpe (Schmidt, 1976). The conceptual and process model of cognitive restructuring follows Ellis' A-B-C paradigm elaborated by Tosi (1973) to an A-B-C-D-E paradigm,
emphasizing high level cognitive control over emotive, physiological, behavioral, and situational conditions.

Tosi and Marzella (1975) define the following growth stages that a person gaining competence in rational self-management progresses through: awareness, exploration, commitment, to rational thinking and acting, implementation of rational thinking and acting, internalization, and change-redirection. These growth stages are adaptations to the counseling process of those stages identified by Mooney (1969) and Quaranta (1971).

In this study cue-controlled relaxation is taught as an active coping skill that the subject can apply to his study and test taking behaviors. Cue-controlled relaxation is simple and effective in controlling excessive and debilitating physiological arousal. In addition to providing immediate reinforcement to students, cue-controlled relaxation is presented in the first part of each session before the cognitive restructuring component. Thus, students will initially achieve a state of relaxation, and then be introduced and guided through the growth stages within a rational emotive approach toward restructuring the self-defeating attitudes and beliefs which support the continuance of underachievement. By combining a relaxation technique with a cognitive restructuring approach both self-oriented and debilitating "worry" and psychologically distracting "emotionality" factors (Liebert and Morris, 1967; Morris and Liebert, 1970; Wine, 1971; Sarason, 1973, 1975; Meichenbaum, 1972) are directly treated.
The experimental study of test anxiety has been the subject of a great deal of research since the 1950's when psychological researchers first developed scales to assess anxiety quantitatively. A growing number of researchers have focused their attention on specific sources of anxiety, such as social anxiety, anxiety over public speaking, stuttering, and test anxiety, because these sources are of considerable intrinsic interest themselves, and also because of the nebulous character of the concept of general anxiety (Sarason, 1975). Research on test anxiety has dealt with a wide variety of topics including test anxiety related to psychological characteristics of subjects, family background, physiological concomitants, and academic performance. The relationship of test anxiety to academic performance is an applied problem of great magnitude, one which deals with "real life" consequences, the passing or failing of tests. The development and implementation of test anxiety training programs aimed at self management strategies toward facilitating personal development and fulfillment are essential.

Underachievers as a group have been found to be highly test anxious. In addition, highly test anxious students have four times the number of academic failures as low anxious students (Spielberger, 1966). Underachievement is a continuing problem that negatively influences the individual's concept of himself resulting in low academic output and likely affecting his social and familial
relationships. The greatest danger of underachievement is the frequent conclusion by the highly test anxious student based on feedback from parents, teachers, and peers that he is below average in intelligence and of less capability than the "average" student, even though there is no basis for this conclusion in the evidence derived from aptitude measures.

**Purpose of the Study**

The purpose of this study is to determine the effectiveness of a study skills counseling, and cue-controlled relaxation and cognitive restructuring group approach on the reduction of test anxiety of underachieving college students at Ohio State University. Students enrolled in the treatments will be assessed by a variety of self-report measures and grade point average.

**Hypotheses**

The following null hypotheses will be investigated:

**Main effects: treatments.** Means representing test anxiety as measured by the Personal Beliefs Inventory, the Anxiety Differential, the Test Anxiety Scale, the State-Trait Anxiety Inventory, the S-R Inventory of Anxiousness, the Anxiety Achievement Test, and the Survey of Study Habits and Attitudes, from groups of subjects defined in terms of various treatments, Study Skills Counseling, Cue-Controlled Relaxation and Cognitive Restructuring, and Control will not differ significantly across pre, post I and post II conditions.

**Main effects: therapists.** Means representing test anxiety on the self report measures of the PBI, the AD, the TAS, the STAI, the
S-R Inventory, the AAT, and the SSHA and from groups of subjects within Study Skills Counseling, Cue-controlled Relaxation and Cognitive Restructuring, and Control having assigned therapists will not differ significantly across pre, post I, and post II conditions.

Interaction effects. Observed means representing test anxiety on the self report measures of the PBI, the AD, the TAS, the STAI, the S-R Inventory, the AAT, and the SSHA, from groups of subjects defined in terms of and in combination of treatment and therapist will not differ significantly from the means expected from the simple addition of the appropriate main effects.

Assumptions

Several assumptions were implicit in the design of this study. These assumptions are as follows:

1. The subjects chosen for this study are aware that they are test anxious.
2. The hypothesized differences between the experimental and control groups are the result of the treatments.
3. The size of the groups are adequate to justify undertaking and generalizing from the study.
4. The subjects administered the pre, post I, and post II tests have been candid enough to make the tests valid.
5. Test anxiety reduction can be accomplished in the time allocated to this study.
Limitations of the Study

The limitations of this study are as follows:

1. The subjects selected for this study are all underachievers with a GPA below 2.00.

2. The results of the study cannot necessarily be generalized to students not classified as underachievers at Ohio State University.

3. Students sent Warning or Probation letters were invited to participate in this study. The thirty volunteers self-selected themselves, thus no true random sampling of the total population of underachievers is represented.

4. A statistical limitation of the study lies in the number of subjects within each cell of the design, and the total N of 25.

5. A final limitation was the relatively low amount of hours (6) spent in the therapy sessions.

Definition of Terms

Underachiever. A student who performs significantly below expected performance as defined by scholastic aptitude measured by the ACT and whose actual performance is below a 2.00 GPA.

Cue-controlled Relaxation. A treatment that involves progressive muscle relaxation and the pairing of a subvocalized cue word such as "calm" with the relaxed state.
Cognitive Restructuring and Rational Emotive Therapy. A therapeutic cognitive behavioral intervention, which is both didactic and experiential, designed to guide the client toward rational thoughts, desirable emotions, positive physical states, and self-enhancing behaviors.

Rational. Rationality is a non-static concept based on logically correct thinking relative to a given set of facts (Tosi and Marzella, 1975). Sperry (1974) suggests that rationality is a method by which we achieve our main life goals and values. Four criteria to determine whether or not one's thinking and acting are rational follow:

1. These behavioral processes consider objective and subjective reality in the environmental, cognitive, affective, physiological, and behavioral realms;
2. These behavioral processes contribute to the preservation and enhancement of life;
3. These behavioral processes contribute to the achievement of one's personally defined immediate and long term goals;
4. These behavioral processes minimize significant personal and environmental stress (Tosi and Marzella, 1975).

Organization of the Remainder of the Dissertation

Chapter I has established the need and purpose of the study, hypotheses, assumptions, limitations of the study, and a definition of terms. Chapter II presents a review of the literature pertinent to the study. Chapter III contains the methodological considerations,
the data analysis procedure, and the research design. Chapter IV is a report of the results and findings of the experiment, and Chapter V summarizes the results and conclusions as well as addressing future recommendations.
CHAPTER II

REVIEW OF THE LITERATURE

The major question which this study focuses on is the efficaciousness of two approaches: cue-controlled relaxation and cognitive restructuring, and study skills counseling, in modifying the debilitating effects of study and test anxiety on college underachievers. A review of research pertinent to the variables contained in this study's research questions and their relationship to one another will be the concern of this chapter. The chapter will review related literature concerned with: 1) theory of test anxiety; 2) characteristics of study and test anxious students; 3) characteristics of underachievers; 4) study skills counseling; 5) the relaxation response; and 6) cognitive restructuring and rational emotive therapy.

Theory of Test Anxiety

A general definition of "clinical anxiety" is difficult to formulate. Definitions of anxiety in terms of illness in biological, social, or behavioral terms are unsatisfactory (Lader, 1975). The only reliable indicators of anxiety are an individual's subjective responses to the therapist or questionnaire. These subjective indicators measure the individual's feelings, emotional responses, symptoms, the extent of "dis-ease" of the individual, and most importantly his wish for help. Thus, we describe the individual as
"anxious" if he reports unpleasant feelings, projection into the future, and fear, often without clear referents.

The most productive investigations of anxiety states focus on anxiety as a transitory state versus as a general state. A transitory anxiety state (state anxiety) implies that an individual is anxious in specific situations, whereas a general anxiety state (trait anxiety) infers that a person is generally anxious due to his own characterological variables and traits (Spielberger, 1966, 1975; Albert and Haber, 1960; Mandler and Sarason, 1952). The research on test anxiety has focused on anxiety as a transitory state experienced specifically in test-taking situations. Research studying the characteristics of the transitory state of test anxiety will be examined in the following paragraphs.

A relationship between the level of test anxiety and the emphasis on evaluation of test performance has been reported in studies that vary the instructional conditions of test-taking situations. Mandler and Sarason (1952) examined the effects of feedback and no feedback on the performance of students scoring at the extremes on the Test Anxiety Questionnaire. Both success and failure feedback facilitated the performance of low-TAQ subjects, and lowered the performance of high-TAQ subjects. This positive relationship between anxiety-level, evaluation-focus, and performance-level was also reported in a study by Wine (1971). In Wine's research, highly test-anxious subjects performed more poorly when given highly evaluative instructions than when given neutral, non-evaluative instructions. Low-test
anxious subjects performed better when given highly evaluative instructions than when instructions were neutral. When both groups were instructed in a non-evaluative manner, high and low test anxious subjects performed at about equivalent intermediate levels between their performances in the high and low evaluative conditions.

The distinguishing element in the above study is the degree to which the subject believes he is being evaluated on the basis of his performance. The situational conditions differentially effect the performance on high and low anxious subjects in opposing ways, specifically in the way their response pattern differs under perceived threat (Sarason, 1960, 1975; Speilberger, 1966, 1975; Wine, 1971). Persons scoring high in anxiety respond to threat with detracting self-oriented thoughts, while low-anxious subjects react to such conditions with increased effort and attention to the task at hand.

Much research supports this notion that the major causes of performance decrement on tests are believed to be intrusion of irrelevant thoughts focusing on self-evaluation and high emotional arousal (Easterbrook, 1959; Wine, 1971; Meichenbaum, 1972; Sarason, 1975). In situations where performance is being evaluated, high test anxious persons will spend much of their time a) worrying about their performance and about how well others are doing, b) ruminating over alternatives, c) being preoccupied with such things as feelings of inadequacy, loss of status and esteem, and heightened autonomic reactions (Liebert and Morris, 1967; Morris and Liebert, 1970; Wine, 1971; Meichenbaum, 1972).
Liebert and Morris (1967) have distinguished worry and emotionality as two separate components of test-anxious individuals. The worry component is described as cognitive concern over performance; emotionality is defined as the autonomic arousal aspect of anxiety. The debilitating effects of worry or cognitive concern have been documented by a number of researchers (Doctor and Altman, 1969; Liebert and Morris, 1967; Morris and Liebert, 1970; Spiegler, Morris, and Liebert, 1968). These studies suggest that cognitive events may exert a more consistent negative influence on test performance than does emotionality.

It is indicated that the importance of the worry component underscores an attentional interpretation of the debilitating effect of test anxiety where the negative effects of test anxiety are due to attention being divided between self and test (Wine, 1971). The highly test anxious individual directs his attention inward in an evaluative setting, whereas the low test anxious individual increases his attention to the task in the same condition. This notion is supported by Doris and Sarason (1955) in a study whose evidence indicates that when asked about the reason why they failed a test, low test anxious college students tend to blame external factors ("It was an unfair exam") and high test anxious students tend to blame themselves ("I got confused"). The high test anxious responses occur as part of a process of heightened attention to oneself.

With this heightened attention directed inward, the highly test anxious student attends to fewer task cues than does the low test
anxious person. This self-oriented use of time by the high test anxious person is concomitant with a higher autonomic arousal. Sarason (1975) cites fear of competition, fear of failure, and ambivalence over achievement as examples of self-preoccupying behaviors characteristics of high test anxious persons. Ambivalence toward achievement is particularly pertinent to students in academic difficulty. Such an ambivalent reaction may reflect the student's anger and annoyance over his parents' unreasonably high academic standards (in the student's view).

Stressful situational conditions, such as taking examinations, tend to reduce cue utilization, in comparison to nonstressful situations (Wine, 1971). Worry, defined as cognitive concern, preoccupation with one's performance, and a lack of self confidence, all refer to attentionally demanding cognitive activity that might detract cue utilization during task performance. According to Doctor and Altman (1959), autonomic activity tends not to be as demanding of attention except at high levels where physiological responses such as stomach knots, tension headaches, or muscular tension might be distractive. Cue seeking of the highly test anxious person might or might not prove to be adaptive depending upon the availability of task-relevant external cues. Because heightened anxiety may interfere with making accurate discriminations between relevant and irrelevant cues, the highly test anxious individual might well attend to irrelevant as well as available relevant cues (Sarason, 1975, b; Wine, 1971).
Characteristics of Study and Test Anxious Students

Test anxiety is experienced in a variety of interlocking ways by students. Each student has a unique response set to examinations, though there are a number of common elements that highly test anxious students may exhibit. Two distinguishing factors of test anxious individuals are 1) the manner in which the student attends to the events in his environment and 2) the manner in which he interprets and utilizes the information provided by these events. The student's cognitive interpretations of these events may include undesirable self perceptions, expectations, fears, and attitudes. In the autonomic system there may be heightened physiological reactivity. The high test anxious individual often functions maladaptively in both of these areas (Boutin, 1976). The following case study examples are representative of these characteristics of test anxious persons.

1. Wayne would mark what seemed to be the right answer, but then, in a sudden rush of panic, would question his response. Suddenly he could think of complicated reasons why any of the choices might be correct. He would frantically change from one answer to another, thinking to himself, "My God, it could be any of these, there's no way to tell....I can't tell what he has in mind!" When he received his test back he discovered that almost all the answers he changed were from a right answer to a wrong answer.

2. As soon as Susan hit a question she did not immediately know the answer to on a test, she would become depressed and give up. A few times she caught herself saying almost out loud, "I'll never be able to do it, I'll never get it," and then giving up. When the test was returned, however, she would look at the question and know the answer immediately. Susan spent a
lot of time ruminating and thinking to herself things like, "I'll never be a good student, I'll never make it....What am I going to do?"
Her thoughts led her to the conclusion that it would be easier to drop out of school than to continue being so depressed.

3. Paul would go to tests 15 or 20 minutes early to see what people were talking about. All the worried conversation would raise his anxiety considerably. He found it hard to control a rising feeling of panic as someone would mention or make reference to something he didn't know right off hand. As the test began he would look around and become obsessed with the idea that everyone else had the material down cold, that only he was nervous and uncertain. He concluded that others remembered and knew so much more than he did that it was hopeless to compete. It became hopeless to try to guess what the instructor would ask on the test, though he would ruminate about it. Since that seemed hopeless, his studying became more aimless and disorganized (Lamb, 1976).

Research suggests that many students have the ability to perform well on exams, but that their academic success is hampered by their test anxiousness (Paul and Eriksen, 1964). Spielberger (1966) reported that highly anxious students experience lower grades and nearly four times the number of academic failures as do low anxious students. It has been previously stated that the intrusion of irrelevant thoughts focusing on self-evaluation and high emotional arousal leads to performance decrement (Easterbrook, 1959; Wine, 1971; Meichenbaum, 1972; Sarason, 1975). In Rational Emotive Therapy, Ellis specifies the illogical thoughts, demands, and catastrophic predictions which distort the view that test-anxious people take of the test situation. Rational Emotive Therapy distinctly elucidates
the internal sentences which generate anxiety and result in self-defeating behaviors. These illogical internal sentences represent the major irrational beliefs, presented by Ellis (1962) and modified by Tosi (1973), which cause emotional disturbances. Of the fifteen irrational beliefs that follow, the first seven figures predominantly in the development of study and test anxiety:

1. I must be loved or approved by everyone for virtually everything I do. Or, if not by everyone, by persons I deem significant to me.

2. I can't stand it when things are not the way I would like them to be.

3. When I am unhappy it is because something external to me such as persons or events causes me to be that way.

4. Although I want to face difficult situations and self responsibilities it is easier for me to avoid them.

5. In order to have a feeling of worth, I should and must be thoroughly competent, adequate, intelligent, and achieving in all possible respects.

6. When something once strongly affected me, it will always or indefinitely affect me.

7. I am happiest when I just remain inactive and passive.

8. I believe that certain acts are sinful, wicked, or villainous, and that people who perform such acts should be severly punished and blamed.

9. I should be terribly concerned about things that may be dangerous or fearsome to me.

10. I need someone stronger or greater than myself on whom to rely.
11. I don't have much control over my emotions or thoughts.

12. I should never be angry or express my anger because such expression is bad and a sign of personal weakness.

13. I should rarely confront other people or assert my own thoughts or feelings about another person because people are fragile and hurt easily. I don't want to hurt anyone.

14. Most of the time I will please other people even if I have to forgo my own pleasure.

15. In order to be perfectly fulfilled as a human being I need (must have) a close personal, involved, and intimate relationship with another person, especially a member of the opposite sex.

Ellis (1962) hypothesizes that the maladaptive emotional reactions of individuals are mediated by the specific nature of persons' beliefs or expectations about certain situations. Thus, if a highly test anxious student believes "I should be thoroughly competent, adequate, and achieving in all respects," this irrational belief takes on the status of a persistent and well-learned set with which the student approaches his next examination. A number of irrational beliefs are usually welded together to form an irrational cognitive structure. For example, the belief "I must be perfect" might be supported with the idea "I can't stand it when things are not the way I would like them to be." Intensifying this response set is the belief "Although I want to face difficult situations, it is easier for me to avoid them." Thus, the internalized demand for perfection culminates in an avoidance response as soon as the individual's
bubble of desired perfection is burst. Since perfection is necessary to be a worthwhile person, the final irrational leap is that "I must be worthless and stupid since things have not gone the way I want them to, and I can't stand that!" This vicious circle of irrational beliefs typify the intrusion of irrelevant thoughts of highly test anxious students.

Numerous social learning theorists (Bandura, 1969; Dollard and Miller, 1950; Staats and Staats, 1963) support Ellis in the great emphasis they place on the importance of cognitive processes as a significant determinant of emotional arousal. Social learning theorists acknowledge that cognition may mediate emotion; however, they recognize that this acknowledgment does not negate the possibility that emotional arousal may occur without the existence of any mediating processes (Goldfried and Sobocinski, 1975). A number of further studies have confirmed the ability of symbolic activities or covert verbalizations to elicit emotional reactivity. Rimm and Litvak (1969) found that subjects reading affectively toned sentences (e.g., "I might get injured or crippled"), as compared with neutral sentences, showed significantly greater emotional arousal, as measured by respiration rate and depth. In related studies, heart rate, respiration, and galvanic skin conductance were found to change as a function of the affective nature of internally evoked thoughts (Goldfried and Sobocinski, 1975).

Sarason (1975) states that the multiplicity of fears that pervade the life of the anxious person has to do with the role of conflict
and values in the experience of anxiety. In addition to having to worry about more things than does the less anxious person, the anxiety-ridden person is beset by the need to consider their priorities and conflicts among them. Deciding which priorities are most pressing add to the self-oriented character of anxiety and in addition heighten autonomic arousal of the person. In relation to the various preoccupations of anxious individuals, Sarason (1975, p. 183) states "...one commonality is self-centering—focusing attention on one's feelings, thoughts, and inability to cope with the problems of life."

A test anxious student will experience this multiplicity of fears and self-centeredness. For example, while taking a test, a text anxious student may continually look at the clock to see how much time he has, gaze at other students who he perceives as working diligently on the task at hand, wonder about the rest of the test—if all the items are going to be as confusing as this one, think of his probable negative outcome on this test, and begin to negatively evaluate himself and think how awful it will be to flunk this test, flunk out of school, and thus never amount to anything. This kind of series can rapidly consume the attention of the student. Rather than focusing on the task of what item number three says, and which of the four possible alternatives seems most appropriate, he is focusing on himself.

Test anxious individuals also experience dualistic thinking in both study and test-taking situations. A.A. Lazarus (1971) talks
of dualistic thinking when he discusses the widespread proclivity to divide everything into two opposite poles (right versus wrong, good versus evil, black versus white, success versus failure) and to avoid the middle ground. Hayakawa (1964) terms this two-valued orientation a factor in many areas of miscommunication.

The test anxious student, who may be perfectionistic, dualistic, and self-centered, may initially conclude that the test was unfair and the teacher didn't cover that material. However, this defense will be penetrated if the student seems to continually need this rationalization. Once penetrated, the student jumps from assigning all the blame to external factors to introjecting his anger. Thus, in realizing he can't effectively punish the teacher, the student turns his anger onto himself. Supporting the existential contention that only the individual has control over the choices he makes, the test anxious student will successfully express his anger at himself in an extremely powerful and debilitating way. The perfectionistic test anxious student will see the achievement of anything less than perfect as failure. The student then illogically concludes that "I am stupid. I should have done better on that test." The student successfully expresses his anger through self condemnation and guilt and catastrophizes the possible consequences of failure to his most precious value, his self-worth.

The test anxious person who concludes that he is a failure will predict that he will continue to do poorly on tests. This prediction then becomes a self-fulfilling prophecy which generates
more anxiety about test taking. By focusing on his anxiety the student shifts the responsibility for his poor performance from his perception of himself to "anxiety" or nervousness, conceptualized as out of his control. The extremely test anxious person may blame his failures on his "nerves" as if a condition of "nerves" was a communicable virus.

This vicious cycle of test anxiety is partially maintained by the misconceptions of others such as teachers, parents, and friends who dictomously define success as "he has everything" and failure as "why does she stay with that no-good bum?" Overgeneralization and excessive reliance on other people's judgments further rigidify the dichotomous reasoning process. Rainy (1975) states that while the external world (i.e., parents, teachers, friends) undoubtedly does influence the person's adjustment, one's misconceptions about the self probably play a major role in his enduring maladjustments.

Characteristics of Underachievers

As mentioned before, highly anxious students receive lower grades and nearly four times the number of academic failures as low anxious students (Spielberger, 1966). Among the highly test anxious students are underachievers, that is students who perform significantly below expected performance as defined by scholastic aptitude measures. A number of studies on underachievers have found them to be highly test anxious, specifically in evaluative examination settings.
Biggs, et al. (1971) observed that underachievers were significantly more test anxious than overachievers. Numerous studies have shown that test anxiety has moderate to high negative correlations with achievement indices such as academic performance in examinations, concept learning, reading, and a variety of other cognitive tasks (Albert and Haber, 1960; Sarason, 1975; Spielberger, 1966,b). Mitchell and Piatrowska (1974) state that the evidence seems to indicate a moderately high and consistent relationship of test anxiety with achievement.

A number of other studies have reported negative self-evaluations to be characteristic of underachievers, including self-derogatory and depressed attitudes, feelings of inferiority, insecurity, and lack of optimism (Mitchell and Piatrowska, 1974). These factors coincide with fear of competition, fear of failure, and ambivalence over achievement cited by Sarason (1975) in his discussion of the self-oriented characteristics of test anxious individuals. Test anxiety in its extreme form appears to warrant high priority in any treatment program for underachievers.

Five investigators found underachievers to be inefficient, disorganized, and lacking order and planning in their approach to tasks. In contrast, twelve investigations found overachievers (the converse of underachievement) to be orderly, planful, and efficient in study habits (Mitchell and Piatrowska, 1974). These investigations indicate that study habits appear to be an important target behavior in the treatment of underachievement.
DeSena (1964) and other investigators have found that underachievers lack persistence and conscientiousness in study as reflected by low class attendance and a low amount of time in private study. In contrast, overachievers are persistent, conscientious, and committed to their academic work. It is likely that low academic application contributes to the continuance of underachievement. Eleven studies reviewed by Mitchell and Piatrowska (1974) found that underachievers tend to be low in academic output, for example, failing to complete assignments on time. Both low academic productivity and poor application are probably only products of past underachievement. The student who continually does poorly is likely to develop an avoidance response to studying since it has not been reinforcing in the past.

Fourteen investigations obtained results showing that underachievers set unrealistically high, uncertain, or no stated goals. In contrast, eight studies found overachievers to be characterized by definite, realistic, and conservative goal-setting and by relating their academic work to future goals (Mitchell and Piatrowska, 1974). DeSena (1964) found underachievers to differ significantly from both overachievers and normal achievers in "maturity of goals" and "levels of aspiration" measures. It seems likely that underachievers who set goals either too high or not at all, and who appear immature, hold a dichotomous cognitive set as reflected by the irrational beliefs, "I must succeed," and "If I don't succeed, that would be awful!"
In their massive review of literature on underachievement (224 separate studies were reviewed), Mitchell and Piatrowska (1974) state the only characteristics which have experimental evidence to support their relationship with achievement are test anxiety and environmental stresses (noise, sleep deprivation) in study conditions. In addition, study skills and study habits show a strong and consistent relationship with achievement. Mitchell and Piatrowska do mention that there is no reason to assume that any single target behavior (i.e., test anxiety, study habits, environmental stresses) should be the sole treatment target. Whether or not several target behaviors can be effectively treated simultaneously remains to be established.

**Study Skills Counseling**

Study skills and study habits show a strong and consistent relationship with achievement according to Mitchell and Piatrowska (1974) in a comprehensive review of the literature on underachievement. Underachievers frequently hold negative self-evaluations, lack persistence and conscientiousness in academic application, set unrealistic or no stated goals, and are highly test anxious (DeSena, 1964; Mitchell and Piatrowska, 1974; Biggs, et.al., 1971). A variety of treatment components for underachievers have been found effective, as indicated in the following mentioned research studies.

Bedmar and Weinberg (1970) in a review of twenty-three studies evaluated the effectiveness of various treatment programs for underachieving college students. All of the studies used grade-point average as the dependent variable, and a specific treatment program intended to improve student academic performance as the independent
variable. Treatment programs associated with improved academic performance were characterized as 1) structured rather than unstructured, 2) lengthy (ten or more hours of treatment) rather than brief, 3) counseling aimed at the dynamics of underachievement used in conjunction with an academic studies program, and 4) having high levels of therapeutic conditions (empathy, warmth, and genuineness).

Greiner and Karoly (1976) in a study investigating the effects of self-monitoring, self-reward, and systematic planning components on study activity and academic performance found that subjects who received all three components consistently outperformed the other groups who did not receive the planning and/or self-reward and self-monitoring components. The training procedure used was very brief (1 1/2 hours), but does support the importance of planning as an aid to behavior control. Kanfer and Karoly (1972) suggest that training in planning strategies enhance the self-evaluation process, having an interactive rather than an addictive effect on the self-control process.

Mitchell, Hall, and Piatrowska (1975) compared desensitization and reeducative training whose target groups include test and academic anxiety and study habits and skills, test and academic anxiety, and test anxiety only, in the treatment of bright failing underachievers. This investigation indicated that systematic desensitization and reeducative training are effective in reducing or improving the targets of test anxiety, academic anxiety, and study habits and skills, all hypothesized as the major contributors to the continuance of
failing underachievement. In addition, effective changes for each group of students occurred only in the specific targets treated directly. These findings suggest that it is not sufficient to treat these targets in isolation. For example, treating test anxiety may reduce anxiety, but it does not provide the student with the necessary new study behaviors.

Doctor, Aponte, Burry, and Welch (1970) compared group counseling and behavior therapy for college underachievers. The group counseling approach focused on the students' attitudes, feelings, and interpersonal roles associated with performance in college, and on suggestions for improvement of classroom study and test-taking habits. The behavior therapy group utilized systematic desensitization for the reduction of study and test anxiety. Both treatment groups showed significantly greater improvement in GPA than the no-treatment volunteer and non-volunteer groups, though neither treatment group showed significant changes in GPA over the other treatment group. Analysis of the difference in pre-post scores on the Wolpe-Lang Fear Survey Schedule, a measure sensitive to interpersonally related situations (i.e., "going on a new date" and "seeking help for a problem"), indicated that the counseling group scored significantly lower on post-test assessment in overall fear reaction ratings than the behavior therapy group. The reverse was true for the S-R scale, a measure of physiological reactions of anxiety in academic and interpersonal situations. The investigators suggest that each treatment had specific and unique effects which were successful in producing desired changes. Improved functioning by the group
counseling subjects may be due to changes in the way subjects think about problems, and improved functioning by behavior therapy subjects may be related to less disturbing physical feelings that are aroused when facing difficulties.

According to the above mentioned research, the important characteristics of effective treatments for underachievers include counseling in conjunction with an academic studies program, systematic planning components related to study activity, test and academic anxiety, and study habits and skills (Bednar and Weinberg, 1970; Greiner and Karoly, 1976; Mitchell, Hall, and Piatrowska, 1975; Doctor, Aponte, Burry, and Welch, 1970). Several anxiety treatment researchers have considered that the alleviation of one target behavior, such as test anxiety, does not in and of itself necessarily provide students with the skills needed to improve their academic performance, that is, when poor study habits appear to be a part of the problem (Allen, 1971; Mitchell and Ng, 1973). Conversely, study skills training may not be sufficient for underachievers where test anxiety appears to be a part of the problem. This thinking has resulted in the establishment of a multimodel approach to test anxiety treatment (for example, combining systematic desensitization with study skills training). Initial results with this treatment strategy have been promising, both in terms of decreasing test anxiety and improving grades (Allen, 1972; Wine, 1971).
The Relaxation Response

Applied relaxation, Cue-Controlled Relaxation, systematic desensitization, and hypnosis have all been reported to effectively improve self-reported test anxiety. While the reduction of test anxiety, whether by individual or group treatment, has been supported, their effects on academic achievement remain unclear (Mitchell and Ng, 1973).

The physiology of the "relaxation response" (Benson, 1975), whether called Cue-Controlled Relaxation, meditation, hypnosis, systematic desensitization, or applied relaxation has been investigated by a number of researchers (Wallace and Benson, 1972; Coleman and Swartz, 1976; Reinking and Kohl, 1975). Major dependable autonomic trends induced by the relaxation response include the slowing of breath and heart rate, a marked decrease in the blood-lactate level, a lowering or stabilization of blood pressure, and a decrease in skin conductance. Electro-encephalogram recording during relaxation tends toward a steady decrease in initial beta level and an increase in alpha and then theta as the session progresses. The progression halts short of sleep, has a pattern of response to external stimuli similar to waking, and is seldom accompanied by drowsiness.

In his work on the biochemistry of anxiety, F.N. Pitts (1969) demonstrated that patients with anxiety neuroses show a large rise in blood lactate when they are placed under stress. In addition, Pitts showed experimentally that an infusion of lactate could bring on attacks of anxiety in such patients and could even produce anxiety
symptoms in normal subjects. Patients with hypertension (essential and renal) show higher blood-lactate levels in a resting state than patients without hypertension, whereas in contrast the low lactate level in meditators is associated with low blood pressure (Wallace and Benson, 1972).

Thus, it seems reasonable to assume that the teaching of a relaxation skill should help the test anxious student cope with his anxiety. In addition, a relaxation response, such as cue-controlled, hypnosis, or transcendental meditation, suggests to the individual that he can control his focus of attention and that this control will deeply relax him. However, it appears that relaxation alone is not sufficient for many test anxious individuals.

In reviewing the literature on test anxiety treatment, Allen (1972) and Wine (1971) have both concluded that "single model" treatments for test anxiety (e.g., systematic desensitization alone) have not consistently been found to result in increased academic effectiveness. While results may indicate that students are more relaxed after some form of relaxation training, they may continue to fail. A more complex formulation of low achievement would include the relationship of test anxiety and study habits, as mentioned by Mitchell and Piatrowska (1974) and a number of other investigators. In addition to the inclusion of study skills and relaxation training, the present research includes a cognitive restructuring component. It appears that study skills, irrational beliefs, and high emotional arousal interrelate resulting in poor academic performance. Thus a multimodel approach directed at the test anxious underachiever seems
warranted. The relaxation component of this multimodel approach, and a review of selected literature supporting this approach, follows.

The success of systematic desensitization (SD) in the treatment of test anxiety has been documented by numerous researchers (Paul, 1969; Johnson and Sechrest, 1966; Suinn, 1968; Allen, 1971, 1972; Osterhouse, 1972; Emery and Krumboltz, 1967). These studies demonstrate the effectiveness of SD for test anxious subjects as evidenced by self-report measures of lowered anxiety and often improved grades. Allen (1972) notes that a number of these studies suffer from serious shortcomings. In addition, there are several drawbacks inherent in the mechanics of the SD procedure. For example, problems in hierarchy construction and presentation, and in ability to maintain vivid visual images of fear-eliciting stimuli, may serve to negate SD's efficiency with some clients (Lent, 1976).

A recently developed treatment program directed at anxiety reduction is Cue-Controlled Relaxation (Russell and Sipich, 1973). The goal of the CCR procedure is to enable the client to achieve relaxation in response to a self-produced cue-word, such as "calm" or "relax." Training in CCR involves a two-step process: 1) progressive muscle relaxation training, and 2) continuously associating the relaxed state with the subvocalized cue-word.

There have been several reported applications of CCR to test anxiety treatment. Russell and Sipich (1973, 1974) in uncontrolled case studies produced suggestive evidence for CCR's potential in
treating this problem. Their clients demonstrated significant improvement on three self-report measures, in addition to a sizable GPA increase. Russell, Miller and June (1974) also successfully applied CCR in a group setting to nine test anxious students, again using self-report criteria. This study similarly lacked relevant controls. Russell, Miller and June (1975) compared group administrations of both SD and CCR against a no treatment control group. Results indicated that both treatments were effective in decreasing self-report anxiety on two of the four measures employed, relative to the no treatment control group. GPA differences, however, were not significant between the three groups. The authors interpreted these findings as indicative of CCR's advantages over SD in treating subjectively experienced test anxiety, since the two techniques did not differ on any of the dependent variables and CCR does not necessitate hierarchy construction or presentation.

A further attempt to demonstrate CCR's potency in the treatment of test anxiety compared CCR with SD and a no treatment control group. Both SD and CCR produced significant reductions in self-reported test anxiety. In addition, both techniques produced significant reductions in self-reported state anxiety from pre-to post-treatment. In spite of significant improvements on the self-report measure, neither treatment group showed significant improvement on the behavioral-assessment instruments (Russell, Wise, and Stratoudakis, 1976). Due to CCR's simplicity and breadth of application, CCR is highly recommended as an effective alternative to SD.
A number of researchers have suggested that relaxation responses be presented as an active coping process (Zemore, 1975; Goldfried, 1974). Chang-Liang and Denney (1976) in a comparison of applied relaxation, systematic desensitization, relaxation only, and no treatment control found that applied relaxation was more effective in reducing test anxiety than both relaxation only and no treatment on two measures of general anxiety and two measures of test anxiety, although significant differences between applied relaxation and systematic desensitization were limited to only one measure. The authors note that applied relaxation procedures are aimed at imparting a general coping skill. Goldfried and Trier (1974) suggest that a possible reason for inconsistent findings on relaxation training methods may rest with the way the training procedure is presented and construed. Relaxation only may well physically relax the test anxious individual and deal with his "emotionality," or autonomic reactions to examinations, but not deal with the "worry" component, the individual's cognitive concern over his performance. Possibly, the practicing of a cognitive relaxational strategy during actual test taking may facilitate attending to the task with resultant improvements in task performance (Chang-Liang and Denney, 1976).

In order to maximize the benefits from relaxation training, Russell's cue-controlled method was employed in the present study. Emphasis was placed on the student becoming aware of anxiety cues and implementing this procedure especially before and during study and test taking behaviors. An additional benefit of CCR is the
short amount of time needed to teach it. This allowed for the more
lengthy cognitive restructuring component to be included in the
same workshop session.

Cognitive Restructuring and Rational Emotive Therapy

Test anxious individuals, in addition to being too autonomically
aroused, frequently ruminate, worry and predict personal disaster
for themselves while studying or taking a test. Such cognitive
processes have been shown to be associated with high emotional arousal
(Rimm and Litvak, 1969; Goldfried and Sobocinski, 1975). Rational
emotive therapy, developed by Ellis (1962), places great emphasis on
an individual's cognitive processes in influencing his emotionality.
The individual, placed in the center of his world, is seen as having
almost full responsibility for choosing and creating his own existence
by cognitively intervening between the environmental inputs and his
emotional and behavioral outputs. A major goal of rational-emotive
therapy is to minimize the self-distorting and self-deceiving
tendencies of the individual so that he can live more authentically
(Tosi, 1974).

Ellis (1973) contends that, philosophically, rational-emotive
therapy is unambiguous, logical, and empirically oriented. RET holds
that the individual does not need any trait, characteristic, achieve­
ment, or purpose in order to accept himself. Ellis clearly discrimi­
nates between evaluations of behavior and ratings of self-concept.
Ellis states that it is not possible for the individual to have a
self-image. In attempting to construct one, the person rates as
good or bad his qualities, adds them up, then judges whether he has value or is valueless. In striving for a good self image, many people make inordinate demands on themselves, as can be seen in the previous listing of irrational beliefs. By telling themselves that "I should be perfect" in one form or other, then realizing that they are not perfect, they conclude "I am stupid."

The test anxious underachiever, by judging himself on the basis of his test scores, often rates himself in a deprecatory way. He spends a great deal of time punishing himself, comparing himself to others by either damning them as even worse off than himself, or damning himself as worthless in comparison to the successes of others. The feelings of intense anxiety and hostility that result constitute the core of what is often called "emotional disturbance" (Ellis, 1973).

A basic teaching of RET is that humans are fallible; perfection is an abstract ideal, not an objective reality. By teaching the individual to assess his behaviors rather than his self-concept, the person is shown that his goals can best be achieved by constructively focusing on his performance, rather than destructively focusing on himself.

RET utilizes the cognitive processes in changing emotions, and receives a good deal of support for the notion of cognitive control over affective states from such theorists as Coue (1922), Korzybski (1933), Johnson (1946), Kelly (1955), and Phillips (1956). Rational emotive counselors generally regard emotion as does Magda Arnold (1960, 1968). She asserts that emotions are felt tendencies either
toward an object or situation appraised as "good," or away from an object or situation appraised as "bad." These appraisals are followed by physiological responses eliciting action either toward or away from the situation. According to Ellis (1962), all effective therapists are engaged in having their clients re-think and re-evaluate their positions in life so as to change their self-defeating behaviors and undesirable emotional states to more self-enhancing patterns of behavior and emotion.

Cognitive restructuring is a therapeutic technique that employs the change of irrational "self-thoughts" in order to alter emotional and autonomic reactions and behaviors toward more favorable outcomes. Cognitive restructuring combines Ellis' rational-emotive therapy with the behavioral therapy originated by B.F. Skinner and amplified by A.A. Lazarus and J. Wolpe (Schmidt, 1976). The method for conceptualizing and implementing this process follows Ellis' A-B-C paradigm, expanded by Tosi (1973) to an A-B-C-D-E model. In this model, an activating situation (A) occurs, which triggers the client's irrational belief system (B) which takes the form of negative "self-talk." In addition, negative emotional feelings (C) and physiological reactions (D) occur resulting in an unhappy consequence or outcome (E). If no intervention is attempted, a threatening situation, such as taking an important test, is repeatedly paired with self-defeating thoughts and their resultant undesirable emotions and physiological reactions.
In the present study, Tosi's instrument the "Self-Directed Behavior Change in the Cognitive, Affective, and Behavioral Motoric Domains: A Rational-Emotive Approach" (see Appendix I) was used in the cognitive restructuring and cue-controlled relaxation treatment. This instrument is a valuable aid in clearly specifying the irrational ideas, undesirable emotions, and behavioral consequences, of the identified problem (i.e., test or study anxiety). By first focusing on the self-perpetuating cycle of irrational beliefs, the individual is then guided toward the implementation of more rational ideas, desirable emotions, and resultant desirable consequences.

The key to the success of this process is internalization of rational beliefs. Frequently clients will say that they understand the process of RET intellectually, but not emotionally. A.A. Lazarus (1971) argues that on closer examination it may be discovered that they are merely verbalizing certain thoughts that they do not fully accept or believe. In order to provide the client with an experiential method to integrate more rational ways of thinking, a number of techniques can be used. Lazarus (1971) discusses the use of Rational Imagery, Gunnison (1976) outlines a fantasy relaxation technique successfully employed with a test anxious individual, and Boutin (1976) obtained support for Rational Stage Directed Hypnotherapy with test anxious nursing students. In addition, Ellis (1962) and others have emphasized the importance of in-vivo behavioral tasks to aid the client in making the transition from the therapy office to the real world. In the present study, cue-controlled relaxation was taught and practiced as an active coping
skill at the beginning of each session. It was felt that the test anxious students could better attend to the RET process after experiencing the relaxation segment and continue to experience relaxation while discussing an anxiety-provoking topic, their low academic performance.

Tosi and Marzella (1975) state that as a person acquires new skills and becomes competent in rational self-management he progresses through various stages. The growth stages, awareness, exploration, commitment, skill development, skill refinement, and redirection have grown out of the works of Mooney (1963) and Quaranta (1971). Tosi and Marzella (1975) modified these stages to reflect the counseling process for Rational Stage Directed Hypnotherapy. These stages are not discrete but highly interrelated. Thus, a test anxious student who may be exploring new ways of behaving in a test situation may gain awareness as well. The stages of Rational Stage Directed Hypnotherapy (self-awareness, exploration, commitment to rational/constructive action, the implementation of rational action, the internalization of rational action, and change and redirection) seem appropriate to the counseling process of the present study and are defined as follows:

Awareness - The client sees in himself and his environment new possibilities for growth. He is introduced to new conditions that are contradictory to his self-defeating thoughts, feelings, and actions. He sees that new thoughts, feelings, and actions (skills) are needed to interact more effectively with his environment and with himself. He comes to consider himself both as subject and object. He realizes that he has consciousness of himself. Awareness
implies witnessing, observing, as well as participating in one's innermost thinking, emotional experiences, physiological functioning, motoric functioning, and transactional functioning.

Exploration - The client tests out his new awareness or knowledge about himself in the therapeutic context and in real life situations. He submits his old as well as his new ideas, translated into hypotheses, to the empirical test. He is engaging in high level cognitive restructuring in an experimental way. He experiences or reexperiences situations he previously avoided, tries out new behaviors or roles, and evaluates the consequences of his acts. Awareness is expanded as a result of self-instructional explorations. Resistance becomes increasingly apparent in this stage. He is exploring and developing skills in this stage.

Commitment to rational/constructive/action - The client poses his previous awareness and explorations and skills against his tendency to resist or not to resist an authentic encountering of self-and-environment. He is more aware of the innermost thoughts that produce affective/physiological/reactions associated with his tendencies to approach or to avoid significant life situations or to develop the skills necessary to overcome his cognitive/emotional/behavioral/social difficulties. The stage of commitment represents an act of faith, a risk, a last minute attempt to avoid subjective or objective reality. It is the juncture at which many terminate therapy-the point of choice or decision to act.

Implementation - The client, after privately and/or publically committing himself to constructive action, implements constructive action or the self and environmental skills he is in the process of acquiring. His skills at this stage may involve cognitive control over emotional/physical, and behavioral states - bio feedback, meditation, cognitive/behavioral restructuring, problem
solving, decision making, self-hypnosis, progressive relaxation and the like. He then proceeds to practice "in-vivo" and refine these skills. They are eventually internalized.

Internalization - The client shows signs of making his new learnings and experiences a part of himself. He shows obvious signs of incorporating more reasonable modes of thinking and acting into his behavioral repertoire. The use of behavioral modifying procedures becomes second nature - he implements them with greater ease and proficiency.

Change, redirection - The client observes himself. He notes significant changes in his thinking, he sees that he can control significantly negative emotions and self-defeating actions. He transacts more effectively with his environment - thus maximizing positive consequences. He may reaffirm his process at this point, or redirect himself through the stages once again - relative to some other set of problematic concerns. He realizes the need for further growth.

(Tosi and Marzella, 1975)

Kelly (1955) in his elaborate theory of personal constructs connects the cause of the person's psychological processes with the ways in which he anticipates events. The individual's behavior is thus governed by his own predictions. The test anxious student who fails a test and predicts he will never pass a test presents a far more serious problem than the student who fails a test and uses that experience as a guide to alter his approach to studying and test taking in that particular course. A treatment dealing with test anxiety should attempt to impart realistically positive anticipations to those students. A number of researchers have shown that techniques that teach positive self-statements can significantly reduce anxiety,
just as negative self-statements can augment anxiety (Kelly, 1955; Phillips, 1956; Ellis, 1962, 1973; Schachter, 1966; Meichenbaum and Smart, 1971).

Numerous studies support a cognitive approach for the reduction of anxiety for a variety of problems such as stuttering (Moleski and Tosi, 1976), social situations (Meichenbaum, et al., 1971; Sanchez-Craig, 1976), and public speaking (Goldfried and Sobocinski, 1975), as well as test anxiety (Meichenbaum, 1972; Holroyd, 1976; Goldfried, 1976; Boutin, 1976). Meichenbaum (1972) compared three treatments for test anxious students: cognitive modification, group desensitization, and waiting list control. In accord with Wine's (1971) stress on direction of attention toward task-relevant variables and away from self-evaluative ruminations, Meichenbaum developed a cognitive modification treatment designed to make the test anxious student aware of his thoughts, self-verbalizations, and self-instructions, emitted prior to and in test situations, which contribute to performance decrement. The subjects of this treatment were trained to emit incompatible self-statements that would facilitate task attending to deal with the "worry" component and relaxation training to handle the "emotionality" component of test anxiety. The results of the study indicated that a cognitive modification treatment was significantly more effective than standard desensitization in reducing test anxiety, as measured by performance improvement on grade point average. In addition, the cognitive modification group did not differ significantly from a group of low test anxious subjects following treatment. The improvement was maintained at a one month follow-up.
Only the subjects in the cognitive modification group showed a post treatment increase in facilitative anxiety as measured by the Albert-Haber Anxiety Achievement Test (1960). This result is significant since desensitization studies have shown modified behavior change but minimal decreases in self-reported anxiety and fear (Paul, 1966; Davison, 1968). Johnson and Sechrest (1968) investigated the effects of systematic desensitization on test anxious subjects but failed to obtain changes in self-report on the Albert-Haber scale. By combining insight exploration and attentional training via relaxation, modeling, and imagery, Meichenbaum's study supports a multimodel approach indicating that private cognitions as well as behavior can be significantly influenced by the therapist.

Goldfried, Linehan, and Smith, in an unpublished manuscript (1976) compared systematic rational restructuring, a prolonged exposure condition, and a waiting list control. The systematic rational restructuring condition employed the subjects' imagining test preparation and test taking situations and attempting to reduce their anxiety by means of rational restructuring. Following each one minute trial presented four times, participants recorded their self-defeating thoughts, their rational reevaluation, and their anxiety levels before and after reevaluating. A brief group discussion followed the fourth presentation of each item. Homework sheets were handed out to be used in anxiety-provoking situations between sessions. The prolonged exposure condition served as a control for exposure to the test anxiety hierarchy items. Rather
than teaching a rational restructuring approach, subjects were instructed to focus on their emotional reactions. The waiting list control were informed that there would be a brief delay before treatment.

On the basis of self report measures of test anxiety, greater anxiety reduction was found in the systematic rational restructuring condition, followed by the prolonged exposure group, with no changes for the waiting list control. Only subjects in the rational restructuring treatment reported a significant decrease in subjective anxiety when placed in an analogue test taking situation. These same subjects also reported greater generalized anxiety reduction in social-evaluative situations. At a six week follow-up, rational restructuring participants reported significantly less anxiety than the prolonged exposure participants on the Suinn Test Anxiety Behavior Scale and two additional measures of social-evaluative situations. Although the systematic rational restructuring procedure was found to be the most effective of the three conditions, exposure alone also produced significant anxiety reduction. These findings corroborate with the results of several other investigators (Aponte and Aponte, 1971; Barrett, 1969; Raimy, 1975). The Goldfried, Linehan, and Smith study supports that cognitive restructuring alone is effective in the reduction of test anxiety.

Holroyd (1976) assessed the comparative effectiveness of cognitive therapy, systematic desensitization, a combination of cognitive therapy and systematic desensitization, a pseudotherapy
control procedure, and a waiting list control. Results of this study showed that cognitive therapy was significantly more effective than a systematic desensitization approach and a combination treatment package on virtually all measures of test anxiety. Validity of all treatments including the pseudo-therapy group based on subjects evaluations of these procedures suggest that the effectiveness of cognitive therapy as a treatment for test anxiety at least partially resides in the specific cognitive therapy methods used in this treatment. While a combined treatment in Meichenbaum's study (1972) was supported, Meichenbaum employed deep breathing and modified imagery procedures that were not used in Holroyd's study. In addition, group interaction was actively facilitated during Meichenbaum's procedure rather than minimized in Holroyd's combination treatment. Until the effects of such procedural variations on outcome are clarified by further research, no definite conclusions concerning the relative efficacy of a combined cognitive-densensitization treatment approach can be made.

In Boutin's unpublished dissertation (1976), rational stage directed hypnotherapy, a rational-emotive approach employed while subjects were in a hypnotic trance, was compared to a hypnosis only, placebo, and waiting list control group for test anxious nursing students. This study found that rational stage directed hypnotherapy was significantly more effective than hypnosis only, placebo, or waiting list control. Hypnosis alone was significantly more effective than placebo or waiting list control, though not as effective as rational stage directed hypnotherapy. The four dependent variables
The previous four studies reviewed (Meichenbaum, 1972; Goldfried, Lineham, and Smith, 1976; Holroyd, 1976; Boutin, 1976) all support a cognitive approach to deal with the "worry" component of test anxiety. In addition, two studies (Meichenbaum, 1972; Boutin, 1976) included some form of relaxation training and imagery, and a third study (Goldfried, et.al., 1976) made use of imagery. These three studies that employed a multimodel approach, (Meichenbaum, 1972; Boutin, 1976; Goldfried, et.al., 1976) indicate that a combination treatment of cognitive restructuring and relaxation or imagery is the most effective mode in treating both the worry and emotionality components of test anxiety.
Holroyd (1976) investigated the comparative effectiveness of cognitive therapy, systematic desensitization, a combination of cognitive therapy, and systematic desensitization, a placebo, and a waiting list control in an effort to sift out the most salient characteristics in the successful treatment of test anxiety. Holroyd assessed the cognitive therapy as the most effective treatment and more effective than the combination approach. In reviewing Holroyd's treatment procedures for the combination approach, it is evident that no definite conclusions can be made about the comparative effectiveness of the combined cognitive-desensitization treatment approach to the cognitive therapy alone approach. Holroyd's combination treatment did not use imagery nor deep breathing procedures as were used in the Meichenbaum, Goldfried, and Boutin studies. Holyrod's combination treatment gave equal time to the cognitive therapy and systematic desensitization components unlike the other studies which primarily focused on the cognitive element and incorporated relaxation and/or imagery into the cognitive re-structuring approach.

While a strictly cognitive approach effectively deals with Liebert and Morris' "worry" component of test anxiety, the "emotionality" component is not directly treated, though evidence does suggest that changes in cognition will effect physiological responses (Rimm and Litvak, 1969; Goldfried and Sobocinski, 1975). Also, Boutin's study suggests that hypnosis alone is effective in changing the cognitive component of the subjects.
The meaning attached to a particular experience, such as taking a test, is the effective agent in converting a relatively innocuous situation into a stressful situation. The overestimation of the danger and the underestimation of the individual's coping ability produces high levels of anxiety and physiological arousal. The threatening content of the ideation leads to anxiety, and the physiological symptoms are interpreted as a threat which also leads to anxiety. Consequently, a continuous spiraling of cognition-anxiety and physiological symptoms is produced (Beck, 1972). To deal with this spiraling process of the cognitive, emotional, and physiological components of anxiety, the present study uses a multimodel treatment approach composed of Cue-Controlled Relaxation and Cognitive Restructuring and a Study Skills Counseling approach.
CHAPTER III

METHODOLOGY

This chapter will describe the research methodology and statistical procedures used in this study. The chapter will provide sections related to the selection of the subjects, instruments, treatments, therapists, and statistical procedures.

A 2 X 3 X 3 factorial design with two levels of therapists, three levels of treatment, and three repeated measures was used in the investigation of the effects of group study skills counseling, group cue-controlled relaxation and cognitive restructuring, and no treatment control in the reduction of study and test anxiety. Specifically, this study was conducted to determine the efficacy of study skills counseling, and cue-controlled relaxation and cognitive restructuring in reducing test anxiety as measured by subjects' scores on the Test Anxiety Scale (TAS), the State-Trait Anxiety Inventory (STAI-1 and STAI-2), the S-R Inventory of Test Anxiety (S-R), the Anxiety Differential (AD), the Achievement Anxiety Test (AAT), the Personal Beliefs Inventory (PBI), the Survey of Study Habits and Attitudes (SSHA), and Grade Point Average (GPA).

The dependent measures for the study skills counseling, the cue-controlled relaxation and cognitive restructuring, and the no treatment control groups were the pre, post, and follow-up scores on the TAS, STAI-1, STAI-2, SR, AD, AAT, PBI, SSHA, and GPA. Pretreatment
measures were obtained one to two weeks prior to the beginning of treatment. Posttreatment measures were obtained after the four weeks of treatment, and follow-up measures were obtained two and a half months after the last session.

**Subjects**

Students on Warning or Probation at University College, Ohio State University were sent letters inviting them to participate in a program designed to assist students in academic difficulty with study and test taking problems. Students who volunteered (no credit was offered) met with the author for an explanation of the program, and were screened using the TAS measuring high debilitative anxiety, and the ACT composite scores measuring aptitude. Students who scored very low on the TAS, the SSHA, and the ACT (below the 10th percentile), were referred to the Reading and Study Skills Center or Counseling and Consultation Services. Speilberger (1966) suggests that students of very low ability will not benefit from test anxiety training, thus only students with an ACT composite at the 10th percentile or above were included in the program. Thirty-five students completed the screening measures. Five students did not meet the established criteria for inclusion in the study. A second meeting was arranged with the remaining thirty students for administration of the additional pretesting instruments. This sample consisted of fourteen women and sixteen men of freshman and sophomore standing. The mean number of quarters completed in college was 3.6. The mean age of subjects assigned to experimental conditions was 19.0. The mean GPA for the sample was 1.52.
Instruments: Pretreatment Assessment

Ten measures were used to evaluate the relative efficacy of the treatment procedures. These included the Test Anxiety Scale, the State-Trait Anxiety Inventory (State and Trait forms), the S-R Inventory of Test Anxiety, the Anxiety Differential, the Achievement Anxiety Test (debilitative and facilitative scales), the Personal Beliefs Inventory, the Survey of Study Habits and Attitudes, and Grade Point Average. A more detailed description of these dependent variables is given below.

Self-report Measures of Test Anxiety

1) Test Anxiety Scale (TAS; Sarason, 1972). This instrument measures debilitative anxiety that results from a specific set of stress inducing circumstances from evaluation situations. The TAS represents the most recent revision of the original 21-item scale developed by Sarason and Mandler (1962). The new TAS contains thirty-seven true-false items. The questionnaire contains questions about attitudes and experiences in individual and group intelligence testing and course examinations such as "I get panicky when I have to take a surprise exam." (See Appendix A for the TAS.)

While normative data is not yet available for this version, much research has been conducted with the earlier form. Sarason and Mandler (1952) have reported the split-half reliability of the TAS ($r = .91$) and the test-retest reliability over six weeks with student samples ($r = .82$).

The validity of the TAS has been supported by Sarason and Gordon (1953) and Mandler and Sarason (1952). Mandler and Sarason
(1952) demonstrated that the TAS correlated highly with characteristics of test anxious subjects (e.g., self-centered feelings of inadequacy, task irrelevant responses, distracting physiological reactions). Sarason (1959) reports the TAS and GAS (General Anxiety Scale) to correlate at about .55, thus suggesting that specific test anxiety should be considered apart from general anxiety.

**Self-judged Study Habits and Attitudes**

2) **Survey of Study Habits and Attitudes** (SSHA; Brown and Holtzman, 1967). The SSHA, intended to measure "non-intellective" components of academic success, is typified by items such as, "My studying is done in a random, unplanned manner - is impelled mostly by the demands of approaching classes." Subjects indicate their study behaviors on 100 statements on a five point scale ranging from "Rarely" to "Almost Always." (See Appendix B for the SSHA.)

Brown and Holtzman (1967) report test-retest reliability coefficients for four and fourteen week intervals. Over four weeks, reliability coefficients were .93, .91, .88, and .90 respectively for the Delay Avoidance, Work Methods, Teacher Approval, and Education Acceptance scales that constitute the composite Study Orientation score. The corresponding coefficients for the fourteen week interval were .88, .86, .83, and .85, respectively. In addition, the internal consistency measure of the SSHA was computed using the Kuder-Richardson Formula 8 for estimating test reliability from the variance of total scores and the sum of the item variances. For 465 freshman tested, reliability coefficients obtained for the four subscales ranged from .87 to .89.
The authors report that the SSHA correlates significantly with grade point average. For 1,772 cases analyzed in six colleges validity coefficients varied from .25 to .45 with a weighted average of .36. Coefficients of correlation were computed between the Study Orientation scores and scholastic aptitude test total scores, as well as between test scores and grade point average for all students. The correlation between the SSHA and measured scholastic aptitude is consistently low, thus suggesting that the SSHA measures traits that play an important role in academic achievement, with only one sub-scale, Work Methods, being appreciably related to measured scholastic aptitude.

Self-report Measure of General (Trait) Anxiety

3) State-Trait Anxiety Inventory, Trait Form (STAI-2; Speilberger, Gorsuch, and Lushene, 1970). The STAI-2 (Trait scale) provides a measure of trait, or characteristic, anxiety. Subjects are asked to respond to twenty statements on a four-point scale, based on how they "generally feel," such as "I get in a state of tension or turmoil as I think over my recent concerns and interests." Speilberger, et.al., (1969) suggest that the STAI-2 (Trait Form) reflects relatively stable individual differences in anxiety proneness. (See Appendix C for the STAI-2.)

Test-retest reliability for the trait scale is reported by Speilberger, et.al., (1970) as ranging between .73 and .86 for periods up to three months. In support of its concurrent validity, the STAI-2 (Trait Form) has been found to correlate significantly with
the Taylor Manifest Anxiety Scale ($r = .80$), which is intended to measure the same construct. Further normative data are presented by these authors.

**Self-report Measure of Irrational Thinking**

4) **Personal Beliefs Inventory** (PBI; Hartman, 1968). The PBI is a 60 item objectively scored measure using a 6-point rating scale (ranging from totally agree to totally disagree), to assess specific levels of irrational thinking by items such as, "A person should be thoroughly competent, adequate, talented, and intelligent in all possible respects." (See Appendix D for the PBI.)

A test-retest reliability coefficient of .89 and a split half reliability of .95 was found for 30 college students administered the PBI over a five day period. Another group of 85 students yielded a test-retest reliability coefficient of .91 and a split half reliability of .90 after one week. Hartman (1968) obtained the mean scores on the PBI of a sample of 8 clients before and after undergoing 10 sessions of Rational Emotive Therapy and a sample of 23 students in a psychopathology class which emphasized rational-emotive approaches. Although no significant differences were reported, Hartman asserts that the differences found demonstrate that the PBI possesses a high level of validity and reliability and is extremely sensitive to irrational thinking.

Tosi and Eshbaugh (1976) examined the construct validity of the PBI through a factor analytic study. As hypothesized, the hierarchical factor analysis revealed a composite factor suggesting a generalized attitude involving self worth. Two second-level factors,
depression and cognitive rigidity, and four third-level factors: achievement, delay of gratification, moral control, and moral shame and guilt, were associated with this general measure of irrationality.

Goldfried and Sobocinski (1975), using the Irrational Beliefs Test (Jones, 1968) consisting of factored measures of Ellis' (1962) 10 irrational beliefs, found a positive relationship between the extent to which individuals held irrational beliefs and their score on measures of interpersonal, public speaking, and test anxiety. It was found that the subjects' tendency to view situations irrationally was related to their susceptibility to emotional arousal in situations related to such expectations.

The PBI is easily administered and quickly scored, giving a general measure of irrationality. Reliability and construct validity are also supported.

Simulated Test Performance with Imagery

After completion of the above instruments, students were asked to sit back for a moment and imagine themselves in the following situation:

You are on your way to class to take a final examination. You enter the classroom building, walk down the hallway, and enter the classroom. You are aware of the bright fluorescent lighting and see that the room is filled with students. You find a seat and sit down. You notice the professor passing out test booklets. He comes to your desk and lays the examination booklet on your desk. You open the test booklet and notice some questions that look unfamiliar to you.

Students were then instructed to keep this situation in mind in filling out the following instruments: the S-R Inventory of Test Anxiety,
the State-Trait Anxiety Inventory (State Form), the Anxiety Achievement Test, and the Anxiety Differential. Following is a description of each of these self-report instruments.

5) S-R Inventory of Test Anxiety (S-R; Endler, Hunt, and Rosenstein, 1962). The S-R measures positive as well as negative drive and anxiety reactions related to feelings of anticipatory excitement and physiological responses. Subjects respond to items such as "Emotions disrupt action" when entering a final examination by rating their response on a five point scale ranging from "none" to "very much." (See Appendix E for the S-R.)

The Alpha-Reliability for the S-R Inventory of Test Anxiety has been reported to range from .83 to .87. In two separate studies the coefficient alpha-reliabilities for each of the 14 scales within the S-R range between a low of .64 and a high of .91. In addition to having a high reliability, the S-R has shown a correlation of .66 with the Test Anxiety Scale, and has also shown a statistically significant correlation with the IPAT Anxiety Scale, the Taylor Manifest Anxiety Scale, and the Gordon Sarason Anxiety Questionnaire (Endler, et al., 1962).

6) State-Trait Anxiety Inventory, State Form (STAI-1; Speilberger, Gorsuch, and Lushene, 1970). The STAI-1 (State Form) provides a measure of state anxiety, of how the subject feels right now. Subjects are asked to respond to twenty statements on a four-point scale, based on how they feel in the imagined situation of taking a final examination. A sample question is, "I feel over-excited and 'rattled'."
Speilberger, et.al., (1970) suggest that the STAI-1 (State Form) refers to a transitory emotional state of the person characterized by subjective consciously perceived feelings of tension and heightened autonomic nervous system activity. (See Appendix F for the STAI-1).

The reliability coefficients for the STAI-1 (State Form) are rather low with a median $r$ of only .32. This would be expected as the State Form should be sensitive enough to be influenced by unique situational factors. Internal consistency, however, a more meaningful measure of the reliability of the State scales, ranged from .83 to .92 which is relatively high.

Construct validity of the State Form is supported by Speilberger, et.al., (1970). The State Form was administered in a single testing session to 197 undergraduate students under four different conditions. The first administration occurred at the beginning of the testing session (Normal Condition). The second administration followed a 10-minute period of relaxation training (Relax Condition). The third administration followed a 10-minute period in which the students worked on the Terman Concept Mastery Test, which was presented as a relatively easy I.Q. test (Exam Condition). The final administration followed the viewing of a stressful movie depicting several accidents in a woodworking shop (Movie Condition).

The mean score for the State Form was lowest in the Relax Condition and highest after students viewed the stressful film. In the Normal and Exam Conditions the scores were approximately the same for males and females, indicating that these conditions had a similar
impact on both sexes. The Movie Condition was particularly upsetting for the females whereas the Relax Condition seemed most effective in reducing their emotional intensity. These conditions suggest that the State Form is a sensitive measure of anxiety occurring under differing stimuli conditions. In addition, this measure suggests that females are more emotionally susceptible than males and/or that they are more willing to report their feelings.

7) Achievement Anxiety Test (AAT; Alpert and Haber, 1960). The AAT was constructed to differentiate between facilitative and debilitative test anxiety. These constructs are measured by two separate sub-scales. The debilitative scale (AAT -) correlates significantly with the TAS with a reliability coefficient of .64 (Alpert and Haber, 1960). The ten items on this sub-scale are suggested by the prototype, "Anxiety interferes with my performance during examinations and tests." The facilitative scale (AAT +) contains items such as, "Anxiety helps me do better during examinations and tests." The two scales are administered in one questionnaire with the items randomized. Subjects are asked to answer each question on a five-point scale indicating the degree to which the statement describes themselves. (See Appendix G.)

The test-retest reliabilities for the AAT+ and the AAT- sub-scales over a ten-week interval are reported at .83 and .87, respectively (Alpert and Haber, 1960). As might be predicted on the basis of test anxiety theory, the AAT+ scale was found to correlate negatively with both the TAS (r = -.40) and its own companion subscale,
the AAT—(r = -.48). Alpert and Haber (1960) additionally present predictive and concurrent validity findings for the AAT.

8) Anxiety Differential (AD; Husek and Alexander, 1963). This instrument was developed to measure situationally-aroused stress, or what Speilberger, et.al., (1970) referred to as "State" anxiety. The AD was developed on the rationale that the person who is situationally anxious is in a different state and perceives things differently from when he is not anxious. Among the changes produced by anxiety are changes in cognition. The AD test items are designed to measure cognitive changes that are influenced by changes in the level of anxiety. The AD was constructed on a semantic differential format. It consists of eighteen items which subjects are asked to respond to on a seven-point scale, depending on what each concept "means" to them at the moment the questionnaire is being filled out. Each item was presented in the following manner:

Shallow: _____: _____: _____: _____: _____: _____: Deep

Such combinations make it difficult to fake as it is difficult for the subject to discern what was a good or desirable response. (See Appendix H for the AD.)

Husek and Alexander (1963) conducted two studies aimed at assessing the AD's sensitivity to pre-examination anxiety experienced by college students. They found that the AD was able to significantly differentiate between two groups of students, one group being asked to take it just prior to a final exam, the other receiving it in the context of a regular class session.
The internal consistency of the AD was examined using Alpha Coefficients. The Alpha Coefficients ranged between .58 and .80 with a median coefficient of .68, indicating a respectable internal consistency reliability.

The scores of highly anxious subjects were correlated with their scores on the anxiety factor of the Naulis-Green adjective checklist. The correlations between the adjective checklist and the AD ranged from a low of .48 to a high of .63 supporting the construct validity of the AD.

The AD has a unique advantage in that it is not susceptible to faking or conscious response distortions since a majority of subjects do not know what the instrument is attempting to measure (Husek and Alexander, 1963). This instrument is easily administered and scored and it has adequate reliability and validity.

9) Grade Point Average (GPA). The cumulative GPA of each subject was collected prior to treatment as a performance measure indicating actual academic achievement. Subjects' grades were obtained from the Registrar through the 1976 Autumn quarter for all credits taken for a letter grade (based on a 4.0 grading system). Significant correlations between test anxiety and debilitated academic performance have been reported by a number of investigators (Paul and Eriksen, 1964; Sarason, 1960; Speilberger, 1966).

Order of Administration

In summary, several types of dependent variables were used to assess the efficacy of the study skills counseling, and the cue-controlled and cognitive restructuring treatments. Initially, all
students were screened with the TAS, a self-report measure of test anxiety; the SSHA, a measure of self-evaluated study habit proficiency; and the ACT composite score measuring aptitude. Secondly, the STAI-2, Trait Form was administered to assess characteristic anxiety-proneness. Then the PBI was given to assess self-reported irrational thinking. After presentation of a simulated test performance using imagery, the S-R was administered to assess anticipatory excitement and physiological responses; the STAI-1, State Form was used to assess state anxiety; the AAT was given for the measurement of facilitating and debilitating test anxiety; and, the AD was given as an additional measure of situational anxiety in taking an important final examination. Cumulative GPA was collected to indicate actual academic achievement.

The order of dependent measure administration was as follows:

**Screen:** TAS, SSHA; **Pretesting:** STAI-2 (Trait), PBI, simulated exam presentation, S-R, STAI-1 (State), AAT, and AD.

**Posttreatment and Follow-up Assessments**

Following the completion of the active treatments, all of the above variables were re-administered in group testing sessions. The order of administration remained the same. In addition, the evaluation form (see Appendix I) was given to all subjects in the active treatments. Posttreatment grade point averages were collected from the registrar as an index of academic achievement. Follow-up assessment was conducted two and a half months after posttesting for subjects in both of the active treatments.
Research Design

A 2 X 3 X 3 mixed model design with 2 between subjects variables (therapists, treatments) and one within subjects variable (3 levels of a repeated measure) was used in analyzing the data (see Figure 1). All subjects were randomly assigned to one of three treatment conditions. Each person received four treatment sessions, one and a half hours in length, over a four week period. All subjects received pre, post I and post II measures except the waiting list control group which immediately received treatment following the posttesting. Variance due to therapists was accounted for in the statistical analysis. The therapist variable was random.
Therapist

CCR + CR  SSC  Control

N = 4     N = 5     N = 4

N = 5     N = 3     N = 4

N = 25

FIGURE 1
Treatments

On the basis of pretreatment TAS and SSHA scores, subjects on Warning or Probation were assigned randomly into one of three treatment conditions:

1) Study Skills Counseling (SSC, N = 8). This procedure is an integration of group counseling approaches emphasizing personal sharing, goal setting, internalization of positive attitudes toward academics, self-awareness, and decision-making. (See Appendix N for "Leader's Guide for Study Skills Counseling"). The student was taught the decision-making process consisting of the following stages: acknowledging, valuing, exploring, analyzing, implementing, experiencing/reviewing, and then acknowledging again. (See Appendix O for "An Overview of Decision-Making").

The academic difficulties of students were examined in the group to clarify the antecedents, consequences, and coping strategies utilized. Self-concept and locus of control variables were discussed with particular emphasis placed on how these variables can more productively interact with the decision-making model.

A behavioral aspect to this group counseling approach directed the student to evaluate his behavior just prior to and during study. The student then developed a schedule that would make the most effective use of his time. Finally, the student evaluated the success or failure of his schedule and the factors related to the outcome.

Studying and taking examination techniques were taught focusing on "You Can Improve Your Study Skills" (see Appendix P), "How to
Take Examinations" (see Appendix Q), and "Establishing a Study Routine" (see Appendix R). Each of these handouts stresses the importance of knowing a variety of organized strategies for application to various academic situations.

Subjects in this treatment condition received no specific treatment for test anxiety, aside from the procedures outlined above. Since study skills re-education approaches have been given considerable attention in the literature as a mode of test anxiety reduction, this Study Skills Counseling package was deemed a suitable, organized forum for this treatment. The treatment rationale for this condition placed considerable emphasis on the potential efficacy of this treatment in enhancing personal development and study and test taking behaviors. Study Skill Counseling subjects were informed that examination anxiety was often due to ineffective study methods and that active participation in this program would likely lead to more effective study habits. It was suggested that greater confidence in one's test-taking ability as a result of more effective study habits, could culminate in improved test performance. The purpose of the assessment sessions was offered as being based on the desirability of recording the students' progress in study and test taking behaviors and GPA.

2) **Cue-Controlled Relaxation and Cognitive Restructuring (CCR + CR, N = 9).** This procedure combines a simple relaxation technique, Cue-Controlled Relaxation, and a cognitive restructuring approach based on Ellis' Rational Emotive Therapy. After subjects
have relaxed themselves, they are guided through the growth stages of awareness, exploration, commitment to rational action, implementation, internalization, and change/or redirection.

The specific objectives for this treatment group include:

1. to help subjects become aware of their attentional content, i.e., thoughts and self-verbalizations emitted prior to and during study and test situations which contribute to poor performance.

2. to help subjects become aware of the self-defeating consequences of such self-verbalizations.

3. to teach subjects effective ways to stop attending to irrelevant cues and to refocus on more self-enhancing behaviors.

4. to teach subjects a relaxation procedure that can be actively applied to study, test taking, and other anxiety provoking behaviors.

Cue-Controlled Relaxation for anxiety reduction enables the subject to achieve relaxation in response to a self-produced cue-word, such as "calm" or "relax." By training the subject in progressive muscle relaxation (Bernstein, D.A. and Berkevec, T.D., 1973), deep breathing and pairing the relaxed state with the sub-vocalized cue-word, a state of relaxation comparable to that produced by systematic desensitization can be achieved. Cue-Controlled Relaxation is taught as an active coping skill that the subject can apply to his study and test taking behaviors. Cue-Controlled Relaxation is simple and effective in controlling excessive and debilitating
physiological arousal. In addition to providing immediate reinforcement to students in their achievement of a state of relaxation, Cue-Controlled Relaxation is presented in the first part of each session before the cognitive restructuring component. (See Appendix J for the "Leader's Guide for Relaxation and RET Program;" see Appendix K for the "Standard Relaxation Instructions.")

Subjects were taught the essentials of Ellis' Rational Emotive approach by analyzing their study and test anxiety using the Self-Directed Behavior Change Instrument (Tosi, 1973; See Appendix L). Following an explanation of this RET model, the workshop leader and another counselor role-played a test anxiety situation to demonstrate the interlocking web that self-thoughts, anxiety and physiological reactions have on performance. Students were then instructed to fill out the A-B-C-D-E irrational sequence for the next session.

Following sessions focused on Cue-Controlled Relaxation and applications subjects had made with this technique. In addition, two group member cases a week were analyzed encouraging the group to identify irrational beliefs and suggest opposing beliefs that are more constructive. Reconstruction focusing on rational ideas and beliefs is presented as the opposites of the irrational beliefs, just as muscular tension is the opposite of muscular relaxation.

In the final session rational emotive imagery is presented. The student is instructed to relax for a few minutes and then presented with a final examination scene. Within this scene it is suggested that the student will carefully read over the questions to see what they are
The student will plan his time, not rushing, and not spending too much time on any one item. The student feels confident that by focusing his attention he will be able to give a fair picture of what he knows for this examination. (See Appendix N, final session of the "Leader's Guide for Relaxation and RET Program.") Students' reactions to this scene are processed, and it is suggested that this is an effective technique to rehearse anxiety-provoking situations.

At the close of both the Study Skills Counseling group and the Cue-Controlled Relaxation and cognitive restructuring group the Workshop Evaluation form was given out to assess participants' subjective responses concerning the procedures utilized and the applicability of those procedures. (See Appendix I for the Workshop Evaluation form.)

3) No Treatment Control (N = 8). The inclusion of this group allowed for assessment of changes in the self-report measures and GPA as a result of repeated measures of these variables. Subjects were informed that there was not enough space for them at this time, but that they would be offered treatment the following quarter. The majority of these students desired and received treatment in addition to a number of other underachieving students. It is pleasing to see a continuation of this program at University College, Ohio State University with a full-time staff person (one of the two leaders) continuing to develop programs for underachievers. However, as a result of receiving treatment after posttesting, follow-up data could not be collected on the no treatment control group.
Therapists

Treatment groups in the Study Skills Counseling, and Cue-Controlled relaxation and cognitive restructuring conditions were conducted by a Ph.D. in Counseling and Guidance and a M.A. in Student Personnel. Both had prior experience in counseling underachievers as professional counselors at University College, Ohio State University. Each therapist led two groups in each treatment condition. Subjects were seen in groups of four or five for four 1 1/2 hour sessions. Group meetings were scheduled once a week between the third and seventh weeks of the academic quarter. The only exception to group treatment was in the case of several make-up sessions which, of necessity, were conducted on an individual basis. A detailed therapy manual was employed for the Cue-Controlled Relaxation and cognitive restructuring groups. (See Appendix J for the "Leader's Guide for Relaxation and RET Program;" and Appendix K for the "Standard Relaxation Instructions.") In addition, the therapy manual "Leader's Guide for Study Skills Counseling" and additional hand-outs were employed for the study skills counseling groups. (See Appendix N for "Leader's Guide to Study Skills Counseling;" Appendix P for "You Can Improve Your Study Skills;" Appendix Q for "How To Take Examinations;" and Appendix R for "Establishing a Study Routine."

Training of the therapists included pre-treatment workshops for six weeks including participation in a two day Rational-Emotive workshop conducted by Albert Ellis. Weekly meetings and supervision of treatment tapes by the author continued throughout the course of the program.
Statistics

Data collected in this study were analyzed by a 2 X 3 multivariate analysis of variance with 10 dependent variables to assess therapist, and treatment X therapist interaction. The multivariate difference for therapist conditions can be accounted for by chance alone ($F = 1.41, p > .35$). The multivariate difference for treatment X therapist conditions can be accounted for by chance alone ($F = 1.21, p > .45$). These results therefore lead us to fail to reject the null hypothesis, suggesting that therapists performed equally well across all treatments and trials, therefore no significant differences were found.

The therapist variable having been accounted for, then discarded as a significant variable, the hypothesis of this study was tested by a one between-subjects, one within-subjects factorial analysis of variance with repeated measures (Winer, 1962; Kirk, 1968). The between-subjects variable was the three levels of treatments. The one within-subjects variable was the repeated measure (three trials). The analysis of variance with repeated measures program was used to compute $F$ ratios for each main effect and interaction. Subsequent to significant $F$ ratios, Dunn's test was used in post hoc analysis (Winer, 1962; Kirk, 1968). Since comparisons among groups were made in terms of differences between linear trends across time, the absolute level of scores related to pre-existing differences, did not contribute to differences among the groups. Though initial differences were observed, these pretest differences were not statistically significant.
Treatment trends emerging within groups across pre, post I, and post II trials were examined visually and graphically.

Summary

Chapter III has presented the procedures and methodology of the study. It also contains a description of the sample, a descriptive analysis of the subjects, the pre, post, and follow-up measures, the treatments, the therapists, and the statistical analysis of the data.
CHAPTER IV

ANALYSIS OF DATA

The purpose of this study was to determine the effectiveness of Cue-Controlled Relaxation and Cognitive Restructuring (CCR + CR) and Study Skills Counseling (SSC) on the reduction of test anxiety of underachieving college students at Ohio State University.

The hypotheses were tested by a 2 X 3 multivariate analysis of variance with ten dependent measures to assess therapist, and treatment X therapist interaction for the Cue-Controlled Relaxation and Cognitive Restructuring, Study Skills Counseling, and no-treatment Control groups. The two between-subjects variables consisted of two levels of therapists and three levels of treatments.

Hypothesis number two, Main effects: therapists, states:

Means representing test anxiety on the self-report measures of the PBI, the AD, the TAS, the STAI-1, the STAI-2, the S-R Inventory, the AAT (facilitative and debilitative scales), and the SSHA, and on the GPA performance measure from groups of subjects within Study Skills Counseling, Cue-Controlled Relaxation and Cognitive Restructuring, and Control having assigned therapists will not differ significantly across pre, post I, and post II conditions.

The multivariate difference for therapist conditions can be accounted for by chance alone ($F = 1.41$, $p > .35$).
Hypothesis number three, Interaction effects, states:

Observed means representing test anxiety on the self report measures of the PBI, the AD, the TAS, the STAI-1, the STAI-2, the S-R Inventory, the AAT facilitative and debilitative scales, and the SSHA, and on the GPA performance measure from groups of subjects defined in terms of and in combination of treatment and therapist will not differ significantly from the means expected from the simple addition of the appropriate main effects.

The multivariate difference for treatment X therapist conditions can be accounted for by chance alone ($F = 1.21, p > .45$). These results therefore lead to the failure to reject the null hypothesis, suggesting that therapists performed equally well across all treatments and trials, hence no significant differences were found.

The therapist variable, having been accounted for, was then discarded as a significant variable. Hypothesis number one, Main effects: treatments, states:

Means representing test anxiety as measured by the PBI, the AD, the TAS, the STAI-1, the STAI-2, the S-R Inventory, the AAT (facilitative and debilitative scales), the SSHA, and GPA from groups of subjects defined in terms of various treatments, Study Skill Counseling, Cue-Controlled Relaxation and Cognitive Restructuring, and Control will not differ significantly across pre, post I, and post II conditions.

The hypothesis of this study regarding treatment effects was tested by a one between-subjects, one within-subjects factorial analysis of variance with repeated measures (Winer, 1962; Kirk, 1968). The between-subjects variable was the three levels of treatment. The one within-subjects variable was the repeated measure across three trials. The analysis of variance with repeated measures program was used to
compute $F$ ratios for each main effect and interaction. Subsequent to the $F$ ratios, Dunn's test was used in post hoc analysis (Winer, 1962; Kirk, 1968). Treatment trends emerging within groups across pre, post I, and post II trials were examined visually and graphically. It is expected that both CCR + CR and SSC will prove significantly more effective than the Control on the 10 dependent measures.

Group means at pre, post I, and post II treatment assessments on all 10 dependent variables are presented in Table 1. Because of ethical considerations, individuals in the waiting list control were offered therapy immediately following post I. Following the suggestion of Winer (1971), follow-up scores for the waiting list Control condition were estimated to compensate for the lack of the Control group at follow-up. Under the assumption of no change between post I and post II, the post I scores were used twice, once at post I and once at post II.

TABLE 1
MEAN SCORES FOR Ss PERFORMANCE ON THE 10 DEPENDENT VARIABLES BY TREATMENT AND TRIALS

<table>
<thead>
<tr>
<th></th>
<th>Pre</th>
<th>Post I</th>
<th>Post II</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TAS</strong>&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CCR + CR</td>
<td>25.56</td>
<td>21.00</td>
<td>16.00</td>
</tr>
<tr>
<td>SSC</td>
<td>23.75</td>
<td>18.13</td>
<td>14.25</td>
</tr>
<tr>
<td>Control</td>
<td>23.88</td>
<td>24.25</td>
<td>24.25</td>
</tr>
<tr>
<td><strong>SSHA</strong>&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CCR + CR</td>
<td>73.22</td>
<td>93.11</td>
<td>103.89</td>
</tr>
<tr>
<td>SSC</td>
<td>95.75</td>
<td>108.25</td>
<td>119.13</td>
</tr>
<tr>
<td>Control</td>
<td>71.63</td>
<td>76.13</td>
<td>76.13</td>
</tr>
</tbody>
</table>
TABLE 1 (Continued)
MEAN SCORES FOR Ss PERFORMANCE ON THE 10 DEPENDENT VARIABLES BY TREATMENT AND TRIALS

<table>
<thead>
<tr>
<th></th>
<th>Pre</th>
<th>Post I</th>
<th>Post II</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PBI</strong>&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CCR + CR</td>
<td>203.78</td>
<td>196.11</td>
<td>184.44</td>
</tr>
<tr>
<td>SSC</td>
<td>196.88</td>
<td>188.63</td>
<td>165.00</td>
</tr>
<tr>
<td>Control</td>
<td>195.75</td>
<td>207.75</td>
<td>207.75</td>
</tr>
<tr>
<td><strong>AD</strong>&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CCR + CR</td>
<td>83.22</td>
<td>83.33</td>
<td>73.00</td>
</tr>
<tr>
<td>SSC</td>
<td>87.13</td>
<td>75.63</td>
<td>71.38</td>
</tr>
<tr>
<td>Control</td>
<td>80.63</td>
<td>80.75</td>
<td>80.75</td>
</tr>
<tr>
<td><strong>SRA</strong>&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CCR + CR</td>
<td>38.00</td>
<td>40.00</td>
<td>32.11</td>
</tr>
<tr>
<td>SSC</td>
<td>42.88</td>
<td>35.38</td>
<td>33.88</td>
</tr>
<tr>
<td>Control</td>
<td>39.38</td>
<td>37.38</td>
<td>37.38</td>
</tr>
<tr>
<td><strong>AAT</strong>&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CCR + CR</td>
<td>18.00</td>
<td>20.33</td>
<td>23.89</td>
</tr>
<tr>
<td>SSC</td>
<td>21.75</td>
<td>25.75</td>
<td>25.63</td>
</tr>
<tr>
<td>Control</td>
<td>19.25</td>
<td>20.00</td>
<td>20.00</td>
</tr>
<tr>
<td><strong>AAT-a</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CCR + CR</td>
<td>38.56</td>
<td>34.11</td>
<td>30.22</td>
</tr>
<tr>
<td>SSC</td>
<td>36.50</td>
<td>26.25</td>
<td>24.00</td>
</tr>
<tr>
<td>Control</td>
<td>34.00</td>
<td>31.75</td>
<td>31.75</td>
</tr>
<tr>
<td><strong>STAI-1</strong>&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CCR + CR</td>
<td>66.00</td>
<td>42.66</td>
<td>37.33</td>
</tr>
<tr>
<td>SSC</td>
<td>66.25</td>
<td>52.38</td>
<td>37.13</td>
</tr>
<tr>
<td>Control</td>
<td>63.38</td>
<td>53.50</td>
<td>53.50</td>
</tr>
<tr>
<td><strong>STAI-2</strong>&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CCR + CR</td>
<td>47.56</td>
<td>44.22</td>
<td>38.78</td>
</tr>
<tr>
<td>SSC</td>
<td>45.75</td>
<td>38.63</td>
<td>36.63</td>
</tr>
<tr>
<td>Control</td>
<td>48.50</td>
<td>47.75</td>
<td>47.75</td>
</tr>
<tr>
<td><strong>GPA</strong>&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CCR + CR</td>
<td>1.41</td>
<td>1.58</td>
<td>-</td>
</tr>
<tr>
<td>SSC</td>
<td>1.57</td>
<td>2.19</td>
<td>-</td>
</tr>
<tr>
<td>Control</td>
<td>1.59</td>
<td>1.79</td>
<td></td>
</tr>
</tbody>
</table>

Note: On scales with the super script <sup>a</sup> lower scores indicate improvement. On scales with the super script <sup>b</sup> higher scores indicate improvement.
The ten dependent measures used in this study as measures of test anxiety, study habits and attitudes, irrational thinking, and academic performance revealed significant $F$ ratios for treatment $X$ trials interaction effects for the TAS ($F = 4.854, p < .01$), the PBI ($F = 4.492, p < .01$), the SR ($F = 2.609, p < .05$), the AAT debilitative scale ($F = 4.324, p < .01$), and the STAI-1, State scale ($F = 3.759, p < .05$). Though the other dependent measures did not attain statistical significance, all except the GPA did show a treatment $X$ trials interaction effect trend. The SSHA ($F = 1.734, p < .16$), the AD ($F = 2.251, p < .08$), the AAT+ ($F = 1.993, p < .12$), and the STAI-2 ($F = 2.347, p < .07$) support the measures that did attain statistical significance indicating differential improvement among treatment groups on these measures. (See Table 2.)

**TABLE 2**

**UNIVARIATE F TESTS OF TREATMENT X TRIALS INTERACTION**

<table>
<thead>
<tr>
<th>Variable</th>
<th>SS</th>
<th>MS</th>
<th>$F$</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAS</td>
<td>271.072</td>
<td>67.768</td>
<td>4.854**</td>
</tr>
<tr>
<td>SSHA</td>
<td>1559.175</td>
<td>389.794</td>
<td>1.734</td>
</tr>
<tr>
<td>PBI</td>
<td>4201.970</td>
<td>1050.493</td>
<td>4.492**</td>
</tr>
<tr>
<td>AD</td>
<td>745.362</td>
<td>186.340</td>
<td>2.251</td>
</tr>
<tr>
<td>SR</td>
<td>294.287</td>
<td>735.719</td>
<td>2.609*</td>
</tr>
<tr>
<td>AAT+</td>
<td>76.820</td>
<td>19.205</td>
<td>1.993</td>
</tr>
</tbody>
</table>
### TABLE 2 (Continued)

**UNIVARIATE F TESTS OF TREATMENT X TRIALS INTERACTION**

<table>
<thead>
<tr>
<th>Variable</th>
<th>SS</th>
<th>MS</th>
<th>$F$</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAT-</td>
<td>254.856</td>
<td>63.714</td>
<td>4.324**</td>
</tr>
<tr>
<td>STAI-1</td>
<td>1249.000</td>
<td>312.250</td>
<td>3.759*</td>
</tr>
<tr>
<td>STAI-2</td>
<td>219.984</td>
<td>54.996</td>
<td>2.347</td>
</tr>
<tr>
<td>GPA</td>
<td>.504</td>
<td>.252</td>
<td>.927</td>
</tr>
</tbody>
</table>

Note: df = 4,44; except GPA, df = 2,22

* $p < .05$

** $p < .01$

Tables 3 and 4 present complete univariate $F$ tests for treatment main effects and trials main effects. Only the SSHA ($F = 4.614$, $p < .05$) attained significance on treatment main effects. All variables attained significance at the .01 level, except GPA which attained significance at the .05 level, on the univariate $F$ tests of trials main effects.
# TABLE 3

UNIVARIATE F TESTS OF TREATMENT MAIN EFFECTS

<table>
<thead>
<tr>
<th>Variable</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAS</td>
<td>357.596</td>
<td>178.798</td>
<td>1.010</td>
</tr>
<tr>
<td>SSHA</td>
<td>13154.711</td>
<td>6577.356</td>
<td>4.614*</td>
</tr>
<tr>
<td>PBI</td>
<td>4943.713</td>
<td>2471.856</td>
<td>1.131</td>
</tr>
<tr>
<td>AD</td>
<td>89.263</td>
<td>44.631</td>
<td>.062</td>
</tr>
<tr>
<td>SR</td>
<td>22.774</td>
<td>11.387</td>
<td>.035</td>
</tr>
<tr>
<td>AAT+</td>
<td>286.876</td>
<td>143.438</td>
<td>1.920</td>
</tr>
<tr>
<td>AAT-</td>
<td>376.537</td>
<td>188.269</td>
<td>1.792</td>
</tr>
<tr>
<td>STAI-1</td>
<td>844.155</td>
<td>422.078</td>
<td>1.340</td>
</tr>
<tr>
<td>STAI-2</td>
<td>712.592</td>
<td>356.296</td>
<td>1.250</td>
</tr>
<tr>
<td>GPA</td>
<td>1.243</td>
<td>.621</td>
<td>1.850</td>
</tr>
</tbody>
</table>

Note: df = 2,44
*p < .05
TABLE 4

UNIVARIATE F TESTS OF TRIALS MAIN EFFECTS

<table>
<thead>
<tr>
<th>Variable</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAS</td>
<td>505.947</td>
<td>252.973</td>
<td>18.119**</td>
</tr>
<tr>
<td>SSHA</td>
<td>5094.426</td>
<td>2547.213</td>
<td>11.332**</td>
</tr>
<tr>
<td>PBI</td>
<td>2651.280</td>
<td>1325.640</td>
<td>5.669**</td>
</tr>
<tr>
<td>AD</td>
<td>950.907</td>
<td>475.453</td>
<td>5.742**</td>
</tr>
<tr>
<td>SR</td>
<td>401.787</td>
<td>200.893</td>
<td>7.125**</td>
</tr>
<tr>
<td>AAT+</td>
<td>167.227</td>
<td>83.613</td>
<td>8.678**</td>
</tr>
<tr>
<td>AAT-</td>
<td>795.440</td>
<td>397.720</td>
<td>26.990**</td>
</tr>
<tr>
<td>STAI-1</td>
<td>6850.667</td>
<td>3425.333</td>
<td>41.235**</td>
</tr>
<tr>
<td>STAI-2</td>
<td>504.506</td>
<td>252.253</td>
<td>10.767**</td>
</tr>
<tr>
<td>GPA</td>
<td>1.332</td>
<td>1.332</td>
<td>4.896*</td>
</tr>
</tbody>
</table>

Note: df = 2,44; except GPA, df = 1,22
*P ≤ .05
**P ≤ .01

Planned comparisons using the Dunn Multiple Comparison Test (see Table 5) demonstrate that both the CCR + CR and SSC groups were significantly more effective than the Control in reducing test anxiety on the TAS (p ≤ .01) and the STAI-1 (p ≤ .05), and irrational thinking (p ≤ .05, for CCR + CR; p ≤ .01, for SSC). In addition, the CCR + CR group was significantly more effective in improving study habits and attitudes than either the SSC or Control groups (p ≤ .05). The SSC group was significantly more effective than the CCR + CR or Control groups in reducing test anxiety as measured by the AAT debilitative
scale \((p < .01)\). The results of each measure will be described and depicted graphically.

### Table 5

**Between-Treatment Differences in Linear Trend Across 3 Trials**

<table>
<thead>
<tr>
<th>Measure</th>
<th>CCR + CR/ Control</th>
<th>SSC/ Control</th>
<th>CCR + CR/ SSC</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAS</td>
<td>-3.87**</td>
<td>-3.74**</td>
<td>-.02</td>
</tr>
<tr>
<td>SSHA</td>
<td>2.55*</td>
<td>1.78</td>
<td>.71</td>
</tr>
<tr>
<td>PBI</td>
<td>-2.99*</td>
<td>-4.06**</td>
<td>1.20</td>
</tr>
<tr>
<td>AD</td>
<td>-1.65</td>
<td>1.09</td>
<td>.49</td>
</tr>
<tr>
<td>SR</td>
<td>1.07</td>
<td>1.87</td>
<td>.85</td>
</tr>
<tr>
<td>AAT+</td>
<td>2.41</td>
<td>1.42</td>
<td>.94</td>
</tr>
<tr>
<td>AAT-</td>
<td>2.31</td>
<td>-3.74**</td>
<td>1.58</td>
</tr>
<tr>
<td>STAI-1</td>
<td>-3.00*</td>
<td>-2.99*</td>
<td>.07</td>
</tr>
<tr>
<td>STAI-2</td>
<td>-2.41</td>
<td>-2.45</td>
<td>.10</td>
</tr>
<tr>
<td>GPA</td>
<td>.001</td>
<td>.01</td>
<td>.01</td>
</tr>
</tbody>
</table>

*Note: Minus values indicate a decrease in the posttreatment II measure. 
* \(p < .05\) using the Dunn Multiple Comparison Test
** \(p < .01\)*

**TAS**

The TAS was included in this study as a general measure of debilitative anxiety that results from stress inducing circumstances related to taking tests. The univariate \(F\) ratio for the TAS was significant beyond the .01 level for both trials \((F = 18.119)\) and
treatment X trials interaction ($F = 4.854$), though was not significant for treatment effects ($F = 1.010$, $p < .39$). Inspection of the total mean scores for subjects' performance on the TAS by treatments (see Table 1), revealed that the SSC group had the lowest mean score of test anxiety, followed closely by the CCR + CR group at post I. The Control group increased slightly. These data showed that subjects in the SSC and CCR + CR groups rated themselves as less test anxious on the post I than on the pretest. Subjects in both the SSC and CCR + CR groups continued to improve in the reduction of test anxiety after the termination of therapy. The Dunn's post hoc analysis demonstrated that both the SSC and the CCR + CR groups were significantly more effective at the .01 level than the Control in reducing test anxiety. No significant differences were observed between the SSC and CCR + CR conditions. These results are presented graphically in Figure 2.
FIGURE 2
TREATMENTS X TRIALS INTERACTION EFFECTS ON THE TAS

T1 = CCR + CR
T2 = SSC
T3 = Control
SSHA

The SSHA was included in this study as a measure of non-intellective components of academic success reflecting study habits and attitudes. The univariate F ratio for the SSHA was significant for trials (F = 11.332, p < .01) and treatment (F = 4.614, p < .05), but not significant for treatment X trials interaction (F = 1.734, p < .16). Inspection of the total mean scores for subjects' performance on the SSHA by treatments (see Table 1) revealed that the SSC group had the highest mean score followed by the CCR + CR group at post I. The Control group increased slightly. These data showed that subjects in the SSC and CCR + CR groups rated themselves as holding more positive study habits and attitudes on post I than at the pretest. Subjects in both the SSC and CCR + CR groups continued to improve after the termination of therapy. The Dunn's post hoc test demonstrated that CCR + CR was significantly more effective (p < .05) than the Control group in improving study habits. No significant differences were observed between the SSC and Control, and the CCR + CR and SSC groups. These results are presented graphically in Figure 3.
TREATMENTS X TRIALS INTERACTION EFFECTS ON THE SSHA

T1 = CCR + CR
T2 = SSC
T3 = Control
The PBI was included in this study to assess specific levels of irrational thinking. The univariate F ratio for the PBI was significant for trials (F = 5.669, p < .01) and treatment X trials (F = 4.492, p < .01), but was not significant for treatment effects (F = 1.131, p < .35). Inspection of the total mean scores for subjects' performance on the PBI by treatments (see Table 1) showed that the SSC group had the lowest mean score followed by the CCR + CR group at post I. The Control group increased through this same period of time. These data showed that subjects in the SSC and CCR + CR groups rated themselves as holding fewer irrational beliefs on the post I than on the pretest, while the Control group rated themselves as having more irrational beliefs on the post I than on the pretest. Subjects in both the SSC and CCR + CR groups continued to improve in reduction of irrational beliefs after termination of therapy. The Dunn's post hoc analysis demonstrated that the CCR + CR group was significantly more effective at the .05 level than the Control. In addition, the SSC group was significantly more effective at the .01 level than the Control. No significant differences were observed between the CCR + CR and SSC conditions. These results are presented graphically in Figure 4.
FIGURE 4

TREATMENTS X TRIALS INTERACTION EFFECTS ON THE PBI

T1 = CCR + CR
T2 = SSC
T3 = Control
The AD was one of the instruments administered following imagery depicting a final examination scene to measure situationally-aroused stress, or "state" anxiety, through changes in cognition. The univariate F ratio for the AD was significant beyond the .01 level for trials \((F = 5.742)\), though was not significant for treatment effects \((F = .062, \ p < .95)\), or treatment X trials interaction \((F = 2.251, \ p < .08)\). Inspection of the total mean scores for subjects' performance on the AD by treatments (see Table 1) revealed that the SSC group had the lowest mean score at post I while the CCR + CR and Control groups increased slightly. These data showed that subjects in the SSC group rated themselves less test anxious on the post I than on the pretest. Subjects in both the SSC and CCR + CR groups continued to improve in the reduction of test anxiety after the termination of therapy. The Dunn's post hoc analysis revealed no significant differences between any of the treatment conditions. These results are presented graphically in Figure 5.
FIGURE 5

TREATMENTS X TRIALS INTERACTION EFFECTS ON THE AD

T1 = CCR + CR
T2 = SSC
T3 = Control
The SR was administered following a Final Examination scene to measure positive as well as negative anxiety reactions related to feelings of anticipatory excitement and physiological responses. The univariate $F$ ratio for the SR was significant for trials ($F = 7.125$, $p < .01$) and treatment X trials ($F = 2.609$, $p < .05$), but did not attain significance for treatment effects ($F = .035$, $p < .97$). Inspection of the total mean scores for subjects' performance on the SR by treatments (see Table 1) demonstrated that the SSC group had the lowest mean score followed by the Control group at post I. The CCR + CR group increased slightly through this same time period. These data showed that subjects in the SSC and Control groups rated themselves as holding fewer negative anxiety reactions on the post I than on the pretest, while the CCR + CR group rated themselves as holding more negative anxiety reactions related to taking a final exam than on the pretest. Subjects in both the SSC and CCR + CR groups improved after the termination of therapy. The Dunn's post hoc analysis revealed no significant differences between any of the treatment conditions when analyzed linearly across the 3 trials. However, using a quadratic equation, Dunn's test demonstrated that the CCR + CR was significantly more effective than the Control ($d = 3.26$, $p < .01$), and significantly more effective than SSC ($d = 4.35$, $p < .01$) across the 3 trials. No significant differences were noted between the SSC and Control groups. These results are presented graphically in Figure 6.
Mean Scores - S-R Inventory of Test Anxiety

FIGURE 6

TREATMENTS X TRIALS INTERACTION EFFECTS ON THE SR

T1 = CCR + CR
T2 = SSC
T3 = Control
AAT

The AAT presents facilitative (+) and debilitative (−) scales in the measurement of test anxiety. This instrument was administered to differentiate facilitative and debilitative responses to a Final Examination scene. The univariate F ratio for the AAT+ was significant for trials (F = 8.678, p < .01) but did not attain significance for treatment effects (F = 1.920, p < .18), or treatment X trials effect (F = 1.993, p < .12). Inspection of the total mean scores for subjects' performance on the AAT+ by treatments (see Table 1) showed that SSC group had the highest mean score at post I. The CCR + CR and Control groups increased slightly from pre to post I. These data showed that subjects in the SSC, followed by the subjects in the CCR + CR and Control groups, rated themselves as having more positive and facilitative test taking behaviors on the post I than on the pretest. Subjects in the CCR + CR group continued to improve after the termination of therapy. The SSC group remained about the same after termination of therapy. Dunn's test revealed no significant differences between any of the treatment conditions across the 3 trials. These results are presented graphically in Figure 7.
Mean Scores - Achievement Anxiety Test (Facilitative Scale)

T1 = CCR + CR
T2 = SSC
T3 = Control

FIGURE 7
TREATMENTS X TRIALS INTERACTION EFFECTS ON THE AAT+
The univariate $F$ ratio for the AAT- was significant for trials ($F = 26.990, p < .01$) and treatment X trials ($F = 4.324, p < .01$), but was not significant for treatment effects ($F = 1.792, p < .20$). Inspection of the total mean scores for subjects' performance on the AAT- by treatments (see Table 1) revealed that the SSC group had the lowest mean score at Post I followed by the Control group and CCR + CR group, respectively. These data show that subjects in the SSC, Control, and CCR + CR groups rated themselves as less test anxious on the post I than on the pretest. Subjects in both the SSC and CCR + CR groups continued to improve in the reduction of test anxiety after the termination of therapy. The Dunn's post hoc analysis demonstrated that the SSC group was significantly more effective at the .01 level than the Control in reducing debilitative test anxiety. No significant differences were observed between the CCR + CR and Control, and the CCR + CR and SSC groups. These results are presented graphically in Figure 8.
Mean Scores - Achievement Anxiety Test (Debilitative Scale)

FIGURE 8

TREATMENTS X TRIALS INTERACTION EFFECTS ON THE AAT-

T1 = CCR + CR
T2 = SSC
T3 = Control
The STAI-1 (State Form) provides a measure of how the subject feels in the present, that is while taking a Final Examination via imagery. The univariate $F$ ratio for the STAI-1 was significant for trials ($F = 41.235, p \leq .01$) and treatment $X$ trials ($F = 3.759, p \leq .05$), but was not significant for treatment effects ($F = 1.340, p \leq .29$). Inspection of the total mean scores for subjects' performance on the STAI-1 by treatments (see Table 1) demonstrated that the CCR + CR group had the lowest mean score at post I. The SSC and Control groups also improved at post I, but not nearly as much as the CCR + CR group. These data showed that subjects in the CCR + CR, followed by the SSC and Control groups, rated themselves as feeling less tense and less autonomically aroused on the post I than on the pretest. Subjects in CCR + CR and SSC continued to improve after the termination of therapy. Dunn's test showed that both CCR + CR and SSC were significantly more effective at the .05 level than the Control in reducing test anxiety. No significant differences were noted between the CCR + CR and SSC groups. These results are depicted graphically in Figure 9.
FIGURE 9
TREATMENTS X TRIALS INTERACTION EFFECTS ON THE STAI-1

T1 = CCR + CR
T2 = SSC
T3 = Control
The STAI-2 (trait form) provides a measure of trait, or characteristic, anxiety. Subjects are asked to rate themselves on how they "generally feel." This instrument was administered prior to the Final Examination imagery. The univariate F ratio for the STAI-2 was significant for trials ($F = 10.767, p < .01$), but was not significant for treatment effects ($F = 1.250, p < .31$), or treatment X trials effects ($F = 2.347, p < .07$). Inspection of the total mean scores for the subjects' performance on the STAI-2 by treatments (see Table 1) indicate that the SSC group had the lowest mean scores at post 1, followed by the CCR + CR and Control groups. These data showed that subjects in the SSC group outranked subjects in both the CCR + CR and Control groups in decreasing their self-reported anxiety proneness. Subjects in the SSC and CCR + CR groups continued to improve after the termination of therapy. Dunn's test revealed no significant differences between any of the three treatment groups. These results are presented graphically in Figure 10.
Mean Scores - State-Trait Anxiety Inventory (Trait Form)

Figure 10

Treatments x Trials Interaction Effects on the STAI-2

T1 = CCR + CR
T2 = SSC
T3 = Control
The cumulative GPA was collected prior to and after treatment as a performance measure indicating actual academic achievement. The univariate F ratio for cumulative GPA was significant for trials ($F = 4.896, p < .05$), but was not significant for treatment effects ($F = 1.850, p < .19$), or treatment X trials interaction effects ($F = .927, p < .42$). Inspection of the total mean scores for the subjects' performance on GPA by treatments (see Table 1) shows that the SSC had the highest mean score at the posttest followed by the Control group. These data showed that subjects in the SSC group improved at least .40 in GPA beyond the Control and CCR + CR groups. Subjects' GPA improved to the 2.00 level or above for 87.5% of the SSC, 37.5% of the Control, and 33.3% for CCR + CR groups. Dunn's post hoc analysis revealed no significant differences between any of the three treatment groups. These results are displayed graphically in Figure 11.
Mean Scores - Grade Point Averages

105

2.8
2.6
2.4
2.2
2.0
1.8
1.6
1.4
1.2
1.0

T3
T2
T1

FIGURE 11

TREATMENTS X TRIALS INTERACTION EFFECTS ON THE GPA

T1 = CCR + CR
T2 = SSC
T3 = Control
CHAPTER V

SUMMARY OF RESULTS

The purpose of this study was to determine the effects of Cue-Controlled Relaxation and Cognitive Restructuring (CCR + CR) and Study Skills Counseling (SSC) on the reduction of test anxiety and the enhancement of study skills of underachieving college students at Ohio State University. CCR + CR and SSC were examined and compared to a waiting list Control group. Students comprising the sample were on Warning or Probation (GPA < 2.00) and were enrolled in University College during winter quarter, 1977.

Twenty-five freshman and sophomore students comprised the subjects for this experiment. Each subject was administered the TAS and SSHA as screening measures. Following administration of the TAS and SSHA and agreement by the subjects to participate in the study, all subjects were pretested, posttested following treatment, and followed-up two and a half months after termination of therapy using the PBI and the STAI-2 (Trait Form), then were presented with a Final Examination scene and tested with the AD, the S-R, the AAT (facilitative and debilitative scales), and the STAI-1 (State Form). In addition each subject's cumulative GPA was collected from the Registrar. Subjects were then randomly assigned to one of the three treatment groups. The CCR + CR and SSC groups met for four one-and-a-half hour sessions.
The hypotheses were tested by a 2 X 3 multivariate analysis of variance with ten dependent measures to assess therapist, and treatment X therapist interaction for the CCR + CR, SSC, and Control conditions. The results show that the univariate difference for therapist conditions, and for treatment X therapist conditions can be accounted for by chance alone (F = 1.41, p > .35; F = 1.21, p > .45). Thus the therapist variable was effectively controlled for, both experimentally and statistically, leading to the failure to reject the null hypotheses regarding therapist, and treatment X therapist conditions.

The hypothesis of this study regarding treatment main effects was tested by a one-between subjects, one within-subjects factorial analysis of variance with repeated measures (split-plot design) to compute $F$ ratios for each main effect and interaction. The null hypothesis for main effects for treatments was rejected inasmuch as significant $F$ ratios were found on the TAS, the STAI-1 (State Form), the PBI, the SR, and the AAT (debilitative scale). The null hypotheses for interaction was rejected supporting the differential effects of treatments interacting with trials (time variable). Dunn's Test was used in post hoc analysis to determine where the significant differences in treatments lay.

Univariate $F$ tests and planned comparisons using Dunn's Test showed that both the CCR + CR and SSC groups, were significantly more effective in the reduction of test anxiety as measured by the TAS ($p < .01$) and the STAI-1 ($p < .05$) than the Control group. In addition,
both treatment groups were significantly more effective than the Control in the reduction of irrational beliefs as measured by the PBI (CCR + CR, \( p \leq .05 \); SSC, \( p \leq .01 \)). While the CCR + CR and SSC groups improved from pre to post I on the PBI, the Control group deteriorated during this same time period.

The CCR + CR group significantly improved their study habits and attitudes in comparison to the Control group \( (p \leq .05) \). The SSC group also improved greatly in comparison to the Control. However, that gain did not reach statistical significance probably due to the difference in pretreatment means between the SSC and Control groups.

The SR, used as a measure of anticipatory excitement and physiological responses, showed that the CCR + CR group was significantly more effective \( (p \leq .01) \) in the reduction of test anxiety manifested by physiological reactions than the Control and the SSC group across the three trials using the quadratic equation for Dunn's Test. While the CCR + CR group's post II mean was below the SSC group's post II mean, this drop did not attain significance probably due to the deterioration of the CCR + CR group at post I.

The AAT (debilitative scale), an additional measure of test anxiety administered after presentation of the Final Examination scene, showed that the SSC group was significantly more effective in the reduction of test anxiety than the Control group \( (p \leq .01) \). The CCR + CR group consistently improved from pre to post II and almost reached significance at the .05 level on Dunn's Test. The AAT (facilitative scale) showed a treatment X trials interaction effect
trend \( (p < .12) \). In addition, the CCR + CR group in comparison to the Control group approached significance at the .05 level using Dunn's Test.

The STAI-2 (Trait scale) showed a treatment X trials interaction effect trend \( (p < .07) \). Dunn's post hoc analysis revealed that both the CCR + CR and SSC groups approached significance at the .05 level in comparison to the Control group. The AD showed a treatment X trials interaction effect trend \( (p < .08) \), but neither the CCR + CR nor SSC groups approached significance on this test anxiety measure in comparison to the Control group using Dunn's Test.

The final measure, GPA, did not approach significance on either the univariate F test for treatment X trials interaction or on Dunn's post hoc analysis. However, subjects' GPA improved to the 2.00 level or above for 87.5% of the SSC in comparison to 37.5% of the Control and 33.3% for the CCR + CR subjects. Changes in academic performance following test anxiety modification programs have been reported in fewer than 30% of the studies. Finger and Galassi (1977) suggest that research efforts be aimed at defining the test-anxiety-performance relationship more clearly by defining those populations for which this relationship exists, refining tools to assess the performance that is affected by test anxiety, and by determining the time intervals appropriate for measurement of treatment gains.

**Discussion**

The results of this study indicated that both a behavioral study skills approach (SSC) and a relaxation and cognitive restructuring
approach (CCR + CR) were significantly more effective than a no
treatment control group in the reduction of test anxiety (TAS, STAI-1)
and irrational beliefs (PBI) for underachieving college students. In
addition, both approaches were significant, or supported trends, in
the enhancement of study habits and attitudes (SSHA) and debilitative
test anxiety (AAT-). Both groups approached significance on the
reduction of state anxiety (STAI-2). The CCR + CR group was signifi­
cantly more effective than either the SSC or Control group in the
reduction of debilitating anticipatory excitement and physiological
responses related to test taking (SR), supporting the Cue-Controlled
Relaxation component of the CCR + CR group. In addition, the gains
of the CCR + CR group approached significance in comparison to the
Control on the facilitative scale of the AAT.

The results of the follow-up assessment, conducted two and a
half months after the termination of treatment, revealed that both
CCR + CR and SSC not only maintained their superior reduction or
improvement in test anxiety, irrational beliefs, trait anxiety,
and study habits and attitudes, but continued to improve between
post I and post II after therapy was terminated. This finding
suggests that a generalization or integration effect may be occurring.
In contrast, the Control group improved only marginally, or deteriorated
from pre to post I.

One of the major findings of the present study was that a combina­
tion of Cue-Controlled Relaxation and Cognitive Restructuring was
more effective than the Control and as effective as the Study Skills
Counseling approach on most measures. In addition, the CCR + CR group was more effective than the SSC group on a measure of physiological responses, and approached significance in comparison to the Control on a measure of facilitative anxiety. This demonstration of the efficacy of a combined relaxation and cognitive restructuring procedure is in agreement with the findings of other investigators utilizing a multimodel approach (Allen, 1972; Wine, 1971; Meichenbaum, 1972; Boutin, 1976). It is also supportive of the impressive number of single-model applications of a relaxation component such as systematic desensitization or hypnosis which have found that the relaxation component of treatment is quite effective in alleviating subjectively experienced test anxiety (Allen, 1972; Paul, 1969; Wine, 1973; Boutin, 1976).

The cognitive restructuring component of the CCR + CR group in the treatment of test anxiety is supported by a number of researchers (Meichenbaum, 1972; Holroyd, 1976; Goldfried, 1976; Boutin, 1976). In addition, numerous studies support a cognitive approach for a variety of other anxiety related problems such as stuttering (Moleski and Tosi, 1976), social and interpersonal anxiety (Meichenbaum, et.al., 1971; Sanchez-Craig, 1976), and public speaking (Goldfried and Sobocinski, 1975).

Finger and Galassi (1977) compared an attentional cognitive treatment, a relaxation treatment, a combined attentional-relaxation treatment, and a waiting list control group in the investigation of the differential effects of treating the cognitive and emotionality
response components of test anxiety that were specified by Liebert and Morris. The results failed to support the predictions that emotionality-focused treatments would reduce scores on measures of debilitating anxiety and emotionality without affecting scores on worry, and that cognition-focused treatments would reduce scores on measures of debilitating anxiety and worry without affecting scores on emotionality. Finger and Galassi reported significant or nearly significant improvement resulting from each experimental treatment, regardless of whether the treatment focused on the specific component assessed.

These results are in agreement with an alternative theory of test anxiety proposed by Lazarus and Averill (1972). These authors have suggested that the arousal (emotionality) and cognitive components of test anxiety can be identified and defined independently, but the components interact as a single process in test anxiety. Lazarus and Averill suggest a process model in which increased levels of arousal can mobilize cognitive appraisals and strategies (arousal $\rightarrow$ cognition $\rightarrow$ test anxiety), or cognitive appraisals of threat can result in increased levels of arousal and subjectively experienced test anxiety (cognition $\rightarrow$ arousal $\rightarrow$ test anxiety). Within this process interpretation of test anxiety, it can be seen that affecting either component in treatment would result in a corresponding effect upon the other component, as well as an effect upon a global measure of test anxiety. This rationale supports a multi-model approach combining relaxation training and cognitive restructuring in the treatment of test anxiety.
A second major finding in this study was that the SSC was comparable to the CCR + CR treatment in its superior effectiveness in the reduction of test anxiety and irrational beliefs, and enhancement of study habits and attitudes, in comparison to the no treatment Control group. Mitchell and Piatrowska (1974) in their review of the literature on underachievement cite that study skills and habits show a strong and consistent relationship with achievement. In addition, underachievers frequently hold negative self-evaluations, lack persistence and conscientiousness in academic application, set unrealistic or no stated goals, and are highly test anxious (DeSena, 1964; Biggs, et.al., 1971). Mitchell, Hall, and Piatrowska (1975) compared densensitization and reeducative training whose targets included test and academic anxiety and study habits and skills, test and academic anxiety, and test anxiety only, in the treatment of bright failing underachievers. This study indicated that systematic desensitization and reeducative training are effective in reducing or improving the targets of test anxiety, academic anxiety, and study habits and skills, all hypothesized as the major contributors to the continuance of failing underachievement. However, effective changes for each group of students occurred only in the specific targets treated directly. These findings suggest that it is not sufficient to treat these targets in isolation.

Underachievers frequently hold negative self-evaluations, feelings of inferiority, insecurity, and lack of optimism (Mitchell and Piatrowska, 1974). These factors coincide with fear of competition,
fear of failure, and ambivalence over achievement cited by Sarason (1975) in his discussion of the self-oriented characteristics of test anxious individuals. A number of investigators have found underachievers to be inefficient, disorganized, and lacking order and planning in their approach to tasks. These characteristics suggest a comprehensive treatment program such as SSC that teaches the student a decision-making process that emphasizes planning and organizing skills, allows for personal sharing and support, and encourages internalization of positive attitudes toward academics.

Both the CCR + CR and the SSC treatments contained a number of components to modify the complex and interlocking dynamics associated with test anxiety for failing underachievers. While several single-component treatment methods have been shown to be relatively effective in relieving self-report test anxiety, Allen (1972) and Wine (1971) have both concluded that "single model" treatments for test anxiety (e.g., systematic desensitization alone) have not consistently been found to result in increased academic effectiveness. A more complex formulation of low achievement would include the relationship of test anxiety, study habits and attitudes, locus of control, and irrational beliefs. Bednar and Weinberg (1970) in their review of the ingredients of successful treatment programs for underachievers cite the potential of a multicomponent approach including an academic studies course and either group or individual counseling.

Test anxiety has frequently been viewed as a unidimensional problem. Research in this area has reluctantly acknowledged that
deficient academic performance may not be a direct consequence of anxiety, but rather the result of inadequate learning. As a result, single-model treatments may have focused on by-products of a larger behavioral dysfunction, and thus failed to equip the individual with those skills necessary for improved performance (Mitchell and Ng, 1973). Mahoney (1974) has suggested that multicomponent treatment packages may offer an invaluable clinical strategy, especially where broad-based skills training is desired. Such an approach rests on the increasingly popular assumption of multi-determinism in complex human behavior.

The evaluations by the subjects themselves (see Appendix I) reflected subjects' awareness of the multidimensional nature of their academic problems. Numerous students mentioned changes in attitude toward themselves and school as this student did:

My opinion of myself and what I believe I can do are slowly changing. There are many areas that I have to change, from belief in myself to studying correctly, but I feel confident that it is possible. I only wish there had been more meetings.

Other comments reflected students' appreciation for being able to share their concerns with other students:

One thing I liked greatly about the class was that it gave me a chance to let out some of the tension and anxiety I had been holding in. Talking to people who had travelled the road I was on made me feel as though I wasn't the only one who was having a problem. I think, though, that the biggest help was finally realizing I've got to be me. Sure, be the best that you can be but don't down yourself. Everyday of my life it is me that I have to face and no one else. As long as
I feel that I've tried or done my very best that's all that should matter to me, that at least I tried.

Comments such as these have led to probably the most significant outcome of this study. Dr. Joseph Weaver has continued providing treatment for underachievers at University College by combining the CCR + CR and SSC treatment approaches in a six week package. Data on this follow-up study has been collected and is presently being analyzed.
REFERENCES


Goleman, D. Meditation helps break the stress spiral. *Psychology Today,* 1976, Feb., 82-86.


Lamb, K. Case study material, Counseling and Consultation Services, 1976.


Lent, B. An examination of the test anxiety and study habit characteristics of psych. 120 and psych. 100 students. Unpublished manuscript, 1976(b).


Smith, J.A. The relationship of measured interest and vocational orientation to achievement satisfaction and persistence in academic studies. Dissertation Abstracts, 1967, 28, No. 975A.


Tosi, D.J. Self-directed behavior change in the cognitive, affective, and behavioral motoric domains: A rational-emotive approach. The Ohio State University, 1973.


APPENDIX A

TEST ANXIETY SCALE

T  F  1. While taking an important exam I find myself thinking of how much brighter the other students are than I am.

T  F  2. If I were to take an intelligence test, I would worry a great deal before taking it.

T  F  3. If I knew I was going to take an intelligence test, I would feel confident and relaxed, beforehand.

T  F  4. While taking an important examination I perspire a great deal.

T  F  5. During course examinations I find myself thinking of things unrelated to the actual course material.

T  F  6. I get to feel very panicky when I have to take a surprise exam.

T  F  7. During tests I find myself thinking of the consequences of failing.

T  F  8. After important tests I am frequently so tense that my stomach gets upset.

T  F  9. I freeze up on things like intelligence tests and final exams.

T  F 10. Getting a good grade on one test doesn't seem to increase my confidence on the second.

T  F 11. I sometimes feel my heart beating very fast during important tests.

T  F 12. After taking a test I always feel I could have done better than I actually did.

T  F 13. I usually get depressed after taking a test.

T  F 14. I have an uneasy, upset feeling before taking a final examination.

T  F 15. When taking a test my emotional feelings do not interfere with my performance.

T  F 16. During a course examination I frequently get so nervous that I forget facts I really know.

T  F 17. I seem to defeat myself while working on important tests.

T  F 18. The harder I work at taking a test or studying for one, the more confused I get.

T  F 19. As soon as an exam is over I try to stop worrying about it, but I just can't.
During exams I sometimes wonder if I'll ever get through college.

I would rather write a paper than take an examination for my grade in a course.

I wish examinations did not bother me so much.

I think I could do much better on tests if I could take them alone and not feel pressured by a time limit.

Thinking about the grade I may get in a course interferes with my studying and my performance on tests.

If examinations could be done away with I think I would actually learn more.

On exams I take the attitude, "If I don't know it now there's no point worrying about it."

I really don't see why some people get so upset about tests.

Thoughts of doing poorly interfere with my performance on tests.

I don't study any harder for final exams than for the rest of my course work.

Even when I'm well prepared for a test, I feel very anxious about it.

I don't enjoy eating before an important test.

Before an important examination I find my hands or arms trembling.

I seldom feel the need for "cramming" before an exam.

The University ought to recognize that some students are more nervous than others about tests and that this affects their performance.

It seems to me that examination periods ought not to be made the tense situations which they are.

I start feeling very uneasy just before getting a test paper back.

I dread courses where the professor has the habit of giving "pop" quizzes.
PLEASE NOTE:


UNIVERSITY MICROFILMS INTERNATIONAL
APPENDIX N

LEADER'S GUIDE FOR STUDY SKILLS COUNSELING PROGRAM

Session I

Objectives: This session will include introductions, a general discussion of why the students have come, their expectations, and a start at clarifying and stating each of their difficulties. This program will attempt to present an opportunity to share with other people in a small group setting. Students will gradually assume more responsibility for their performance by developing an increasingly self-directed and internal locus of control.

A. Summarize most common academic complaints. Inquire about the:

1) Antecedents
2) How specific complaints manifest themselves and inhibit progress
3) How does student attempt to cope with his problem
4) How does difficulty in this area impinge upon other aspects of college life
5) Is this the only difficulty the student is experiencing
6) How much thought had student given to his difficulty prior to getting the OSU letter inviting them to participate in this program
7) What other organized efforts has the student tried, i.e., Reading and Study Skills Center, Counseling and Consultation Services, tutors

Session II

A. Continue with comments from last week to focus on:

1) Self-concept and awareness
2) The self-fulfilling prophecy
3) A positive result (How does attitude and preparation at this time differ from the past)

B. Do students acknowledge the need for help or do students just suffer the consequences? If so, why? Focus on passivity and locus of control.
C. Overview of Decision-Making with the Forre Field Analysis using a problem mentioned by a group member, stressing personal responsibility. Decision-Making presented as cyclic.

D. Work through another decision-making problem (student volunteer at board with group discussion).

**Session III**

A. Multiple techniques emphasizing that student can improve his study skills. Have students write down what they do just prior to and during study, including thoughts and behaviors, and organization techniques employed.

B. Lecture on "How to Take Examinations" (hand out).

C. Process students reactions and inquire about how satisfying their technique is, compared to that mentioned in the lecture.

D. Homework assignment - have students write down a schedule for next week (7 days) that would make the most effective use of their time. This schedule will be followed up next week.

**Session IV**

A. Check how successful students were with schedule. Reinforce positive changes, and focus on problem areas and suggest alterations in approach where needed.
B. Process any self-reported changes in attitude toward school work, self-concept, organization, and time utilization.

C. Edited "Establish a Study Routine" handed out.

D. Hand out evaluation forms and have students turn these into you. Notify students of the time of their post-testing.
<table>
<thead>
<tr>
<th>Decision Phase</th>
<th>Personal Activity/Involvement</th>
<th>Force-Field Step</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acknowledging</td>
<td>A. Recognition of the need to make a decision.</td>
<td>Problem Identification</td>
</tr>
<tr>
<td></td>
<td>B. Recognition of the control/power you have to decide.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>C. Recognition of the responsibility you are willing to assume.</td>
<td></td>
</tr>
<tr>
<td>Valuing</td>
<td>A. Determine what is important to you</td>
<td>Goal Statement</td>
</tr>
<tr>
<td></td>
<td>B. Determine what you want to accomplish by the decision.</td>
<td></td>
</tr>
<tr>
<td>Exploring</td>
<td>A. Assess current information.</td>
<td>Define positive and negative forces</td>
</tr>
<tr>
<td></td>
<td>B. Identify needed information and information resources.</td>
<td>Generate new action steps</td>
</tr>
<tr>
<td></td>
<td>C. Generate alternatives</td>
<td></td>
</tr>
<tr>
<td>Analyzing</td>
<td>A. Assess alternative actions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. Probability</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Desirability</td>
<td></td>
</tr>
<tr>
<td></td>
<td>B. Assess projected outcomes.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. Probability</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Desirability</td>
<td></td>
</tr>
<tr>
<td>Implementing</td>
<td>A. Develop a decision-making strategy.</td>
<td>Behavioral action plan</td>
</tr>
<tr>
<td></td>
<td>B. Select from among the alternatives.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>C. Implement the decision - take overt public action.</td>
<td></td>
</tr>
<tr>
<td>Experiencing/Reviewing</td>
<td>A. Experience and review consequences of your choice.</td>
<td></td>
</tr>
<tr>
<td>Acknowledging</td>
<td>A. Recognize the need to make a new decision.</td>
<td></td>
</tr>
</tbody>
</table>
YOU CAN IMPROVE YOUR STUDY SKILLS!

If you have always had a complete semester to study a textbook; if your high school teachers usually followed the textbook for their lectures so that you may be used to gaining most of your information orally; or if, for any reason, you haven't learned efficient reading and study methods, you may have difficulty with college-level courses. Generally speaking, the three main characteristics of successful college work are:

1. You must be able to take thorough, well-organized lecture notes and to read a large body of material and learn it on your own, in a few weeks' time (a quarter);
2. You must be able to learn fine details, as well as generalities, from a large amount of material and to integrate knowledge from a variety of sources;
3. You must be able, after you thoroughly learn the material, to analyze and apply this information to any new situation presented to you.

Check List of Study Habits:

Use the following check list to test yourself concerning general study techniques which you should be using regularly:

1. Can you read and learn at the rate of approximately 12-15 pp. per hour of history-type material? (Many students' rate for this type material is 20-25 pp. per hour.)
2. Are you reading and studying each day's assignment according to the method by which you will be tested—in fine detail or in generalities?
3. Can you regularly concentrate on your most difficult subject at peak efficiency for two hours without having to take a break?
4. Do you make an effort to ask your professors for help or explanations when needed?
5. Do you study for your difficult classes by reviewing first by yourself and then going over the material out-loud with a student who is doing well in class?
6. Are you comparing your lecture notes with those of a good student in your class, to make sure you are not omitting important information and to check what you have listed as main ideas, etc?
7. Are you keeping up with assignments by studying every course at least a little every day? Do you study about 4 hours each day? Do you have an efficient work schedule?
8. Are you working as many practice problems as you have the time to do for all quantitative courses, such as math, physics, chemistry, and accounting?
9. Are you making every effort to continue to develop your general English vocabulary, as well as learning technical words of your major area of study?
10. Are you participating in class discussion?
11. Do you visualize what you are reading as you read—to improve comprehension and to ensure that you are concentrating on the subject?
12. Are you analyzing your returned tests to learn which part of a course you are losing the most points on - the lecture, text, outside reading, lab, etc.? Are you correcting your mistakes?

13. Before exams do you review and attempt to predict test questions according to the method by which you will be tested?

Reading:
Always follow the three steps listed below for intensive reading of study-type materials.

1. Make a fast overview of the assignment by reading all major and minor section headings and glancing over any maps, charts, graphs, etc.
2. Read the assignment.
3. Without taking a break, make a fast overall review of what you have just read.

Be flexible in your reading by learning more than one good reading method. Learn the special skills of skimming for general information and scanning for answers to specific questions.

About Speed:
If you are having difficulties completing assignments in a reasonable length of time, this does not necessarily mean that you read too slowly. If you read about 300 words per minute with adequate comprehension, you should be able to complete assignments in a reasonable length of time if you use efficient reading organization methods, such as taking organized notes and underlining main ideas. Of course, you should check to make sure any vision problems you may have are corrected, and you should avoid such obviously poor habits as reading only one-word-at-a-time, retracing frequently, or moving your lips when reading.

Reading-Study Skills Center:
Begin now to develop your study skills by applying those techniques which you are not now using. If you find that you need to know methods for applying the skills mentioned in the check-list above, and, particularly, if you feel that your reading is inefficient, you may wish to attend a reading and study skills group. These groups are offered at the Reading-Study Skills Center located on the lower floor of the Learning Resources Center on West Campus. They are offered as a free service to enrolled students, on a first-come, first-served basis. (You may inquire in Room 024, Learning Resources Center)

Jane Kollaritsch, Counselor
Reading-Study Skills Center
Learning Resources Center
Room 024
422-1461
HOW TO TAKE EXAMINATIONS

I. Studying for exams.
   A. When to review.
      1. Frequently during quarter - try to review subjects daily and
         weekly for more effective learning.
      2. Schedule several final review sessions - not one long period.
      3. The night before - briefly review main points and go to bed early.
         An appropriate amount of sleep is essential.
         a. Cramming is undesirable but better than nothing if study
            has been neglected during the quarter.
         b. Do not study just before test time (anxiety and memory
            losses may develop).
   B. Study techniques.
      1. Study with a purpose.
         a. Organize materials so that main points and relationships
            are clear.
         b. Study to remember - not just read over material. (Use SQ3R).
         c. Memorize certain materials and review frequently (ex. diagrams,
            definitions).
      2. Predict possible questions (either essay or completion type), then
         write out some answers.
      3. Go over previous tests in course or former tests given by
         professor if available.
            of principles? discussion?
         c. Understand items you missed - what was wrong with your attack
            on the questions? carelessness? organization of ideas?
            lack of completeness or clarity?
      4. Cultivate an interest in the subject.
         a. Usually something attractive about any course.
         b. Relate subject to other interests.
         c. Develop involvement with your subject.
         d. Avoid making excuses for yourself. (ex. dull professor,
            uninteresting course, poor memory, just can't do well on
            objective tests)
      5. Avoid distractions.
         a. Clear desk of unnecessary objects.
         b. Set deadlines.
         c. Plan time schedule for study.

II. Taking examinations.
   A. Procedure or plan of action.
      1. Start immediately.
      2. Read the directions carefully.
      3. Scan exam quickly to determine kinds of questions, how many points
         for each, whether choice of questions to answer.
      4. Adopt a time budget for each type of question, allowing time for
         checking.
      5. Answer easiest questions first, usually.
      6. Try to base your answers on textbook and lectures first, not own
         experience.
7. Check questions where unsure of answer.
8. Check essay questions for grammar, spelling, smoothness, clarity.
9. Check all questions if time available.
10. Try to be the last to leave, not the first. Use your extra time for checking.

B. Dealing with different types of questions.

1. Essay questions.
   a. Read all questions first: note of choice.
   b. Jot down key words and major ideas as you read.
   c. Begin with easiest question.
   d. Briefly outline answer for organization.
   e. Write legibly.
   f. Answer every required question. No answer is 0 credit!
   g. Leave space for corrections if possible.
   h. Answer the question; note key words: analyze, elaborate, compare, evaluate, explain, illustrate, outline, define.
   i. Be concise if time is at a premium.
   j. Use technical terminology if appropriate.
   k. Watch spelling.

2. Multiple choice questions.
   a. Don't expect trick questions.
   b. Always guess if no penalty for wrong answers.
      (1) Eliminate answers definitely wrong.
      (2) Make an educated guess among plausible answers.
      (3) Use exam cues (unintentional mistakes of test-maker) qualified answer more likely correct than absolute; unduly long answer more likely right; avoid choosing either of two synonyms if opposites both used, one is probably correct; avoid bizarre or completely unfamiliar distractors; watch for consistent grammatical structure between stem and answer; clues to some answers may be found in other questions. (Use these suggestions only when guessing. They are no help with a sophisticated test and no substitute for thorough preparation.)
   c. Follow directions meticulously if special answer sheet used.
      (1) Is a special pencil required?
      (2) Put answer mark in proper space! Make mark just dark enough.
      (3) Avoid all extraneous marks; make careful erasures.
      (4) Check question number with answer number frequently.
   d. Mark question where unsure of answer. Go on and return to these questions as soon as finished.
ESTABLISHING A STUDY ROUTINE

1. Schedule your time for the week
   a. Schedule for the whole week everything you have to do. You'll need to allot about six hours of study time per week (at least) for each three-credit hour course. Schedule time for classes, eating, studying, working, laundry, showers, sleeping and relaxing with your favorite TV program. Use small amounts of unexpected free time (that 15 minutes between lunch and class) to do small tasks such as reviewing class notes.
   b. Organize your study periods by making a daily plan of work. List the chapter to be read, notes to be reviewed and vocabulary lists to be memorized on your daily work plan. Check each item as you complete it. Schedule any uncompleted work for the following day. (See sample work plan in the back of this manual.)

2. Study at the same place each day.
   a. Choose a quiet place where you can isolate yourself from distractions. Use the library, a study lounge, an empty classroom - whatever works for you.
   b. Use your study place for studying only. Writing letters, reading for pleasure and recreation should be done elsewhere. That way you will have established one place with the connotation: "Work only is done here," and you will not be tempted to stop studying and do something else.

3. Avoid distractions and interruptions
   a. Let your friends know that you do not wish to be disturbed while you are studying.
   b. Radios, TV and record players should, of course, be off.

4. "Take 5" every hour
   a. Give yourself a five minute break every hour so you - - and your brain can relax. Or, if you're unaccustomed to studying for a whole hour, start with 15 minutes at a time, or even less. Then increase your work intervals slowly. Then, if you've really (honestly!) worked, be sure to take that break and reward yourself for your efforts. Take a walk, get a cup of coffee or a coke, something short and refreshing. Be equally sure, however, not to exceed that break beyond 5 - 10 minutes, otherwise you will find it increasingly difficult to return to work.

TAKING AND USING LECTURE NOTES

1. Listen and Think
   a. Pay careful attention and take down all important points emphasized in class. It is not necessary to write things you already know. Then taking notes in class devote most of your effort to listening and understanding. Take a minimum of notes which will serve as cues and which you can expand later when you review your notes. Even the best notes are useless unless used well.
2. **Use 2/3 of the paper for notes, 1/3 for cues.**
   
   a. Save 1/3 of the width of your paper for subheading, major concepts, key phrases. (See attachment 3)

3. **Review your notes**
   
   a. As soon as possible after class read over your lecture notes. Underline and mark the important points. Fill in ambiguous abbreviations, correct errors, and organize facts into their proper relationships.

4. **Review notes frequently during the semester**
   
   a. Frequent repetitions make studying for exams easier and more effective.

---

**STUDYING FOR EXAMS**

1. **Schedule your reviewing in advance**
   
   a. Review lectures and text study notes. Ask yourself questions and answer them. You might want to study aloud, or perhaps write the answers since most exams are written. Note, however, that studying and reciting aloud has been shown to be a particularly effective study technique.

   b. Review study cards on formulas and definitions until you can recite or write correct answers from memory. This assumes, of course, that such formulas are understood by you and that you could apply them.

   c. Reread summary paragraphs, introductory and closing chapters of books and parts you have singled out for emphasis. Outline the chapters and/or your notes so that in the end you have a neat, concise catalogue of the material required for each test.

   d. Read over all notes quickly an hour or two before the exam to solidify the information.

---

**AIDS TO CONCENTRATION**

**Try doing "just one more page"**

a. If the temptation to stop studying becomes too great, try reading "just one more page" before quitting. Read it thoroughly, taking notes or making cards adequately, then stop if the urge is still there. It may be that the desire to stop will disappear, once the pace of study has been resumed.

b. The next time the need to stop studying occurs, try reading "just two more pages," and on a subsequent occasion "just three more pages."

**Try the subtask approach**

a. Achieving several subgoals can provide the encouragement needed to continue until the total goal is achieved.

b. Divide the daily assignments into several smaller assignments. (e.g., finish one-third of a history reading assignment in an allotted time.) Don't make the discouraging mistake of trying to do more at one time than would be humanly possible.
c. Try to break your own record. (e.g. learn the French vocabulary faster today than yesterday or take more readable lecture notes for this class than the last.)

Try developing a genuine interest in subject matter

a. Seek out occasions to use a foreign language.
b. Try to relate information from history, literature, sociology, etc. to personal experiences and values.
c. Seek practical ways to use math and science in everyday life.
d. Try to consolidate things learned by discussing them or by actually teaching them to others who are interested.