THE COGNITIVE-BEHAVIORAL MANAGEMENT OF TEST ANXIETY

by

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ABSTRACT

This review of recently published studies concerned with concepts, assessment, and treatments of test anxiety, traces the influence of the current trend toward self-management on behavioral counselling for test anxiety. The principal measures for assessment, the Test Anxiety Scale, the Achievement Anxiety Test, and the Emotionality-Worry Scale, are reviewed in terms of their analysis of the problem and their implications for treatment. A number of current treatment methods employing systematic desensitization and modified behavioral techniques, such as cue-controlled relaxation, relaxation-self-control, coping models, and covert cues, are described and compared, as are also such cognitive strategies as rational-emotive therapy, self-instruction techniques, and "coping self-statements". Outcome studies bringing together cognitive and behavioral components in a single program aimed at both the emotionality and the worry aspects of test anxiety are presented, with special attention given to Meichenbaum's cognitive-behavioral treatment paradigm.

The central focus of this review is the question of which treatment paradigm is the most efficient, effective, and appropriate for use by counsellors working among school and university populations. To this end, comparisons are explored, research needs indicated, and implications for the schools suggested. Specific illustrations of treatment methods are included in the appendices for the purpose of providing practical information to counsellors in the field.

ABSTRACT

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CHAPTER I

Introduction

Statement of the Problem

There are many individuals in our schools and universities, and indeed in our population at large, who are disadvantaged in a way which is not essentially a function of socio-economic status, physical disability, or even intellectual capacity. These are the persons suffering from test anxiety. Test anxiety may be defined as a maladaptive response pattern experienced by some individuals in testing situations perceived as personally evaluative. It is characterized by an irrational fear of failure and manifested both by autonomic arousal, such as increased heart rate, constricted breathing, stomach upset, and by cognitive distress, such as loss of concentration, ruminations concerning failure, desire to flee, and self-criticism.

Since the construct was first delineated in 1952 by Mandler and Sarason, numerous studies have been undertaken, providing abundant evidence that highly test-anxious individuals typically respond to stressful examinations with scattered attention, autonomic distress, and markedly impaired performance (Mandler & Sarson, 1952; Sarason, 1960; Sarason & Mandler, 1952; Sarason, Mandler & Craighill, 1952; Wine, 1971). When compared with low-test-anxious subjects, high-test-anxious students do more poorly on academic examinations (Sarason, 1957), have lower grade point averages (Alpert & Haber, 1960; Prociuk & Breen, 1973), perform less well

on scholastic aptitude (Brown, 1974; Sarason, 1957; Sarason & Mandler, 1952), and intelligence tests (Mandler & Sarason, 1952; Sarason, 1960). However, under neutral or reassuring conditions, their performance improves significantly, even to the point of equalling or surpassing their low-test-anxious conterparts (Mandler & Sarason, 1952; Sarason, 1972). This would seem to be a clear indication that poor performance by those rated as high in test anxiety cannot be considered a function of inferior intelligence, but of the amount of personal threat perceived in the testing situation.

The importance of the problem of test anxiety to those who struggle against it can hardly be over-estimated. In a competitive society where grades and similar performance assessments hold the key to personal advancement, doors may be locked tight to the test-anxious. High school students to whom examinations are a nightmare are less likely to seek the further ordeals and frustrations of higher education (Goldberg, 1973). Even if they are so inclined, their chances for admission are impaired by their poorer showing, relative to their low-anxious competitors, on such entrance examinations as the Scholastic Aptitude Test and the Mathematics Aptitude Test (Brown, 1974; Mandler & Sarason, 1952; Sarason, 1957). Thus, students of high potential for post-university careers may be by-passed, and may then be forced to settle for vocational levels inappropriate to their abilities and interests.

While test anxiety is generally seen in relation to academic performance, the same dysfunctional responses may be elicited in other personally evaluative testing situations. For example, the 14-year-old girl who habitually panics on her final exams in junior high school, is later likely to be severely hampered by anxiety on her typing exam for a government secretarial position (Deffenbacher & Rivera, 1975). In the rivalry of the working world, i.e., in government, in business, in the military, even in the trades, placement and advancement are frequently won through the medium of evaluative tests: performance, personality, and intelligence. In such an arena, the severely test-anxious contender competes with a disabling handicap.

Purpose and Scope of Review

Test anxiety is a problem which must be of concern to all counsellors, but especially to those working within a school or university population, where so much emphasis is laid on successful academic performance. Familiarity with the concepts and current treatments would be an appropriate and valuable addition to the professional counselling repertoire.

What, then, is the nature of test anxiety? How can it be recognized? Once we have recognized it in an individual, what can be done about it? Should the schools be doing anything to prevent or alleviate test anxiety? Or is it, perhaps, not within the limited facilities of the school system to deal with this problem? It is to questions such as these that this paper addresses itself.

In Chapter II, a brief summary of the original formulation of the construct of test anxiety is presented, together with a discussion of the instruments devised to assess test anxiety in its various aspects. Chapter III discusses systematic desensitization as the earliest and still most widely used behavioral method of treating test anxiety. In Chapter IV, modifications and innovations to systematic desensitization are shown, and the influence of the current trend towards self-management is discussed. Chapter V deals with test anxiety treatments in which cognitive methods are used to mediate behavior change within a primarily behavioral paradigm. Chpater VI presents a number of treatment outcome studies in which cognitive and behavioral techniques are brought together and compared. Particular attention is given to Meichenbaum's cognitive-behavioral management of test anxiety, as being an especially eclectic treatment paradigm designed to encompass the various diverse aspects of test anxiety in a self-control approach. A continuing illustration of the principal treatments under consideration in these chapters will be found in Appendix D - G, in the form of a hypothetical test-anxious student seeking help from counsellors of several orientations. In Chapter VII, an assessment of the current state of the research on self-management methods of treatment for test anxiety is made, together with suggestions for further study. Finally, in Chapter VIII, implications and recommendations arising out of the research and relevant to school counsellors and teachers are briefly explored.

CHAPTER II

Test Anxiety: Concept and Measurement

Three major groups of studies have formed the basis of test anxiety theory and assessment. The first, by Mandler and Sarason (1952), isolated and introduced the construct of test anxiety and formulated a theoretical base. The second, by Alpert and Haber (1960), further factored test anxiety and introduced a measure for the assessment of what they termed "facilitative anxiety". The third, the studies by Liebert and Morris (Liebert & Morris, 1967; Morris & Liebert, 1969, 1970), examined the two aspects of test anxiety: the cognitive, or worry, and the autonomic, or emotional, components. These studies will be summarized briefly, as it is from their combined findings that the rationale for many of the current test anxiety treatments evolved.

Mandler and Sarason: The Test Anxiety Questionnaire

G. Mandler and S. Sarason, in a series of studies published in 1952, departed from the prevailing view of anxiety as a general character trait assessed by such measures as Taylor's Manifest Anxiety Scale (1953), and investigated the anxiety aroused by a specific situational stress, that of a testing situation.

The assumption underlying their study was that test situations evoke drives of two kinds: 1)learned task drives which lead to drive-reducing task responses, and 2) learned anxiety drives, which in turn lead to two kinds of responses: a) task-oriented responses tending toward task completion and anxiety reduction, and b) self-

oriented responses, such as:

> feelings of inadequacy, helplessness, heightened somatic reaction, anticipations of punishment or loss of status and esteem, and implicit attempts at leaving the test situation. (Mandler & Sarason, 1952, p. 166)

These latter responses would be expected to interfere with task completion. On the assumption that assessment of such task-irrelevant responses would be more predictive of test reaction and performance than general anxiety scales, Mandler and Sarason developed a 37-item questionnaire, the Test Anxiety Questionnaire (TAQ), designed to measure self-oriented responses typically experienced by students just before and during an examination. (The TAQ has subsequently undergone several reworkings by I. Sarason, 1972, and is currently a 37-item true-false questionnaire called the Test Anxiety Scale, or TAS. See Appendix A.)

According to Mandler and Sarason, a high drive combined with a high level of interfering responses should logically result in lowered performance. Their hypothesis was that high-anxious subjects, as rated by the TAQ, would have more task-irrelevant, interfering responses in their repertoire than low-anxious subjects, and that under stress their performance would suffer accordingly. In these and subsequent studies, Mandler and Sarason, as well as other experimenters, manipulated the testing conditions to assess the differential effects of various stresses. It was shown, for example, that ego-involving instructions which equate test performance

with intelligence tend to lower the performance of high-test-anxious subjects and improve that of low-test-anxious ones (Sarason et al., 1952). Experimenting with the effect of evaluative feedback on performance, Mandler and Sarason (1952) found that intervening reports of success or failure raised scores for the low-anxious group but depressed scores for the high-anxious, who responded best to conditions of no intervening feedback at all. Conditions which stressed time limits tended to lower the performance of high-anxious subjects, while improving that of low-anxious (Morris & Liebert, 1969). When examiners indicated to subjects that they were expected to finish with ease a test in which it was impossible to do so, this additional stress raised the performance of low-anxious subjects relative to their performance under conditions of no expectations of finishing. The reverse results were obtained with the high-anxious groups (Sarason et al., 1952). Using the presence of an observer as the stress variable, Ganzer (1968) found that audience presence lowered the task performance of high-test-anxious subjects and improved the performance of low-test-anxious subjects.

These results, consistent with the Mandler and Sarason (1952) hypothesis, illustrate the complex nature of test anxiety across a subject population. It appeared that it was the evaluative nature of the stimulus elements which interfered with performance. The more the high-test-anxious individual perceived a test as threatening to his self-image, the more his anxiety rose and the more his performance suffered. With the low-anxious subject, the same

elements also raised the drive level, but with the result that performance improved. Thus, when the instructions were highly evaluative, low-test-anxious subjects performed better than high; when instructions were non-evaluative, the high-anxious performed as well as, or better than, the low.

The differential effects of increased stress in a testing situation have been attributed to attentional response habits (Wine, 1971). According to this view, the subject rated low in test anxiety typically has learned to respond to heightened stress or threat with increased effort, attention and concentration on the task, while his high-anxious counterpart has learned to respond with self-oriented ruminations, anticipation of failure, catastrophizing, self-deprecation, "worry thoughts", and often distractingly severe somatic distress (Ganzer, 1968; Sarason, 1960; Wine, 1971). That the discrepancy in test performance is due to such factors and not to an innate difference in intellectual capacity would seem to be demonstrated by the studies in which, under varying experimental conditions, high- and low-test-anxious groups changed places on performance levels on intellectual tests (Sarason, 1972). Sarason cites many studies showing that under neutral conditions there is no difference among groups differing in anxiety scores, although differences were found in performance under conditions of personal threat (Sarason, 1960, 1972). Presumably, under neutral or reassuring conditions, low-anxious subjects are not sufficiently stimulated to direct their full attention and

effort to the task, while the high-anxious subjects, with their higher drive level, are not distracted by interfering, self-oriented responses.

To summarize: Mandler and Sarason had taken the concept of general anxiety and dissected out the anxiety response to a situationally-specific stress. That the two constructs are not synonymous, and the TAQ and general anxiety scales are measuring something significantly different, has been shown in a number of correlational studies (Alpert & Haber, 1967; Sarason, 1960, 1972). Yet in view of their results, Mandler and Sarason concluded that even finer discrimination was needed: "Further study of the nature of the various anxiety responses is necessary, particularly the two types of responses (compatible and incompatible with test responses) suggested in this study" (Mandler & Sarson, 1952, p. 172).

Alpert and Haber: the Achievement Anxiety Test

It was precisely these two types of responses Alpert and Haber (1960) sought to measure. The Test Anxiety Questionnaire is unidimensional in character, in that it measures only the incompatible test anxiety responses. The inference was that the presence of one kind of response meant the absence of the other. The test developed by Alpert and Haber was designed to discriminate and measure the presence and intensity of both types of anxiety response. Their Achievement Anxiety Test (AAT; see Appendix B), comprises nine items measuring facilitating anxiety (example: "Nervousness while taking a test helps me do better"), and 10 items for debilitating anxiety (example: "The more important the

examination, the less well I seem to do"). The Debilitating subscale correlates .64 with the TAS. While the two subscales correlate -.48 with each other, it is far from the perfect negative correlation implied in the Mandler and Sarason (1952) studies.

The Alpert and Haber study had two main objectives. The first was to test the assumption underlying general anxiety scales, such as Taylor's Manifest Anxiety Scale (1953), that any measure of diverse anxiety responses could act as a dipstick, showing the general level of anxiety across all situations. If this hypothesis were correct, all measures of anxiety should correlate highly. Their second objective was to assess the independence and efficacy of their Facilitating and Debilitating AAT scales, relative to general anxiety scales, to the TAS, to each other, and to academic performance measures.

They administered three general anxiety scales and three specific (the TAS and the two subscales of the AAT) to a university population. Performance measures were grade point averages and three course grades. Their results showed correlations ranging from .32 to .38 among the general scales, .24 to .38 between general and specific scales, and .40 to .64 among specific anxiety scales. It thus appeared that "specific anxiety scales and general anxiety scales measure, to a significant extent, something different" (Alpert & Haber, 1960, p. 209). Furthermore, it was found that specific anxiety scales were better predictors of academic performance than general ones, and of all measures, the combined use of

the debilitating and facilitating anxiety scales provided the best prediction of all.

Liebert and Morris: The Emotionality-Worry Scale

The analysis of the construct of debilitating test anxiety was carried a step further by Liebert and Morris (1967), who developed a short questionnaire to assess the differential properties of the two aspects of anxiety: the autonomic and the cognitive. Designed as a state measure, their E-W Scale (see Appendix C), is composed of ten items drawn from the TAQ, five relating to cognitive concern and five to autonomic arousal. For each item, the subject is asked to respond on a five-point scale, according to how he feels "right now, that is, in relation to this examination" (Liebert & Morris, 1967, p. 976).

The Liebert and Morris studies (1967, 1970) have produced a number of findings:

1. Worry, which is described as "primarily a cognitive concern about the consequences of failing, the ability of others relative to one's own, etc." (Liebert & Morris, 1967, p. 975), is inversely related to performance expectancy, whereas emotionality, described as "the physiological and affective reactions to the stress of the test situation per se" (Morris & Liebert, 1970, p. 332), is unrelated.

2. There is a significant negative relationship between worry and performance, as measured by examination grades, but no such relationship between emotionality and grades (Morris & Liebert, 1970).

3. Pulse rate, an objectively measured indication of autonomic arousal, is no more highly correlated to emotionality than to worry scores (Morris & Liebert, 1970). This finding raises questions concerning the validity of self-report measures of autonomic processes.

4. Investigation of the interactive effect of anxiety and time limits on intelligence test performance showed the Anxiety X Timing interaction could be fully accounted for by the effect of the Worry X Timing interaction. "Emotionality," they stated, "was not related to intelligence test performance" (Morris & Liebert, 1970, p. 333).

In view of their findings, Liebert and Morris conclude that the effects of test anxiety on academic or intellectual performance are due solely to the effects of the worry component.

However, while these studies suggest that emotionality is virtually a negligible factor in performance, subsequent studies (Deffenbacher, 1975; Doctor & Altman, 1969) show the role of emotionality to be neither as clearly defined nor as fully understood as previously supposed. Different methods of factoring the Worry-Emotionality components brought results which conflicted both with Liebert and Morris and with each other. Perhaps all that can be asserted with any assurance at this point is that worry clearly appears to be the more important component of test anxiety in relation to performance.

In all three groups of studies cited above, the dominant thread running through the findings is cognition. Test anxiety is, as Sarason puts it, "a proneness to emit self-centered, interfering responses when confronted with evaluative conditions" (1972, p. 383).

Readers are encouraged to refer to the appendices for practical illustrations of the material presented here and subsequently. Appendix D introduces a typical test-anxious high school student, whose symptoms and treatments will be followed at appropriate intervals throughout this review.

CHAPTER III

Systematic Desensitization and Test Anxiety

Until recently the great bulk of published research on test anxiety has been concerned with discrimination and assessment of components, situational variables, and performance correlates. Very little was being published on treatment. When such studies did begin to appear in increasing abundance, paradoxically enough, while research pointed to the preeminent role played by cognitions, the treatment being offered was typically some form of systematic desensitization.

Systematic desensitization will be described here as it is commonly carried out in test anxiety studies. The rationale and procedure of this form of treatment for test anxiety will be considered, and a number of supporting studies cited.

Systematic desensitization, one of the most serviceable tools in the behavioral repertoire, is a treatment method designed to supplant one conditioned response with another. According to Wolpe (1958), its originator:

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

In implementing this principal for the eradication of phobias, a number of responses have been employed which are considered to be

incompatible with anxiety, such as sexual, eating, and assertive responses. More generally, as in the treatment of test anxiety, deep muscle relaxation is used, it being assumed that relaxation and fear are antithetical and cannot be experienced simultaneously.

If it is practical to do so, the stimuli may be experienced in vivo, as with a closer and closer approach to a feared object. More often, however, the stimuli are presented imaginally to the client, who presumably responds to the symbolic and covert stimulus as s/he would to the actual experience. According to Wolpe's rationale, it is essential that anxiety not be felt during the desensitization procedure, since the bond between stimulus and anxiety response would then be further strengthened.

Procedure

The subject is first given training in relaxation, most commonly through the sequential tension and relaxation of muscle groups (see Appendix E). If the treatment is on an individual basis, counsellor and client together work out a hierarchy, i.e., a list of stimulus scenes thematically appropriate to the problem of test anxiety and ascending, not necessarily in temporal sequence, from the least anxiety-provoking image to the most frightening. If systematic desensitization is administered in a group format, the hierarchy is composed of items common to all members. Once the client has learned to relax quickly and completely, the scenes are presented several times and in sequence, while the client maintains a state of deep muscle relaxation. Should anxiety be

experienced, the scene is erased at once, and relaxation resumed for a short period before the scene is again presented. In this way the presumed bond between the stimulus situation and the anxiety response is weakened and eventually disappears entirely.

For an example of systematic desensitization as applied to our hypothetical test-anxious student, Mary, refer to Appendix E.

Advantages of Systematic Desensitization

Systematic desensitization is still probably the most frequently used behavioral method to reduce test anxiety. It has much to recommend it, both in terms of efficacy and of efficiency. Among the many studies which have demonstrated the effectiveness of this behavioral technique in significantly reducing test anxiety are those by Laxer and Walker (1970), Meichenbaum (1972), Richardson and Suinn (1974), Russell, Miller and June (1975), and Zemore (1975). The efficacy of systematic desensitization in significantly improving intellectual performance is less well documented; however, such improvement is shown in a number of studies, including those of Deffenbacher and Kemper (1974a, 1974b), Laxer and Walker (1970) and Meichenbaum (1972). In a recent article in which he surveyed the outcome variables of this treatment, Anton (1976) refers to 15 of 17 studies in which desensitization resulted in significant reductions of test anxiety, and 6 of 14 studies in which performance improved significantly as well. Anton suggests that when desensitization is used in conjunction with other counselling procedures, performance measures are more likely to

improve than when it is used alone. In sum, there does appear to be substantial evidence of the efficacy of this form of behavioral treatment for test anxiety.

In terms of efficiency - length of treatment, clarity and standardization of process, and economy of counsellor time - systematic desensitization has many advantages. It can easily be adapted to groups, using a standardized hierarchy of items common to all members (Deffenbacher & Kemper, 1974a, 1974b; Paul, 1966; Richardson & Suinn, 1974; Russell et al., 1975). Elaborate equipment is not needed, nor special premises. Systematic desensitization has been used successfully not just on university students but on students in junior high school (Deffenbacher & Kemper, 1974a) and even in sixth grade (Deffenbacher & Kemper, 1974b). Para-professionals can easily be trained in the procedure; according to Deffenbacher and Kemper (1974b), less than 20 hours of classroom instruction was sufficient. Even more appealing in this age of automation, it can very nearly do away with the services of the counsellor altogether: relaxation and visualization instructions have been administered quite adequately by audiotape (Richardson & Suinn, 1974). A further economy of time is a function of the method of treatment: because systematic desensitization consists of a regular progression through a pre-set hierarchy, treatment time is well delineated, in contrast to more open-ended counselling procedures. Numbers of sessions generally range from six to eight.

In view of its evident advantages, it can easily be understood

why systematic desensitization has been the behavioral treatment of choice. And yet, in view of the findings of researchers cited in the previous chapter, it is remarkable as well as puzzling that this form of treatment has been as successful in reducing test anxiety, both on performance and self-report measures, as it has been, since it appears to ignore the very cognitive components considered to be most crucial in terms of performance. As Wine (1971) states:

> It has implicitly been assumed that test anxiety differs only in degree from the specific anxieties and phobias (e.g., rat, spider, snake) dealt with in much of the behavior modification literature. It should also be noted that by training test-anxious subjects to relax in the presence of progressively more stressful stimuli, a systematic desensitization treatment approach assumes that the emotional arousal component of test anxiety is its defining characteristic. (p. 101)

Since emotional arousal is generally considered to have a negligible effect on performance (Liebert & Morris, 1967; Morris & Liebert, 1970), the question naturally arises: why does systematic desensitization work? A number of researchers have addressed themselves to this question. The next section will consider some of their theories and the modifications to the traditional systematic desensitization paradigm which have resulted from them.

CHAPTER IV

New Directions in Desensitization and Self-Management

In recent years many changes have been rung on the basic notes of systematic desensitization: relaxation, hierarchy and stimulus cues. Like other behavioral techniques, desensitization is being re-evaluated and modified in the light of a burgeoning new trend in behavior therapy, that of self-management. This section will consider the implications of this trend and the experimentation with new forms of systematic desensitization which have evolved from it.

Behavior therapy is currently undergoing a pervasive change both in theory and practice. The terms "self-management" and "self-control" are much in evidence in the books and journals of the last few years (Goldfried & Merbaum, 1973; Lazarus, 1971; Rimm & Masters, 1974; Watson & Tharp, 1972). Implicit in the concept of self-management, self-control, is at least a partial shift in focus from the external, objectively measurable, behavioral and environmental factors, to the internal, covert, mediating processes. The client himself, making a personal, goal-directed decision, becomes the agent of change, making use not just of environmental factors but of those variables inside his own skin to effect the motivation and contingencies for the desired behavior modification. Cognitions, once out of bounds to behaviorists, have become fair game for therapeutic intervention and modification. Behavioral counselling is becoming less a matter of manipulation of the client

and his environment with the therapist pulling the strings, and more a structured program of teaching the client how to pull his own strings.

Foremost among the theorists working in the self-management orientation is M. R. Goldfried. It is Goldfried's hypothesis that systematic desensitization works, not for the reason its originator, Wolpe (1958), thought, but because it involves the "learning of a general anxiety-reducing skill, rather than the passive desensitization to specific aversive stimuli" (Goldfried, 1973a). Systematic desensitization, then is not an operation performed by a therapist on an inert and passive subject; rather:

> During the process of systematic desensitization, the client is taught to become sensitive to his proprioceptive cues for tension and to react to these cues with his newly acquired skill in muscular relaxation. He is also taught to differentiate the proprioceptive feedback associated with tension from that associated with relaxation, and to identify this feeling of "calm" with the state of muscular relaxation. Once the client has been successful in reducing muscular tension and experiencing the feeling of "calm" in the aversive situation, he is in a better position to approach, rather than avoid, the heretofore fearful object . . . What the client learns is a means of actively coping with the anxiety, rather than an immediate replacement for it. (Goldfried, 1973a, p. 249)

The fact that systematic desensitization tends to result in a decrease of general fearfulness and even a reduction of anxiety regarding widely differing fears, is indicative, not of stimulus generalization, in Goldfried's view, but of the application of a new coping response to anxiety.

The concept of relaxation as an active skill suggested important modifications to the standard systematic desensitization treatment paradigm. No longer was it logically necessary for the passively receptive client to signal anxiety at his first sensation of tension and arousal, and then obediently to erase the anxiety-provoking scene from his mind. Now, in what might be called an imaginal rehearsal, he was directed to maintain the image and to use his newly acquired skills to relax away the anxiety. Goldfried reported that, while Wolpe maintained that continued exposure to the anxiety-provoking image would resensitize the subject, his client, on the contrary, invariably managed to relax away the tension.

Goldfried suggests two further modifications to the traditional systematic desensitization paradigm:

1. Since the ability to perceive and reduce autonomic anxiety responses is the central focus of treatment and not the automatic deconditioning of specific situational cues, the hierarchy need not be monothematic. In one single hierarchy, graded according to the level of anxiety arousal, could be a variety of different problematic situations. This is a particular advantage when the client

has many areas of anxiety, and under the old system would be required to work through a number of separate hierarchies.

2. Again consistent with his view of relaxation as an active coping skill, Goldfried encourages the client to develop an awareness of his proprioceptive cues and to respond to them by relaxation in in vivo situations. In theory, the Wolpean explanation of the reciprocal inhibition process would seem to preclude the experiencing of a specific situational anxiety once the counter conditioning has taken place. The fact that this is often not the case (Goldfried, 1973a), lends support to Goldfried's views and also to a treatment method which teaches the client to cope with anxiety whenever and wherever he finds it.

The Diminishing Hierarchy

It seems a logical sequal to the concept of relaxation as a learned coping skill that the necessity for having a hierarchy at all would be called into question. And so it has been, by a number of experimenters. In an experimental study for the treatment of test anxiety, in which they compared systematic desensitization with what they termed "accelerated massed desensitization", Richardson and Suinn (1974) gave one experimental group a one-hour training session in relaxation followed a week later by exposure to just the top three items on the same hierarchy used by the systematic desensitization group. Each item was presented for 30 seconds, and there was no signalling of anxiety; subjects were expected to practise relaxing away anxiety. As the results for the two groups

were equivalent, both significantly reducing self-reported test anxiety, Richardson and Suinn concluded, "The use of a carefully graduated hierarchy and the signalling of anxiety may not be necessary and may even hamper the attainment of self-control over maladaptive anxious responding" (Richardson & Suinn, 1974, p. 458).

Cue-controlled Relaxation

In several recent studies, the hierarchy has been stripped away entirely and self-controlled relaxation becomes the whole treatment (Russell, Miller & June, 1974, 1975; Russell & Sipich, 1973, 1974). Subjects are given relaxation training, following which a relaxation response is conditioned to a cue word such as "calm", which the subject repeats to himself on exhalation. Focused breathing, the cue word, and relaxation become the learned response to perceived anxiety.

Comparing "cue-controlled relaxation" with systematic desensitization for test anxiety, Russell et al. (1975) found that they both effected significant reductions in self-reported anxiety; there was no significant difference between treatment groups. In two case studies, Russell and Sipich (1973, 1974) report excellent results with test-anxious students in just five weekly sessions. In the second study, the student improved markedly, not only in self-report measures, but in grade point average, going from an average of 1. (failing) to 3.5 on a scale of 4.

Relaxation as Self-control Studies

A case study reported by Deffenbacher and Rivera (1975) documents the treatment given two test-anxious women who had failed civil service typing exams. The focus of the treatment was relaxation as self-control (RSC, or "applied relaxation", as it is also called), the goals being to help the subjects to become aware of their own anxiety signals and to quickly reduce their tension and anxiety by applying deep relaxation in response to these internal and external cues. Counselling consisted of the training and practice of relaxation skills, training in recognition of internal anxiety cues, and finally practice in bringing discrimination and self-control skills together to reduce anxiety. The results of treatment were a significant lowering of test anxiety as measured by the TAS, and, of even greater importance to the subjects, success on their civil service examinations, one performing at the 94th and the other at the 86th percentile. Furthermore, "both women reported use of the RSC procedures in other settings, e.g., at work, in stressful interactions with spouses and children, and described a general increase in relaxation and self-confidence" (Deffenbacher & Rivera, 1975, p.8).

Further evidence of the efficacy of discrimination training and applied relaxation was shown in two new studies by Deffenbacher (in press) and Deffenbacher and Snyder (1976) which resulted in significant reductions in debilitating test anxiety and increases in facilitating anxiety, and in the case of the latter study significant reductions in general anxiety as well.

Support for the concept of relaxation as an active coping skill was also found in a study by Goldfried and Trier (1974). In an attempt to resolve the problem of inconsistent and conflicting findings on the benefits of relaxation training, they compared two ways of presenting relaxation training for the treatment of speech anxiety. The treatment group which was instructed in relaxation as an active skill to relieve stress was superior to the group trained in relaxation as an automatic counter-conditioner. Not only did the self-control group show greater performance and self-report improvement on the target behavior of speech anxiety, but greater generalization and continued improvement on follow-up, lending support to the view of self-control relaxation as a learned skill that improves with practice.

A growing number of other studies have demonstrated the efficacy of applied relaxation, or relaxation-self-control. Denney (1974) found that the applied relaxation group, intended as a control in his comparison study of four variations of systematic desensitization for test anxiety, was in fact equally, or more, effective than any of the other treatment groups. Not only did they show significant improvement over control subjects on four self-report and performance measures, but they exceeded all the desensitization groups, and in one of the performance measures (grade point average), significantly bettered the other four treatment groups. A study by Zemore (1975) found relaxation-self-control equivalent to systematic desensitization in generalization from

directly-treated to "unrelated" fears - although the unrelatedness of test anxiety and speech anxiety might be questioned. In another recent study (Spiegler, Cooley, Marshall, Prince, Puckett, Skenazy, 1976), relaxation-self-control was superior to systematic desensitization on three measures of test anxiety, general anxiety, and an unrelated situational stress measure. A 1976 study by Chang-Liang and Denney showed applied relaxation to be more effective than systematic desensitization or relaxation only, on both test and general anxiety measures, and significantly more effective than desensitization on the performance measure.

Sherman and Plummer (1973), working with "normal" student subjects, found that relaxation training alone produced diverse self-reported benefits over a wide range of stressful situations. A two-year follow up (Sherman, 1975) reported that relaxation skills were still being used to advantage by a high percentage of the participants. Sherman concludes that "it may no longer be premature to recommend that behavioral practitioners consider training selected clients in skills of self-relaxation for purposes of controlling tension and reducing dysphoric affect in stressful situations" (p. 420).

As has been shown, the concept of relaxation-self-control has challenged the traditional systematic desensitization paradigm. While significantly superior efficacy of treatment has not been demonstrated thus far, relaxation-self-control techniques do offer promise of at least equivalent results with an abbreviated procedure.

The shift in focus from external to internal processes has led away from the traditional procedures of manipulating environmental cues to condition a target response. Experimenters working in the self-management orientation have emphasized instead the discrimination and utilization of physiological cues. In the next section the role of cognitive cues in the mediation of behavior change will be discussed.

CHAPTER V

The Cognitive Component

As was noted in Chapter II, the analysis of test anxiety emphasized the cognitive, or worry, component of the response pattern. In spite of this, initial treatment programs were directed at the emotionality factor, systematic desensitization having been specifically designed to eradicate an autonomically mediated emotional response. Even as systematic desensitization was modified, and applied relaxation became the central focus of some test anxiety treatments, the cognitive component was not dealt with directly, and emotionality remained the central target of treatment. Relaxation-self-control proved to be equivalent to, though not significantly better than, desensitization in terms of self-report anxiety reduction; and there were indications of its efficacy in terms of improved performance as well (Chang-Liang & Denney, 1976; Deffenbacher, 1976; Deffenbacher & Rivera, 1975; Denney, 1974; Goldfried & Trier, 1974).

But what of the cognitive, or worry, aspect of test anxiety? It is, finally, being taken into account in a number of treatment paradigms of the last few years. A cognitive orientation, of course, is particularly appropriate to the trend toward self-management discussed in the previous chapter. This chapter will present some of the theories and studies contributing to a more cognitive approach to the alleviation of test anxiety. The work of Albert Ellis, pioneer and still a strong influence in cognitive therapy, will be described, as his theories are the cornerstones of

several cognitive-behavioral treatments for test anxiety. Self-verbalization and cognitive modeling techniques will be discussed and a number of illustrative studies cited. While not all of the studies deal with test anxiety, they are all, nonetheless, relevant to the cognitive-behavioral treatment programs presented in the next chapter.

Laxer and Walker (1970), in a study designed to assess the importance of relaxation to the efficacy of systematic desensitization, found that only in the groups in which relaxation formed all or part of the treatment was test anxiety reduced. Thus it might seem that relaxation is the necessary - some would say sufficient - component for treatment. However, if relaxation is the sine qua non of systematic desensitization, both in its traditional and radically modified forms, the question still remains as to why it is effective, in view of the crucial role of the cognitive component of test anxiety. One possible answer is that not only does relaxation reduce autonomic distress, but it distracts, at least temporarily, the worry thoughts. It is not possible to concentrate on relaxing and at the same time to be thinking how terrible the situation is, how failure is imminent, how stupid one is, etc. Just the interruption of the negative thoughts may be beneficial in itself, and may prevent a pernicious spiraling of anxiety.

Cognitive-behavioral therapists, however, take a considerably more aggressive stance toward this aspect of anxiety. Focusing explicitly on the worry thoughts, they seek not only to interrupt but

to dispute them, and to replace them with "self-talk" which is both constructive and rational. Foremost among the semantic, or cognitive, theorists and therapists is Albert Ellis, whose Rational Emotive Therapy (RET) has been a major influence in cognitive-behavioral therapy.

Rational Emotive Therapy

The basic assumption underlying RET is the interconnectedness of thought and emotion. "A large part of what we call emotion . . . is nothing more or less than a certain kind - a biased, prejudiced, or strongly evaluative kind - of thinking" (Ellis, 1973, p. 172). According to Ellis, emotion cannot be sustained without thought, and such thought takes the form of self-talk, or internalized sentences, which we may often not be aware of. In the case of such pernicious emotional responses as inappropriate anxiety, depression, or anger, the internal sentences are reaffirmations of faulty and irrational beliefs. Among the most common illogical beliefs which inevitably contribute to self-defeat and neurosis, Ellis lists these:

1. The idea that it is a dire necessity for an adult to be loved or approved by everyone for everything he does . . .
2. The idea that it is terrible, horrible, and catastrophic when things are not the way one would like them to be . . .
3. The idea that one should be thoroughly competent, adequate, intelligent, and achieving in all possible respects .. .

> 4. The idea that one has virtually no control over one's emotions and that one cannot help feeling certain things, instead of the idea that one has enormous control over one's emotions if one chooses to work at controlling them and to practise saying the right kinds of sentences to oneself. (Ellis, 1973, p. 176-7)

It is Ellis's belief that ideas such as these have their genesis in childhood, when the individual is truly helpless and vulnerable, and is conditioned to fear such judgments as "badness", "unlovableness", "worthlessness", etc. The unconditioned stimulus accompanying these concepts or labels was very real: physical pain or discomfort or loss of support or abandonment. In later years, however, rarely is there any real threat to physical, much less survival, needs accompanying these same judgments, and yet there is no extinction of the conditioned response, i.e., fear, anxiety, depression, etc. It is Ellis's idea that these emotional responses are kept alive by irrational beliefs indoctrinated by parents, maintained by our society and culture, fostered by the mass media, and continually re-indoctrinated through conscious or "preconscious" auto-suggestion, that is, by the individual himself.

> They were first told that it was terrible, horrible, and awful if they were unloved or disapproved; and they then kept telling themselves that being rejected or unapproved was frightful. This twice-told tale, in the great majority of instances, constituted their neurosis. (Ellis, 1962, p. 18)

Ellis has conceptualized his theory into a simplified "A-B-C" model: It is not "A", the activating event, which causes "C", the emotional consequences, but "B", the intervening belief system, through which the person perceives and interprets - and talks to himself about - "A". Since these destructive and crippling emotions are generated and sustained through self-verbalizations, it is the major role of an RET therapist to serve "as a frank counter-propagandist who directly contradicts and denies the self-defeating propaganda and superstitions which the patient has originally learned and . . . is now self-instilling" (Ibid, p. 95). In spite of the cognitive emphasis, RET does not overlook the potential for change in behavioral assignments. Clients are encouraged and directed to engage in hitherto avoided activities, in order that the experience will further convince them of the irrationality of their beliefs. However, in the choice of therapeutic goals, Ellis is clearly not in the behavioral camp:

> Both these main therapeutic activities are consciously performed with one main goal in mind: namely, that of finally inducing the patient to internalize a rational philosophy of life, just as he originally learned and internalized the irrational views of his parents and his community. (Ibid, p. 95)

That the ideas of Ellis have been applied to the problem of test anxiety seems highly appropriate, if one remembers the presumed nature of test anxiety. As discussed in Chapter II, the more evaluative the testing situation - that is, the more there is a

perceived threat to the anxiety-prone subject's self-image - the higher the anxiety and the poorer the performance. What is the nature of this perceived threat? Ellis would undoubtedly say that the anxious student is thinking that it is a dire necessity to achieve brilliantly in order to be of any value, and since the student's entire self-worth is thus at stake, naturally anxiety becomes intense. For an illustration of the way an RET counsellor might deal with these counter-productive thoughts, please refer to Appendix F.

Cognitive Mediation: Self-Verbalization

There is a growing body of evidence to support Ellis's hypothesis that cognitions in the form of self-verbalization can affect emotional states. Several recent studies which have relevance to test anxiety are described below.

A study by Velten (1973) demonstrates the influence on mood of self-statements, even when arbitrarily assigned. Subjects read, first silently and then aloud, a set of "elation", "depression", or "neutral" self-referent statements. On the post-experiment questionnaire, the "elation" group reported their mood in such terms as "happier", "more confident", "energetic", "alive", while the "depression" subjects reported themselves to be "sad and lonesome", "tired", "unloved", "like crying" and "rejected". Performance tests as well, showed significant between-group differences in the expected direction, in such measures as writing speed, decision and reaction time, and spontaneous verbalizations.

An unpublished 1970 study by Maes and Heimann is reported by Rimm and Masters (1974). Rational-emotive therapy was compared

with client-centered therapy and systematic desensitization in the treatment of test-anxious high school students, during ten sessions over a five-week period. Dependent measures were an anxiety self-report, galvanic skin response, and heart rate, in a post-treatment analogue test situation. While the anxiety inventory showed no difference between treatment groups, the desensitization and RET groups showed significantly less emotional reactivity on the physiological measures than did the client-centered and control groups.

In a 1974 article, Goldfried, Decenteceo and Weinberg describe a procedure which they call "systematic rational restructuring", in which, drawing on Ellis's RET, they help the client to "control his anxiety by modifying the cognitive set with which he approaches potentially upsetting events" (Goldfried et al., 1974, p. 252). Their treatment method involves:

1. Presentation of the rationale of thoughts mediating feelings.

2. Overview of Ellis's irrational assumptions.

3. Analysis of the client's problem in RET terms.

4. Teaching the client to modify his/her internal sentences.

This last step is done via behavioral rehearsal, in overt or imaginal form, and in hierarchical sequence. This therapeutic approach is similar to Goldfried's relaxation-self-control version of systematic desensitization, with RET techniques replacing relaxation as the active coping skill.

Cognitive Modeling and Self-Instruction

Modeling, long a part of the behavioral therapy repertoire, has also been adapted to a cognitive orientation. Just as systematic desensitization was reassessed in terms of the learning of an active coping skill (Goldfried, 1973a), so modeling is now being viewed as not simply a relatively passive observation and mirroring process, but as the active learning of such cognitive subtleties as assessment, discrimination, problem-solving, and self-instruction.

This new viewpoint has been incorporated into a number of recent experimental studies. Meichenbaum and Goodman (1971), working with impulsive children, demonstrated the efficacy of a self-instructional model who verbalized the step-by-step procedures, both cognitive and behavioral, which he was following in order to achieve his objective. In another procedure, later incorporated into his test anxiety program, Meichenbaum (1971) experimented with "coping" models. Traditionally a "mastery" model has demonstrated successful control of a situation; for example, snake phobics are typically shown films in which models fearlessly handle snakes. In a new approach to this same situation, Meichenbaum used a 2 X 2 experimental design in which there were four modeling conditions: Mastery, mastery + verbalization, coping, and coping + verbalization. The coping model showed initial fear, gradual approach, and finally mastery. When verbalization was added, there was a commentary of the inner dialogue, progressing from fear to self-challenge, self-encouragement, and finally self-congratulation. Both coping model groups were consistently and significantly improved on performance

and self-report measures, the coping + verbalization group showing the greatest improvement of all. Meichenbaum concludes:

> The efficacy of the coping model in reducing fear may be based on (a) the perceived similarity between the observer and the model which facilitates imitation, that is, the 'appropriateness' of the model for the observer and/or (b) the explicit modeling of coping techniques to be used to overcome fears. The detailed modeling of how to cope and reduce anxiety by means of slow deep breaths and by means of self-instructional, self-assuring, and self-rewarding statements facilitated behavioral change. (Meichenbaum, 1971, p. 304)

Sarason's study (1975) on a modeling treatment program for test anxiety produced similar conclusions. Of the five modeling conditions (coping anxious, non-coping anxious, non-anxious, neutral, control), the coping-anxious model proved significantly better than the other conditions in assisting highly test-anxious students with a memory task. This condition also resulted in the best performance for the low-anxious subjects, as well.

In another study on test anxiety (Sarason, 1973), observation of a model who performed a difficult anagram task while verbalizing general problem-solving principles relevant to the task, resulted in high-test-anxious subjects solving anagram tasks more quickly than low-test-anxious subjects. This was a reversal of the results in the other modeling conditions (verbalizing without reference to

general principles, non-verbalizing, and control). In his discussion of the results, Sarason comments:

> Perhaps the key aspect of the performance-verbalization-principles condition is that it permitted the subject to observe useful cognitive strategies displayed by the model. In addition, the subject could observe the model's business-like and auto-critical behavior. Aided by the information provided through these observations, high-TAS subjects may have become less self-preoccupied and anxious and are more able to guide their own bahavior. (Sarason, 1973, p. 60)

The studies described in this and the preceeding chapter have been attempts to approach test anxiety reduction through either the autonomic or the cognitive mediation. The following chapter will present a number of test anxiety treatment "packages", designed to treat both the emotionality and the worry components of test anxiety by a combination of cognitive and behavioral techniques.

CHAPTER VI

Cognitive-Behavioral Treatment Programs

A few experimenters have drawn together components derived from both cognitive and behavior therapies in an attempt to find a strategy for attacking test anxiety on the two fronts of emotionality and worry. This chapter will describe in chronological order several of these new, experimental treatment programs in some detail - their procedures, results and comparative efficacy. Of the programs described, the one by Donald Meichenbaum is probably the most eclectic and comprehensive of any outcome study on test anxiety to date, and as such is given special emphasis and illustration in this review.

Meichenbaum, Gilmore, and Fedoravicius

A study by Meichenbaum, Gilmore, and Fedoravicius in 1971 compared systematic desensitization with RET and a combination of the two, for the treatment of speech anxiety. While speech anxiety is not the focus of this paper, it is similar to test anxiety in its specificity, its evaluative nature, and the methods of treatment which have been applied to it; and thus this study, preliminary to Meichenbaum's test anxiety work, is relevant to this review.

Fifty-three subjects met in small groups for eight weekly one-hour sessions. There were four treatment conditions:

Group desensitization treatment followed the usual sequence of progressive relaxation training, group hierarchy construction,

imagery training, and finally the desensitization procedure.

Group insight-oriented psychotherapy focused on the RET rationale, and directed the subjects toward awareness of their self-verbalizations in anxiety-arousing situations, the irrationality and destructiveness of these self-statements, and finally the production of incompatible self-verbalizations and behaviors.

Combined group desensitization and insight received the same procedures as the systematic desensitization group, except that in sessions four through eight, the RET treatment was introduced for one-half the session.

A speech-discussion placebo group and a no-treatment group served as controls for such factors as expectation, therapist-patient relationship, environmental influences, etc. In addition to the 53 subjects, 15 low-speech-anxious subjects were selected from responses of a generally administered fear survey schedule. These subjects afforded a "base-line measurement" and a comparison for high speech-anxious members.

Results on dependent measures, which consisted of both behavioral and self-report measures, were summarized as follows:

> Greatest (and approximately equal) improvement was seen with the desensitization and the insight-treatment conditions. Less consistent but general improvement was evidenced by the combined desensitization plus insight group and the speech discussion (placebo control) condition. The latter conditions appeared significantly more improved than did the

> waiting-list control condition. Waiting-list control subjects showed relatively unchanged levels of anxiety over the period of the study, and in measures of speech disruption they showed a slight worsening in performance. (p. 417)

An interesting additional feature of this study was the inclusion of three self-report measures for the purpose of assessing treatment generalization. The Social Avoidance and Distress Scale and the Fear of Negative Evaluation Scale presumably reflect more chronic social anxiety, as opposed to acute situational stress, and the third, the Confidence of Speaking Scale, measures chronic speech anxiety. These results were consistent with the other dependent measures, the desensitization and insight groups showing greater improvement than the combined group, with all three significantly improved over the two control groups. Improvement was maintained at three-month follow-up.

Post-treatment performance on behavioral, cognitive, and self-report measures of the subjects in the two most effective groups (desensitization and insight) did not differ significantly from the low-speech-anxious subjects - an added indication of the treatments' success.

One further interesting aspect to this study concerns the interactional effects of particular treatments on particular subjects. Subjects were classified into two type-groups on the basis of their scores on the Social Avoidance and Distress Scale. For one type, speech anxiety appeared to be a specific and circumscribed problem,

while for the other it was part of a general social anxiety. Those in the first group benefitted more from systematic desensitization, while those who were more generally anxious found insight and combined treatment more helpful.

Meichenbaum

Perhaps nowhere is the marriage of behavioral and cognitive psychology better illustrated than in Meichenbaum's program of "stress innoculation" for anxiety (1975c), in which ingredients of Albert Ellis's RET are blended with such tried and true behaviorist standbys as relaxation, hierarchies, cues, and modeling. Each of these elements has been adapted to a self-control orientation and applied to the problems of test anxiety in the treatment program described below.

Following up on his speech anxiety study, Meichenbaum (1972) compared the efficacy of a "cognitive modification" group with a systematic desensitization and a waiting-list control group in the treatment of test anxiety. This time, in contrast to the combined group in the speech-anxiety study, Meichanbaum's "treatment package" was both eclectic and integrated:

> The cognitive modification treatment procedure combined a specific insight-oriented therapy which fostered an awareness of anxiety-engendering thoughts with a modified desensitization procedure which employed coping imagery to handle anxiety by means of relaxation and task-relevant self-instructions. The cognitive modification treatment was thus designed to deal with the two major components of test

anxiety, worry and emotionality. (p. 372)

The two eight-member treatment groups met in eight sessions. Because of scheduling difficulties, three members of each group had to meet on an individual basis, thus affording a comparison between group and individual treatment. Just as in the speech anxiety study, ten low-test-anxious subjects provided a baseline for anxiety measures and a comparison for the high-test-anxious subjects.

> Two general classes of dependent measures were used to assess the relative effectiveness of the different treatment approaches. The first class of measures included performance measures which are influenced by the S's anxiety in a test-taking situation. Within the analogue laboratory test situation, the measures were performance on digit symbol tests and the Raven's Matrices test; and second, a measure of the S's scholastic performance was determined from his grade point average. The second class of measures involved self-report indexes . . . designed to assess (a) the degree to which test anxiety was a problem . . . as indicated on the Alpert-Haber scale and (b) the S's emotional and cognitive state during the analogue test-taking situation as indicated on the Anxiety Adjective Checklist and on the anxiety differential. (p. 373)

The two treatments were conducted as follows:

Group desensitization: this group followed the usual procedures of progressive relaxation, group hierarchy construction,

imagery training, and group desensitization.

Cognitive modification: this group received:

1. RET, as previously described in this paper, with special emphasis on self-statements evoked by testing situations, and the formulation of incompatible self-statements which would facilitate task-relevance.

2. Systematic desensitization, as previously described, but with several important modifications:

- particular emphasis on slow, deep breathing;

- consistent with Goldfried's (1973a) theory, the subjects were instructed to maintain the image during the experiencing of anxiety and to continue with active relaxation;

- instead of the mastery imagery of standard desensitization, a coping-model imagery was used. Subjects were asked to imagine themselves in the situation, experiencing anxiety, coping with it through relaxation, deep breathing, and self-instructions to relax and to be task-relevant. Facilitative positive self-statements were encouraged. Only if this covert coping rehearsal did not reduce the level of their anxiety were they to signal the therapist and erase the image. "The assumption underlying the use of such coping imagery is that the closer imagery comes to represent 'real' experiences of the most complete sort, the greater the likelihood of generalization" (Meichenbaum, 1972, p. 374).

Although there were no significant differences between the treatment groups, the results of the post-tests were encouraging

for the combined treatment:

> All performance measures (except Raven's Matrices) and self-report measures . . . objective and subjective, overt and covert, indicated similar results, with subjects in the cognitive modification group manifesting greatest improvement relative to the desensitization treatment group and relative to the waiting-list control group. Further, the superiority of the cognitive modification treatment group was maintained at the one-month follow-up, and in fact Ss in the cognitive modification treatment group did not significantly differ from the low test anxious Ss following treatment. Less consistent but general improvement was evidenced by the desensitization treatment group, who appeared significantly more improved than did the waiting-list control Ss. (p. 377)

It was noted also that only subjects in the cognitive modification group reported a significant increase in facilitative anxiety, an improvement which was maintained at the one-month follow-up. Meichenbaum interprets this finding as evidence that the cognitive modification group had learned to label their anxiety as facilitative, and to use it as a helpful cue for the application of learned coping skills.

Since there were no significant differences between individual and group treatment results, Meichenbaum concluded that group administration is advantageous, both in terms of therapist time and also - in the cognitive modification treatment - somewhat more effective because of peer interaction.

Little and Jackson

Consistent with the analysis of test anxiety as primarily a problem of worry thoughts (Liebert & Morris, 1967; Mandler & Sarason, 1952; Wine, 1971), a study by Little and Jackson (1974) focused on training 7th and 8th graders to direct their attention away from task-irrelevant distracting thoughts and on to the task at hand. Thirty-four high-test-anxious subjects were assigned to five conditions: attention training, relaxation training, combined attention and relaxation, placebo expectancy, and no-treatment control.

Attentional training, over six sessions, consisted of an audiotaped rationale repeated over several sessions, two videotapes of models of the subjects' age coping with and overcoming their test anxiety, and intensive practice in working at academic tasks while being instructed to focus full attention on the work. In the first session, the experimenter gave verbal attention-directing instructions. In session two, the verbal instructions were preceded by a tone. In sessions three, four, and five, the tone was accompanied by a verbal reminder for only the first practice task, and then faded out. In session six, the tone, too, was discontinued.

Relaxation alone consisted of six sessions of the treatment rationale and training in progressive relaxation (Paul, 1966).

Attention + Relaxation consisted of the same number of sessions with both components being included, necessitating less time on the

test practice.

Placebo expectancy was like the attention group in exposure to tasks, but without the attention-directing instructions.

Comparisons of pre- and post-tests on self-report scales show the combined group as experiencing a significant decrease in test anxiety and also general anxiety as measured by the General Anxiety Scale for Children (GASC; Sarason, Davidson, Lighthall, Waite, & Ruebush, 1960), while neither relaxation nor attention alone were effective. Results were less clear-cut on performance measures (WISC and DAT subtests), with the greatest number of significant improvements scored by the attention and placebo-expectancy groups. Since these groups had the most test practice, it may be assumed that "practice in scholastic tests enhances performance among test-anxious junior high school students" (Little & Jackson, 1974, p. 177). Little and Jackson attribute this result to greater practice in controlling the worry factor. The fact that the combined group, while apparently experiencing less anxiety, nevertheless showed significant improvement in only three of the eight performance tests would suggest that "changes in test anxiety are somewhat independent of performance on academic tests that reputedly present cues for test anxiety" (p. 178).

Hahnloser

A recent study by Hahnloser (1974) combines cognitive restructuring with relaxation as self-control in an experimental treatment for test anxiety. Forty-six high-anxious subjects,

chosen through AAT screening, were assigned to four groups: cognitive restructuring, relaxation, combined, and waiting-list control. Four one-hour sessions were given, each group being divided in half.

Cognitive restructuring: objective of the training was to:

1. Bring into awareness the distracting, negative self-verbalizations elicited in test situations, i.e., to "operationalize" the worry component.

2. Help the subjects recognize the irrationality of the self-verbalizations.

3. Teach the subjects to dispute in RET fashion the inappropriate self-statements, and to acquire a new and more appropriate cognitive set toward test taking.

4. Teach subjects to focus attention and inhibit self-referent thoughts through intensive practice in dealing with tests. (Experimenter modeled self-instruction to attend to task).

5. Since this group received no relaxation training, they were told to regard their autonomic arousal as helpful, as the body's way of "gearing up" for a challenge.

In sum: "The cognitive modification treatment combined the acquiring of a new attitude toward test taking, the gaining of insight into self-defeating thought patterns, and intensive training in test-taking behavior" (p. 28).

Relaxation: This group was told that poor performance was the result of interference by autonomic arousal, and that relaxation could reduce the anxiety and tension. They were taught progressive

relaxation, differential relaxation and eventually applied relaxation during test-taking situations.

Combined group: The same procedures as the above were taught, except that the combined group subjects were told that relaxation helps to reduce anxiety. The experimenter modeled a student coping with test anxiety by relaxation and self-instruction to focus attention.

Three ways of handling frustration during an examination demonstrate the group differences:

- Cognitive: O.K., I cannot solve this particular problem -- it would be nice if I could, but rather than worrying about it, I'll continue and concentrate on solving the next problem.
- Relaxation: O.K., I cannot solve this particular problem -- I'll take a deep breath and relax . . . and now go on . . .
- Combined: O.K., I cannot solve this particular problem -- I'll take a deep breath and relax -- I don't worry about this one but I'll continue and concentrate on solving the next problem. (p. 31)

Results: all three treatment groups showed significant reduction in debilitating anxiety and worry. The first two, but not the combined, also showed significant reduction in emotionality. The combined group was the only one to show a significant increase in facilitating anxiety, and the only one to significantly improve on any performance test (the digit symbol). There were only two significant between-group differences: the combined group showed

more facilitating anxiety than either the relaxation or the control, and a greater reduction in debilitating anxiety on follow-up.

Rank ordering showed the cognitive and combined groups holding 15 of the 18 first and second ranks in the seven dependent variables.

Commenting on the four-session treatment schedule, Hahnloser states that "a significant reduction of test anxiety may be obtained from cognitive modification treatment in a relatively short time period" (p. 54). Follow-up showed the reduction was maintained even at the time of academic examinations one month later.

In summary, Hahnloser claims:

> Results of this study indicate that training in progressive relaxation combined with intensive practice in how to apply the relaxation techniques when experiencing stress before and during exams is effective in reducing test anxiety. (p. 58)

Study Skills and Desensitization Programs

It should be noted, in passing, that a somewhat different line of approach has been taken by some experimenters who have combined desensitization with study-skills training. One such program for high-test-anxious subjects was conducted by Katahn, Strenger, and Cherry (1966). Systematic desensitization and practice in applying relaxation *in vivo* were intended to alleviate conditioned anxiety, while study techniques were included to alleviate anxiety occasioned by inadequate preparation or skills for the examination situation. This combined cognitive-behavioral program resulted in significantly improved and maintained grade point averages and significantly

lowered self-report test anxiety. The subjects reported that they found the relaxation and desensitization procedures helpful, but felt that the discussion and study advice were the most important elements of their treatment. A study by Allen (1971), comparing a cognitive-behavioral (study counselling plus desensitization) treatment with desensitization and study counselling separately, showed similarly promising results for the combined treatment. Subjects in the combined group showed significant reductions in physiological arousal and significant improvement in academic performance, superior to subjects in the single treatment or control groups.

To summarize: the six studies reviewed in this chapter show, with one exception, consistent superiority of treatment paradigms which combine cognitive and behavioral strategies in a two-pronged attack on test anxiety. The exception is the study by Meichenbaum et al. (1971) in which the combined approach was used in only half of the sessions and without integration, RET taking up one-half hour of each of the last four sessions. In other studies, the combined groups showed superior results in terms of lowered test anxiety, increased facilitative anxiety, follow-up scores, and, in general (with the exception of Little and Jackson, 1974) better performance scores, than single-component groups or controls. The efficacy of bringing together, in an integrated program, appropriate techniques from both orientations, as exemplified particularly in Meichenbaum's comprehensive and multi-faceted therapeutic approach, seems to be

supported by these outcome studies.

A practical step-by-step illustration of Meichenbaum's treatment techniques for test anxiety may be found in Appendix G.

CHAPTER VII

Research Review and Discussion

This thesis has presented a number of diverse points of view on test anxiety from many sources. Theories regarding the nature and effects of test anxiety were followed by the various treatments, behavioral, cognitive, and combined, which have been applied to it. The intent of this chapter is to consider the current state of development of test-anxiety theory and treatment. To return to some of the questions asked in the opening chapter: What is test anxiety? Can anything be done about it? Is there a single, best treatment? A further question to be considered: what research problems are inherent in assessing and comparing test-anxiety treatments? And, finally, where might research and treatment go from here?

What Is Known?

In the welter of frequently confusing and equivocal evidence, what can be affirmed with any degree of certainty regarding test anxiety?

It could be said that the way in which it manifests itself is well known:

> The high test-anxious scorer . . . tends to be self-oriented and to personalize the situations and challenges with which he finds himself confronted. There is considerable evidence that he is strongly self-depreciative and ruminative. . . Cues that suggest his behavior will be evaluated according to some norm or standard of excellence seem to constrict his focus.

> Whereas the less test-anxious person plunges into a task when he thinks he is being evaluated, the highly text-anxious individual plunges inward. He either (1) neglects or misinterprets informational cues that may be readily available to him or (2) experiences attentional blocks. (Sarason, 1972, p. 391)

It is known also that test anxiety can be alleviated, and by a number of different methods: systematic desensitization, relaxation-self-control, cognitive modeling, cognitive-behavioral "packages". Treatment can be administered individually or in groups, utilizing tapes, videotapes, film, live models, and/or live counsellors.

What else has been established by the research cited in the previous pages?

Relaxation as self-control would appear to be solidly established as a useful self-help tool in a variety of stressful situations (Deffenbacher & Rivera, 1975; Goldfried & Trier, 1974; Laxer & Walker, 1970; Russell et al., 1974, 1975). Follow-up reports have been especially encouraging (Goldfried & Trier, 1974; Russell & Sipich, 1973; Sherman, 1975), although it must be noted that there is such a dearth of follow-up studies that no comparative evaluations are possible in this regard.

Modeling, incorporating self-instruction and/or coping strategies, could also be said to have established itself as an effective teaching and therapeutic tool. To quote Sarason (1975) again:

> It would appear that a credible coping model may present a valuable and convenient means of enhancing stress tolerance.

> It may be that an observational learning paradigm would be quite useful in teaching people more effective ways to think through problems, plan their activities and direct their attention to tasks rather than to themselves. (p. 152)

Finally, it is noted that significant increases in facilitative anxiety have been shown by cognitive restructuring treatment groups. This finding is consistent with those of the Schachter and Singer (1962) experiment which supported their hypothesis that the label a person puts on his arousal mediates his emotional response. Subjects in the cognitive groups had presumably learned to label their autonomic responses as helpful cues for learned coping responses, rather than as signs of an anxiety which was going to overwhelm them and render them powerless to cope.

Unanswered Questions

Although it may thus be said that there are a variety of known ways to treat test anxiety, the question of which of these is the best way remains unanswered. On reviewing the literature, one cannot but be struck by the lack of definitive evidence of the clear superiority of one treatment program over the others. Since systematic desensitization has for years been an effective and efficient method of reducing test anxiety, it has tended to be the yardstick against which other treatments are measured. When all the results to date are in (and it must be remembered may of these treatments are very new), a consistent pattern emerges. When cognitive or self-control-oriented treatments are pitted against

systematic desensitization, both experimental treatment groups show significant improvement (or neither do, on such performance measures as grade point everage, for example), and there are few, if any, significant between-group differences. The trend seems indeed to be in favor of the cognitive, or self-control group, but since it does not reach statistical significance, no conlusions may be drawn.

The familiar paradox remains: if, as has been established by the test-anxiety theorists, the cognitive component is the troublesome factor in performance, why does systematic desensitization have at least as significant impact on performance measures as the cognitive or other mediational treatment? What is happening at a cognitive level during systematic desensitization which carries over to the testing situation? It would be of interest to solicit that information from desensitized subjects whose E-W worry scores and performance have both improved. Do they, in fact, "short-circuit" self-referent worry thoughts by self-instructions to relax, a skill they have acquired without explicit training through their systematic desensitization experience? Further research in this area might prove enlightening.

Perhaps more could be discovered about the cognitions of highly competitive and successful individuals, such as those who excel in sports and are continually under stress. What do they say to themselves to gear up to the challenge? It is an intriguing thought to speculate on what might be the result of "feeding" their self-

statements into test-anxious subjects, using Velten's (1973) methods described earlier.

Differentiating the Components

The difficulties of assessing a treatment "package" such as Meichenbaum's are obvious, and have been frankly stated by him:

> The exact reasons why the cognitive modification procedure was most effective are difficult to ascertain from the present study because two distinct aspects of therapy were combined, namely, a specific type of insight exploration and an incompatibility response training which emphasized attentional training. The relative importance of the emphasis placed on relaxation, coping imagery, or suggestions and modeled examples of task-relevant self-instructions is impossible to isolate from the present study and requires further research. (Meichenbaum, 1972, p. 378)

Many of the elements in his program have been found to be effective on their own in other studies: coping modeling (Sarason, 1975), covert modeling (Kazdin, 1974), relaxation as self-control (Goldfried & Trier, 1974), cue-controlled relaxation (Russell & Sipich, 1974), self-instructional attention-focusing (Little & Jackson, 1974), RET (Ellis, 1962). Does combining them have an additive effect? If so, results of his "package deals" might be expected to show significant between-group differences in favor of cognitive-behavioral modification, which they do not. Which treatment components are necessary and sufficient; which ineffectual or redundant? One wonders, for example, whether the hierarchy is

not perhaps an anachronism in the cognitive-behavioral model? The study by Richardson and Suinn (1974) in which only the top three items were used, and indeed the whole concept of relaxation-as-self-control, throw some doubt on the function of the carefully calibrated step-by-step desensitization approach.

Problems of Comparison

A central question arising out of this research is surely this: can a valid comparison be made between systematic desensitization and cognitive-behavioral therapy on the basis of any of the experimental designs yet tried? The differences, not just in methodology but in conceptual orientation, between the two treatment paradigms create enormous difficulties in design.

The discrepancy of goals is the heart of the matter. Systematic desensitization was designed to focus on a single, circumscribed, target behavior, the problematic response to a specific, situational stimulus. By contrast, RET has, as its ultimate goal, no less than "inducing the patient to internalize a rational philosophy of life" (Ellis, 1962, p. 18). Admittedly, Meichenbaum does not advance anything this ambitious as the goal for cognitive-behavioral therapy, yet it would not be overstating the case to say that his treatment program is designed to change habitual cognitive sets toward performance and self-evaluation - as he says, "to influence the nature of the client's internal dialogue" (Meichenbaum, 1974, p. 66). There is, after all, a heavy component of RET in his package.

If the goal is to reduce test anxiety as quickly, and with as few counsellor-hours per client as possible, then the research suggests systematic desensitization will do that, and with the advantage that it is fairly standardized, suitable for groups and taped instruction, and probably requires less sophisticated counsellor skills. Is the goal to improve performance on academic tests? Systematic desensitization appears to be as effective as any other method here also, although measures of performance are highly inconsistent across studies. If, however, the goal is to help the subject not only with test anxiety, but with other stress situations, to teach him coping skills which will stand him in good stead throughout his academic life and beyond, to teach him more appropriate ways to think of himself vis-a-vis evaluative situations, then one intuitively expects that cognitive-modification would be the more successful. However, conclusive evidence of this is lacking.

Perhaps one reason such evidence is lacking is that the experimental designs seem to be more appropriate to desensitization than to the cognitive paradigm. For one thing, the criterion of success tends to favor the single, circumscribed target; generalization is dealt with only peripherally, as will be discussed later. For another, the studies have time restrictions which cannot but favor desensitization. By its very nature, systematic desensitization has a built-in time monitor. When the subject completes his hierarchy, he is presumed to be "cured". How does one know with cognitive restructuring when effective change has taken place? How valid a test of cognitive therapy is a program of four half-hour

sessions, for example (Meichenbaum et al., 1971)? Or four one-hour sessions (Hahnloser, 1974)? Is it not probable that it takes longer to change an habitual pattern of self-referent thinking than it does to decondition a specific situational response? Has there been a true assessment of the potential of cognitive restructuring as a treatment when four to eight sessions have been arbitrarily set as the cut-off time? Research studies with clients having a common problem have been successfully completed in eight sessions, Meichenbaum (1975b) says, but adds that individual therapy can require as many as 40 sessions. It would seem to be a case of design expediency dictating inappropriate terms, and the resulting statistics, neatly tabulated though they may be, should be interpreted with caution in view of the design limitations.

Test Anxiety: All or Part of the Problem

A second related problem of research involves the nature of the test anxiety itself. "Is it a relatively circumscribed problem or merely a manifestation of a more generalized condition?" asks Sarason (1975, p. 152), and postulates that it can be either. If it is specific, as conditioned by a traumatic experience, for example, systematic desensitization is "intuitively" the logical treatment choice. But if it is characterized by "anxiety and worry in other areas .... and conflict and ambivalence about achievement and being evaluated", other treatments might be indicated. Systematic desensitization would not be likely to solve the central problem - or certainly not with one hierarchy, at any rate. The question of match-

ing the treatment to the client is one which Meichenbaum touched upon in the speech-anxiety study (1971), in which he found that:

> different types of clients received differential benefit from insight and desensitization treatment. Clients with high social distress who suffered anxiety in many varied situations benefitted most for the insight procedure, which attends to and modifies the client's self-verbalizations. (Meichenbaum and Cameron, 1974, p. 107)

He left unanswered, however, the interesting and relevant question of what effect the insight treatment had on the social distress and anxiety of the group.

Suggested Research

It is this kind of question to which future researchers might address themselves, for it seems that the scope of benefit sought could be the criterion for the choice of treatment. There have been a few correlational studies which show a positive relationship between test anxiety and such indices of personality characteristics as "Need Achievement", "Social Approval" (Brown, 1974), "Irrational Beliefs" (Goldfried & Sobociski, 1975), "Defensiveness" and "Hostility" (Sarason, 1958). However, these studies have either not involved treatment outcome, or, as in Meichenbaum's speech-anxiety study, the generalization implications are clouded by the problem of treatment-time limitations and inappropriate design. To address the question of generalization, a new measure needs to be developed to discriminate between those for whom test

anxiety is a circumscribed problem and those for whom it is but one of a number of social and evaluative anxieties. Taking as subjects those falling into the latter category, the experimenters would then test for whatever associated anxieties they deem appropriate (e.g., assertiveness, fear of social evaluation, etc.), and divide them into three groups: systematic desensitization, cognitive-behavioral, and control. Rather than holding time as a constant, let each treatment be set for the number of sessions deemed by the therapist to be appropriate to the treatment and the goals. Let the criterion of success be reduction of test anxiety and generalization of treatment benefit to the other associated dependent measures. Follow-up should be an important part of the study; with few exceptions, follow-up has been absent, or in the nature of a few weeks. The hypothesis would be that both treatments would reduce test anxiety, but that cognitive-behavioral treatment would result in more significant improvements in the related dependent measures.

Such a comparison study would, of course, raise a number of serious design problems. How to control for the longer counsellor-client exposure in the cognitive group, for example? An attention-control group might be used, perhaps, as well as a no-treatment control to account for extraneous environmental factors. Possibly the desensitization counsellor would wish to use the time differential to go through additional hierarchies. In any event, there would doubtless not be the neatness of design found in the present

studies. But compensating for these difficulties would be this major advantage: cognitive therapy, as it is practised clinically, would be weighed against systematic desensitization, as it is administered in real life. The comparison would have a validity lacking in the studies to date.

If such outcome studies show broader generalization, maintained on follow-up, for the cognitive-behavioral group, then there would surely be clear justification for that kind of a treatment program, even if it should take a little longer or be more demanding of the counsellor. The essential question finally is: what is to be treated, a specific situational response or the whole person? If the former, then systematic desensitization would seem to do the job perfectly well. If the latter, perhaps the better choice may be a cognitive-behavioral treatment. The answer rests with future research.

This chapter has reviewed the current state of test anxiety treatment and outcome studies, and suggested directions for future research. The final chapter will deal with the practical implications for schools suggested by the data.

CHAPTER VIII

Implications For Schools

There are a number of implications for the school system arising out of the work that has been done on test anxiety. The first and most obvious implication concerns the value of academic tests in general. It is tempting to conclude that since tests are for a portion of our students an inaccurate and misleading indication of ability, and are thus discriminatory, it would be better to simply throw them out. In the case of "I.Q." tests, whose validity has been seriously challenged by the studies of Sarason and others previously cited, such a step would doubtless be appropriate. However, to abolish all scholastic test would be, perhaps, too superficial a solution, for unless our entire competitive culture were to be restructured, evaluative tests in one form or another are likely to be encountered throughout life. A more practical approach is to ask ourselves how best we can help the test-anxious student overcome his incapacitating anxiety. There are two ways of approaching the problem; the first involves changing the system, the second changing the student. This chapter will consider both approaches.

Changing the System

The first step towards helping the test-anxious is to find out who they are. It should be possible in all schools to carry out a routine screening for test anxiety among all children early in their school careers. There are children's forms of the TAS and the GAS (TASC and GASC, Sarason et al., 1960) which can be administered to children as early as grade one. Teachers should be

informed about which of their students are test-anxious, as by their interaction with them they can either alleviate or exacerbate the problem. They should be made aware of the differential effects of stress on their students, of the fact that the challenging message which may motivate the low-anxious student to better performance will probably cause a high-anxious one to blank out. Test instructions should be relatively neutral; as Sarason (1972) discovered in one study, "motivating, task-orienting instructions", which play down competition and evaluation and encourage interest and effort, create good conditions for both high- and low-test-anxious subjects. The most important implication of these studies is perhaps the most difficult to convey: parents, teachers, and principals who stress the competitive aspects of school, and who link personal worth with intellectual achievement, are playing into the distorted perceptual system of the unfortunate test-anxious student and increasing the probability of his failures.

The studies on cognitive modeling have important implications for teachers of all grades. Meichenbaum (1971) showed that a coping, verbalizing, self-instructional model was markedly successful in teaching kindergarten, first and second graders. Sarason (1973), Little and Jackson (1974), and others have demonstrated the efficacy of modeling with older school and university students. It appears to be a useful teaching aid, not just for the test-anxious , but for all students. Perhaps a child who learns early through the

teacher's modeling, how to self-instruct, to work out problems step by step, to focus attention on the task, may be spared the distress of test anxiety. Elementary school is not too early to begin teaching the coping skills.

Schools with their captive populations have a unique opportunity to act in a preventive capacity. Early screening of students could help to identify the problem of test anxiety before it has done too much damage to a child's education and future life. No child should be allowed to go through the school system with a problem of test anxiety which has gone unrecognized and untreated.

Changing the Student

If there is any one consistent finding in the body of research done on test anxiety, it is that something can be done about it. School counsellors can take their choice of methods - systematic desensitization, cognitive-behavioral modification, cue-controlled relaxation - they have all been effective. Furthermore, they have all been successfully conducted in a group format, and both desensitization and relaxation have frequently been administered by tape or video-tape. Decision as to the choice of treatment will depend on the skills and orientation of the counsellor, and also on the appropriateness of the treatment to the client, as discussed in the previous section.

The evidence argues strongly for the inclusion of relaxation skills in any treatment program; it is easy to teach and appears to

have widely beneficial and lasting results beyond mere test anxiety.

If a means is devised to discriminate students for whom test anxiety is part of a broader problem, then a cognitive-behavioral program such as that described holds much promise. Further research is needed to confirm what makes intuitive sense: that for a person who is plagued with negative self-judgments and whose self-esteem is at risk during every evaluative situation, treating test anxiety as an isolated problem may be a partial solution, at best. With cognitive-behavioral counselling, students like Mary, in the illustrated examples, may learn not only a new cognitive set toward academic tests, but new, more appropriate and adaptive ways to cope with stress wherever they may encounter it.

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APPENDIX A

TAS

Instructions

This instrument is composed of 37 items regarding your feelings and reactions to taking tests. There are no right or wrong answers to these questions. We are interested in how you personally react to testing or exam situations. Mark the items below with either a T for true or an F for false depending on whether the item applies to you or not. Try to decide "true" or "false" on the basis of what is most typical or most representative of your reactions. Then enter the appropriate mark in the blank before each question.

This information is completely confidential and will not be made known to your instructors. Work quickly and don't spend much time on any one question. Now go ahead, work quickly and remember to answer every question.

TEST ANXIETY SCALE

_____ 1. I seem to defeat myself while working on important tests.

_____ 2. While taking an important exam I find myself thinking of how much brighter the other students are than I am.

_____ 3. The harder I work at taking a test, or studying for one, the more confused I get.

_____ 4. As soon as an exam is over I try to stop worrying about it, but I just can't.

_____ 5. If I were to take an intelligence test, I would worry a great deal before taking it.

_____ 6. During exams I sometimes wonder if I'll ever get through college.

_____ 7. I would rather write a paper than take an examination for my grade in a course.

_____ 8. I wish examinationd did not bother me so much.

_____ 9. I think I could do much better on tests if I could take them alone and not feel pressured by a time limit.

_____ 10. Thinking about the grade I may get in a course interferes with my studying and my performance on tests.

_____ 11. If examinations could be done away with I think I would actually learn more.

_____ 12. On exams I take the attitude, "If I don't know it now, there's no point worrying about it."

_____ 13. If I knew I was going to take an intelligence test, I would feel confident and relaxed beforehand.

_____ 14. I really don't see why some people get so upset about tests.

_____ 15. Thoughts of doing poorly interfere with my performance on tests.

_____ 16. Even when I'm well prepared for a test, I feel very anxious about it.

_____ 17. I don't enjoy eating before an important test.

_____ 18. While taking an important examination, I perspire a great deal.

_____ 19. Before an important examination I find my hands or arms trembling.

_____ 20. During course examinations, I find myself thinking of things unrelated to the actual course material.

_____ 21. I seldom feel the need for "cramming" before an exam.

_____ 22. The University ought to recognize that some students are more nervous than others about tests and that this affects their performance.

_____ 23. I get to feel very panicky when I have to take a surprise exam.

_____ 24. During tests, I find myself thinking of the consequences of failing.

_____ 25. It seems to me that examination periods ought not to be made the tense situations which they are.

_____ 26. After important tests I am frequently so tense that my stomach gets upset.

_____ 27. I start feeling very uneasy just before getting a test paper back.

_____ 28. I dread courses where the professor has the habit of giving "pop" quizzes.

_____ 29. I freeze up on things like intelligence tests and final exams.

_____ 30. Getting a good grade on one test doesn't seem to increase my confidence on the second.

_____ 31. I sometimes feel my heart beating very fast during important tests.

_____ 32. After taking a test I always feel I could have done better than I actually did.

_____ 33. I usually get depressed after taking a test.

_____ 34. I have an uneasy, upset feeling before taking a final examination.

_____ 35. When taking a test, my emotional feelings do not interfere with my performance.

_____ 36. During a course examination, I frequently get so nervous that I forget facts I really know.

_____ 37. I don't study any harder for final exams than for the rest of my course work.

APPENDIX B

AAT

Instructions: The questions are intended to indicate how you feel about taking tests. There are no right or wrong answers to any of the questions. When answering these questions, simply try to answer the question, "About how often does this happen to me?" Using the scale below, enter in the blank the number that describes you best.

1 means "No", "never", "not at all", etc.
2 means "somewhat", "sometimes", "a little", etc.
3 means "about as often as not", "an average amount", etc.
4 means "usually", "a good deal", "rather often", etc.
5 means "practically always", "entirely", etc.

_____ 1. I work most effectively under pressure, as when the task is very important.

_____ 2. While I may (or may not) be nervous before taking an exam, once I start, I seem to forget to be nervous.

_____ 3. Nervousness while taking a test helps me do better.

_____ 4. When I start a test, nothing is able to distract me.

_____ 5. In courses in which the total grade is based mainly on ONE exam, I seem to do better than other people.

_____ 6. I look forward to exams.

_____ 7. Although "cramming" under pre-examination tension is not effective for most people, I find that if the need arises, I can learn material immediately before an exam, even under considerable pressure, and successfully retain it to use on the exam.

_____ 8. I enjoy taking a difficult exam more than an easy one.

_____ 9. The more important the exam or test, the better I seem to do.

_____ 10. Nervousness while taking an exam or test hinders me from doing well.

_____ 11. In a course where I have been doing poorly, my fear of a bad grade cuts down my efficiency.

_____ 12. When I am poorly prepared for an exam or test, I get upset, and do less well than even my restricted knowledge should allow.

_____ 13. The more important the examination, the less well I seem to do.

_____ 14. During exams or tests, I block on questions to which I know the answers, even though I might remember them as soon as the exam is over.

_____ 15. I find that my mind goes blank at the beginning of an exam, and it takes me a few minutes before I can function.

_____ 16. I am so tired from worrying about an exam, that I find I almost don't care how well I do by the time I start the test.

_____ 17. Time pressure on an exam causes me to do worse than the rest of the group under similar conditions.

_____ 18. I find myself reading exam questions without understanding them, and I must go back over them so that they will make sense.

_____ 19. When I don't do well on a difficult item at the beginning of an exam, it tends to upset me so that I block on even easy questions later on.

JD:ht

8-28-72

APPENDIX C

E-W Scale

Name _____ Date _____

Directions: Read each of the following statements carefully. After each item, indicate how you feel right now in relation to the upcoming examination. Use the following numerical scale:

1. The statement does not describe my feeling, condition, etc.
2. The feeling, condition, etc., is barely noticeable.
3. The feeling, condition, etc., is moderately intense.
4. The feeling, condition, etc., is strong.
5. The feeling, condition, etc., is very strong.

____ I do not feel very confident about my performance on this test.

____ I am so nervous that I cannot remember facts which I really know.

____ I feel my heart beating fast.

____ I feel I may not be as well prepared for this test as I could be.

____ I am so tense that my stomach is upset.

____ I am worrying a great deal about this test.

____ I have an uneasy, upset feeling.

____ I find myself thinking of how much brighter the other students are than I am.

____ I am thinking of the consequences of failing this test.

____ I feel very panicky about taking this test.

APPENDIX D

Mary: Typical Test-Anxious Student

With a little imagination one can breathe life into the correlations and definitions and hypotheses of the published studies. Imagine Mary, 17 years old and a high school senior. If she were to be evaluated for test anxiety (which, unfortunately is unlikely), she would score in the top quarter percentile of the TAS, the AAT (debilitating), and the E-W Scale. Mary is of average intelligence, but tends to be self-deprecatory and self-preoccupied. She "sees innocuous events as threatening and magnifies minor threats that are easily coped with into major calamities" (Beck, 1972, p.348). Performing well in her classroom work and daily assignments, Mary studies hard, until a few days before a final exam. Then she finds herself unable to concentrate; her worry is beginning to build. By the time she sits at her desk to write the examination, her anxiety is peaking. Her mouth is dry, her stomach churning, her heart racing. She looks at the exam questions and immediately decides she can't answer any of them. Panic overwhelms her. She is going to flunk! She sees her neighbors writing busily and wishes desperately that she knew what they seem to know. "What'll I do? I know I'll fail; I'll fail the whole course," she thinks. She imagines what the teacher will think of her, how her parents will look, what they will say. She looks at her watch; so much time gone! "I'll never finish!" She reads and rereads the first question uncomprehendingly. "Everyone will know how stupid I am. What will I tell Mum and Dad?"

She feels ill, wishes she had a drink of water, imagines herself rushing out of the room. Between watching her neighbors, anticipating failure and calamity, and disparaging herself, she has little attention and virtually no concentration for her exam. She is certain to chalk up another failure, undermining her chances for academic advancement and further depleting her low reserves of self-esteem.

If no-one comes to Mary's aid in time to reverse this pattern of response to tests, she is likely to continue throughout her life avoiding self-evaluative challenges, being misjudged by both herself and others, and missing out on many of life's rewards which she might otherwise enjoy.

APPENDIX E

Mary Is Desensitized

Should Mary, our hypothetical high school student, come under the care of a counsellor who uses systematic desensitization, her course of treatment will almost certainly be much like this:

I. She will be taught progressive relaxation, probably along the lines recommended by Paul (1966), until she can achieve a deep relaxation without difficulty under the instructions of her counsellor.

II. She and her counsellor will develop a hierarchy thematically appropriate to her problem of test anxiety, and ascending, not necessarily in temporal sequence, from the least anxiety-provoking image to the most frightening. One typical standardized hierarchy for test anxiety is the following:

1. You hear about someone else who has a test.
2. You are in your place of study. You are reading a regular assignment.
3. You are in class. The instructor announces a major exam in two weeks.
4. You are in your place of study. You are reading and studying for the exam which is a week away.
5. It is two days before the exam. You are talking with another student about the test.
6. It is the night before the exam. You are talking with another student about the test.
7. It is the night before the exam. You are at your place of study and are studying for the exam.

8. It is the day of the exam. It is one hour before the test and you are studying for it.

9. It is the day of the exam. You are now walking on your way to the exam.

10. You are standing outside the test room and are talking with others gathered there.

11. You are sitting in the exam room waiting for the test to be passed out.

12. You are leaving the classroom and are talking with other students about the exam. Some of their answers do not agree with yours.

13. While waiting for the exam to be passed out, you hear a student ask a question which you cannot answer.

14. While the test is being passed out, you think about not being adequately prepared.

15. You are taking the important test. While trying to think of an answer, you notice everyone around you writing rapidly.

16. While taking the test, you come to a question which you are unable to answer. You draw a blank.

17. You are in this important exam. The instructor announces that 30 minutes remain, but you have an hour's work left.

18. You are in the important exam. The instructor announces that 15 minutes remain, but you have an hour's work left.

(Deffenbacher, 1974, p. 452)

III. While Mary is in a relaxed state, the counsellor will work up the hierarchy, presenting a scene for Mary to imagine while maintaining her relaxation. If she should experience feelings of anxiety, she must signal, and the counsellor will instruct her to erase the image, as it is considered vital that the stimulus and the anxiety response not become even more strongly linked.

IV. After the hierarchy is completed, that is, after each scene has been presented at least twice for 15 to 20 seconds without signalled anxiety (a process which may take anywhere from six to ten sessions), Mary will presumably be free of her conditioned anxiety response to academic testing situations.

Goldfried's Desensitization Procedure

If Mary's counsellor should be among those experimenting with applied relaxation according to Goldfried's system (1973b), a typical sequence for a hierarchy item might go like this:

Trial 1. Counsellor presents scene, for example #4 in the preceding hierarchy. After one second Mary signals anxiety. She maintains the image of herself studying for the exam, at the same time trying to achieve a state of relaxation. After 40 seconds she signals no anxiety, and 20 seconds later Counsellor tells her to terminate the scene.

Trial 2. The same scene is presented. After one second, Mary again signals anxiety, then works at relaxing away her tension, signals no anxiety after 30 seconds, and after a further 20 seconds the scene is terminated.

Trial 3: Same scene presented (2 seconds) - Anxiety signal (15 seconds) - No anxiety (20 seconds) - Scene terminated.

Trial 4: Same scene presented. No anxiety (20 seconds) - Scene terminated.

Following this sequence, the next item on the hierarchy will be presented in the same fashion, progress from one item to the next depending upon the absence of signalled anxiety. It should be remembered that with Goldfried's system, the hierarchy need not be monothematic; thus Mary's next item could refer to a different area of anxiety, such as speaking up in class.

Readers interested in applying relaxation techniques are referred to Bernstein and Borkovec (1973) for a comprehensive description of progressive relaxation theory and procedures. See reference list.

APPENDIX F

Mary Learns the ABC

As a means of illustrating RET, let us suppose Mary seeks help from C., a rational-emotive counsellor. First C. will attempt to establish an atmosphere of trust and rapport with her through the usual counselling methods of listening and responding to her distress, a preliminary and necessary part of this, as of other, therapies. Then together C. and Mary will explore her specific experiences in testing situations. What was she saying to herself about the tests? If Mary replies, as many do, that she wasn't saying anything, the counsellor will not accept that answer, but will point out that, on the contrary, it is only because she was telling herself something fearful about the situation that she felt fear. C. will explain to Mary the rationale of RET, the inseparability of her thoughts and feelings. She will be asked to monitor her "self-talk", her inner dialogue, over the following weeks, to bring it out into her conscious awareness. She may be given other "homework" as well, such as reading A New Guide to Rational Living (Ellis & Harper, 1961).

The following week Mary may report that she has realized she has been saying to herself, "I'm going to fail! I won't know anything on the test; I'll flunk!"

"And what does that mean to you, if you should fail? What are you telling yourself about failing?"

"Well . . . How horrible and embarrassing it would be. And that I'm stupid, I guess. Can't do anything right . . . no good."

"So in effect what you've been telling yourself boils down to this: I'm going to fail, and if I do, I'm a worthless person. No wonder you are in a panic! Now, let's examine those assumptions you have made to see if they stand up to reason. Prove to me that if you fail it follows logically that you are a worthless person ...."

In this way the counsellor will work with Mary to separate th e rational ("I might fail ...") from the irrational ("and that would be horrible, and would mean I'm a failure ...") in her self-statements, to confront her over and over with the self-destructiveness of the false assumptions she is making. In Mary's case the previously unquestioned assumption is that she must achieve intellectually if she is to have any value to anyone in this world.

Little by little, or so it is hoped, the grip of her habitual self-demands and self-denigration will be loosened, and she will learn to approach an examination with the rational thought, "I hope I do well; I'll try my best. But if I should do poorly, it doesn't wipe me out as a person, and it's not the end of the world for me." Her anxiety will then be reduced to a level appropriate to the actual issue at stake, an examination grade, and not to the virtual life or death of her self-worth.

APPENDIX G

Mary Receives Cognitive-Behavioral Counselling *

Mary presents herself to C., a cognitive-behavioral counsellor, and after an initial exchange during which she comes to feel more at ease, she describes her feelings about tests. "I get so scared . . . . I just go blank. My stomach gets all tied up in knots. I can't seem to think, even though I know the answers. Afterwards I know everything, but when I'm sitting there in the exam room, I don't know what happens to me . . . I just forget everything".

C.: "Can you think for a minute, and tell me when was the last time you had these feelings, of your stomach being tied in knots and your mind sort of blanking out?"

M.: "Well, last night, I guess, it was sort of like that. I was studying for the test we're having in a couple of days."

C.: "O.K., just close your eyes and let your mind go back and re-run that experience in your head, as if it were a movie. Tell me what you are feeling, and what thoughts are going on."

In this way, and often with considerable prodding, the counsellor helps Mary to become aware of her fleeting thoughts, e.g., "I know I'm going to flunk . . . I'll forget everything . . . I'll look so stupid; the teacher's going to really scorn me. What if I fail the whole course? . . . What'll I tell my parents? . . ."

---

* For a fuller description of procedures, and for use in a group format, the reader is referred to Meichenbaum's (1974) Therapist Manual for Cognitive Behavior Modification, available from him at cost and on request. See reference list.

After this kind of exploration, the counsellor helps Mary to recognize the destructive effect these thoughts have on her concentration. He/she develops the rationale of the treatment--that negative self-thoughts are the principal cause of her anxiety, both in her feeling, emotional state and in her scattered attention. C. tells her that therapy will consist first of relaxation training for anxiety and tension reduction, and then of learning to become aware of, and control her thinking processes. Recognition of

> "negative self-statements, catastrophizing, being task-irrelevant, etc . . . will also act as a reminder, a cue, a bell-ringer for us to produce different thoughts and self-instructions, to challenge our thinking styles and to produce incompatible, task-relevant self-instructions and incompatible behaviors" (Meichenbaum, 1974, p. 11).

From the first session on, Mary will be given homework. She will be asked to keep a record of her negative self-statements, to do a situational analysis: When does she feel anxious? What is going on? Who is present? What triggered the anxiety? What has she been saying to herself? While Meichenbaum believes that few people actually make explicit statements to themselves, he suggests that they have developed habitual styles of thinking, an automatic set, of which they need to become aware. By developing their inner ear, listening to their wordless thoughts, so to speak, they become observers of their own behavior and in a better position to modify it.

Also in the first session, the rationale of relaxation will be discussed, and Mary will have 20 minutes of progressive relaxation.

The concept of a hierarchy may also be touched upon, and she will be asked to think about it for the next session, and also to practice relaxation daily.

Being a cooperative and obedient client, Mary returns the next week with a list of self-statements. She has had her exam during the week, and after it was over, she was able to reconstruct her experience. Her list: "walking to test room, see bunch of kids talking, scared to join them for fear they'll be discussing something I didn't study. Think: I'll forget everything. It's going to be awful.

"Looking at test, terrible feeling of dry mouth and heart pounding. Questions don't make sense. Think: I don't know anything. I'm going to fail. See other kids writing, feel so stupid because they seem to know so much. Wonder what I'll do when marks come out. How tell parents? Feel just awful. Wish I could run out of the room.

"Re-read questions. Think about time going. Start to write. Notice my hand can hardly write.

"Feel so depressed after. Know I failed. Think I'm such a failure, as usual".

Mary and her counsellor discuss the effect these thoughts have on her feelings and performance. Relaxation practice and hierarchy construction follow, and Mary is instructed to continue relaxation practice at home, as well as to keep up her self-observation log.

In the following sessions these two processes continue concurrently, the cognitive restructuring increasingly being integrated into a modified form of systematic desensitization.

The counsellor helps Mary to question and dispute the assumptions

behind her self-talk, e.g., "I know it would be disappointing if you did poorly on the test, but can you tell me how it follows logically that if you fail you are therefore a worthless person?"

C. introduces the central idea of Ellis's ABC: "If it were the test itself causing your panic, everyone taking it would be in a panic. Since they aren't it must be what the test means to you, what you are telling yourself about the test".

C. and Mary together generate a list of "coping" statements, by thinking about how she confronts other stressful situations in which she is able to function, such as a trip to the dentist. Borrowing from her self-statements in those situations and adding whatever other self-talk she thinks of which would be incompatible with the negative thoughts she wishes to replace, Mary compiles a personal list:

- I'm nervous, but I'll get over it.
- I'll do my best; that's all I can do.
- I don't have to be perfect; who is?
- It's just a math test, not my worth as a person.
- Forget everyone else and just think of what I must do now.
- I know the answers. If I can just calm down, I'll remember, etc.

Together they consider the phases of anxiety, which Meichenbaum has characterized as: "confronting and handling the stressor, coping with the feeling of being overwhelmed . . . (and) the phase of reinforcing self-statements for having coped" (p. 46). Thus Mary will have several kinds of self-statements worked out to "plug in" at the appropriate time. "Confronting" statements will be those which direct her attention onto the task and away from destructive worry thoughts

("Now what is it I'm being asked to do here? I'll just take it one step at a time . . ."). Statements for the feeling of being overwhelmed will be mainly relaxation self-instruction ("Oh, oh, I'm getting really uptight! That's my cue to stop a second, take a good, deep breath and just relax . . ."). Self-reinforcement should never be overlooked; Mary will say to herself such congratulatory things as, "I did it!" "It really works!" "That's better, I'm in control now".

During these sessions Mary is also becoming skilled at accelerated relaxation, at tying in relaxation with slow, deep breathing and the self-instruction "relax" or "calm".

For the modified desensitization procedure, the counsellor uses a rather complex sequence. On the first few items, until Mary is used to the imagery experience, C. presents the conventional "mastery" image which he/she terminates at once if she signals anxiety, and which is then re-presented after a short period of relaxation. Subsequently, however, C. introduces coping imagery if Mary signals anxiety, e.g.,

> See yourself coping with this anxiety by use of the breathing procedures which we have practiced. See yourself taking a slow, deep breath, slowly filling your chest cavity. Good. Now slowly exhale. As you exhale, note the feeling of relaxation and control settling in. Good. Now stop the image and just relax. (p. 40)

Toward the end the counsellor will present scenes in which he/she actually programs anxiety, e.g.,

> See yourself taking an important exam and as you are thumbing through the exam booklet, you feel some tenseness in the pit of your stomach. Your eyes begin to wander about the room, your thoughts wander . . . Now notice what you have been feeling and doing. These are the reminders, the cues to cope. . . Good. See yourself taking a slow breath; hold, hold. See yourself parting your lips and as you are breathing out you are telling yourself what to do. (p. 41-42)

By the end of her counselling sessions, if all has gone well, Mary will have learned a variety of skills to help her through any testing situation.

She will have learned to dispute, and throw out, the destructive and irrational self-judgments attached to her test anxiety, i. e., I must perform perfectly or I am no good.

She will have learned how to prepare herself for the stress of the test, how to focus her attention during the test, how to "talk herself down" from spiralling panic.

She will have learned how to interpret as facilitative cues her own autonomic responses and distractive thoughts--cues for the quick application of new coping responses.

She will know how to relax herself quickly and effectively, relieving her tension and lowering her anxiety.

She may even have learned the efficacy of coping self-statements and relaxation for other problem areas in her life.

And if she's lucky, Mary may also have made a start on learning a new way of thinking about herself: less anxious and demanding, more realistic, and, especially, more self-accepting.

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