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Decreasing debilitating test anxiety in elementary remedial readers

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Abstract

Diagnosis is an integral part of the remedial reading program. It gives direction, facilitates decisions, and provides a basis for choosing instructional techniques and materials. It is a complicated process of choosing what information is appropriate, what decisions are to be made, and what methods can best implement these decisions. In short, diagnosis is a comprehensive process necessary to reading instruction. In fact, as its best, it is a type of instruction known as diagnostic teaching. One factor in this process of diagnosis is assessment (Peters,1977).

DECREASING DEBILITATING TEST ANXIETY IN ELEMENTARY REMEDIAL READERS

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CHAPTER I

INTRODUCTION

Diagnosis is an integral part of the remedial reading program. It gives direction, facilitates decisions, and provides a basis for choosing instructional techniques and materials. It is a complicated process of choosing what information is appropriate, what decisions are to be made, and what methods can best implement these decisions. In short, diagnosis is a comprehensive process necessary to reading instruction. In fact, as its best, it is a type of instruction known as diagnostic teaching. One factor in this process of diagnosis is assessment (Peters, 1977).

Reading assessment is a systematic collection of data from tests and other procedures (such as interviews with students and parents and recorded teacher observations) which help provide understanding of reading behaviors. In this methodical gathering of information testing plays an important (but not all-important) role, according to Peters.

Peters stated that reading tests are a "collection of behaviors that reflect the reading process" (p. 152). The tests we as teachers choose to assess these behaviors become our operational definition of reading. These tests may be specific or general, individual or group, informal or standardized. Of the different types of tests, perhaps the use of standardized (or norm-referenced) tests has generated the most disagreement (Peters, 1977).

Probably many educators would agree that norm-referenced testing is a necessary part of the elementary remedial reading classroom.

According to Traxler (1970), such testing helps define achievement, gives direction to instruction and lets us speak quantitatively with confidence.

There are problems associated with the use of these standardized tests, as a survey of current newspapers (LaBlanc, 1984) and magazines will reveal. In addition to the usual limitations of standardized tests, the remedial reading teacher faces measurement problems peculiar to reading. These are defined by Traxler (1958) as: (a) the destruction of the art of reading when it is stopped for the inspection of one of its aspects, and (b) the complex nature of the subdivisions of reading such as rate and comprehension. Nowhere in Traxler's discussion of difficulties in reading measurement is debilitating test anxiety discussed. This topic is often ignored in other general writings (Blanton, Farr, & Tuinman, 1974; Buros, 1975) about reading measurement.

The remedial reading teacher is nevertheless well aware of the importance of test anxiety. Reduced performance has been related to the construct (Wine, 1982) and prizes, pep talks, and even monetary payments almost always fail to raise achievement scores (Cronbach, 1970). As a result, the teacher is left with a set of test scores invalidated by either anxiety, low motivation, or both. An invalid test score is a serious matter; test anxiety's effect on the student can be even more serious, if the anxiety is allowed to become excessive (Carver, Peterson, Follansbee, & Scheier, 1983).

At the heart of the student's test anxiety problem is a low self-concept. This construct, discussed fully in books such as

Felker's Building Positive Self-Concepts (1974), Burns' The Self-Concept in Theory, Measurement, Development and Behavior (1979), and Bills' Self-Concept and Schooling (1981), is of great importance and can manifest itself in high test anxiety. To deal with test anxiety, a combination of strategies is generally considered best (Prout & Harvey, 1978). These strategies although closely interrelated are often discussed separately. Investigations generally fall into two categories: reduction of anxiety symptoms and cognitive restructuring.

Although many investigations including those of Spielberger and I. Sarason (1975-1982) and Krohne and Laux (1982) have investigated the problem of anxiety, specific studies are still needed to relate theories to classroom practice. In a symposium on recent trends in achievement motivation, Atkinson (1978) called for such research:

> We must close the deplorable gap between the frontier of research in motivational psychology and discussion of vital issues in education. . . . What is needed, of course are definitive large scale studies using the tests that are conventionally called intelligence-ability or aptitude tests but including the tools available to categorize individuals according to differences in motivation and also employing the techniques available for manipulation of the incentives or of intensifying motivation in other ways at the time of performance. . . . The first feasible step is to encourage systematic experimental study of how personal and situational determinants of motivation influence the level of intellectual performance on the tests traditionally conceived as measures of ability. The test agencies should have been doing this job since their inception. (pp. 11-14)

Test anxiety may be called a personal and situational determinant which influences performance (Carver et al., 1983). Studies of test anxiety as such a determinant are still needed today, particularly in the field of elementary remedial reading. The need is especially

critical in this field because the remedial reader, who is less capable of coping with the testing situation, is faced with taking even more tests. Another array of tests is presented to the student, to be taken in addition to the regular classroom tests. These extra tests often include Chapter I pre- and post-tests, informal reading inventories, and standardized diagnostic tests.

The remedial reader may add this increased load of test-taking to a burden already heavy with anxiety. Because students with low reading skills also often have low self-concepts, the testing situation is especially likely to cause test anxiety. This is particularly true of remedial readers taking standardized tests (S. Sarason, 1960). For the above reasons it is strange that almost no research has been directed to the problem of the test-anxious elementary remedial reader.

Statement of the Problem

The purpose of this paper is to provide an analysis and a synthesis of research relative to decreasing debilitating test anxiety in elementary remedial readers. Specifically, the research will be examined regarding two questions. First, is test anxiety a major problem for elementary remedial readers? Second, if it is a problem, how can the problem be corrected?

Significance of the Study

A review of literature in the field of test anxiety points to a need for further refinements of specific coping strategies for the elementary remedial reader. Developments leading from research might help the too anxious child reduce the uncomfortable symptoms of the

problem and might introduce a new, more productive way for the child to think about the testing situation. With anxiety under control, performance on standardized tests should cease to be artificially depressed. Scores can then be considered valid indications of the child's reading achievement (Fyans, 1978). A last and possibly most important result could be students who, for the rest of their lives, are able to meet test situations to their satisfaction (S. B. Sarason, Davidson, Lighthall, Waite, & Ruebush, 1960).

Definition of Terms

Biofeedback Training--Learning to control one's body functions with a visual or auditory record of one's own brain waves, heartbeat, and perspiration, is called biofeedback training. The use of monitoring devices such as the electromyography, psychogalvanometer, and the electroencephalogram (EEG) are used to inform the individual about changes in muscle tenseness, perspiration, and brain waves. Simpler devices may be used to provide information concerning heart rate, body temperature, and blood pressure. This information often helps the subject to gain control over these processes to relieve physical and emotional distress (Goldenson, 1984).

Cognitive Restructuring--Cognitive restructuring is the process of acquiring new ways of thinking to replace maladaptive ways (Sarason, 1978).

Desensitization--Desensitization, or counter-conditioning, is used in this paper as a pairing of an anxiety-provoking stimulus with a response which is antagonistic to anxiety. A reverse desensitization can also be employed. An example of this is the use

of stories of pleasant experiences in the presence of anxiety symptoms. The stories should be unrelated to the anxiety-producing situation (Prout & Harvey, 1978).

Goal Discrepancy--Goal discrepancy is the difference between the subject's self-predicted score and the actual score (Heckhausen, 1982).

Locus of Control--Locus of control is the point from which a person's actions are directed. Inner locus of control is in effect if the child's actions are determined by the individual's own motives, thoughts and feelings. External locus of control is evidenced by the influence of other people or outer conditions upon the child's actions (Bauer, 1975).

Self-Prediction--This paper uses the term self-prediction to describe the student's process of setting personal goals concerning test scores. Appraisal of abilities is considered by I. G. Sarason (1980, p. 7) as part of cognitive restructuring.

Symptom Reduction--This paper will consider symptom reduction to be the use of measures specifically designed to reduce arousal. These procedures include desensitization or counter-conditioning (Prout & Harvey, 1978), biofeedback (Omiza, 1980), self-hypnosis, breathing exercises, and isometric exercises (Heide & Barcovec, 1983).

Systematic Desensitization--Systematic desensitization uses training in muscle relaxation. A relaxed state is then paired with progressively more fearsome thoughts or realities (Goldenson, 1984).

Test Anxiety--S. Sarason et al. (1960, p. 11) defined test anxiety as that which makes the test situation "markedly unpleasant,

tinged with more or less vague feelings of uneasiness and bodily tension." This paper will use the above definition but will further describe the symptoms as those occurring to a degree so excessive as to be debilitating. Test anxiety in itself is not necessarily a hindrance to performance (Wine, 1982).

Test-Wiseness--Test-wiseness is defined as the knowledge of the design and structure of objective tests which influences the subject's response (Ebel & Damrin, 1960).

CHAPTER II

RESEARCH PROCEDURES

The University of Northern Iowa Library served as the primary source for this paper's research. The general purpose of the investigation was to find how positive attitudes toward standardized test-taking might be best promoted among elementary remedial reading students.

A broad (and somewhat cursory) study of the general topic of reading and reading tests was undertaken prior to the specific search. Such volumes as the Encyclopedia of Educational Research (Mitzel, 1982), The Encyclopedia of Education (Deighton, 1971) and even Roger Farr's Reading: Trends and Challenges (1981) yielded little except the insight that test anxiety is often considered less than a major topic by editors of many major educational works.

Personal experience with remedial reading students indicated a need to find ways to deal with excessive test anxiety, however, and the search was continued. A survey of the U.S. Department of Health, Education, and Welfare's ERIC (Resources in Education and Current Index to Journals in Education), Psychological Abstracts, and Dissertation Abstracts International suggested that these sources might be productive. A computer search spanning the years 1966-1983 was planned.

The descriptors Elementary Education, Remedial Reading, Tests, Anxiety, Attitudes, Test-wiseness, Test Validity, Standardized Tests and Standardized Testing were first used in the ERIC database. Standardized Tests had to be removed from the combination, as this

term reduced the number of hits to zero. Nine titles were eventually chosen from this search, three of which were useful.

A second search of ERIC, using Self-actualization or Goals or Objectives or Aspiration, yielded 81,397 hits. (At this particular time realistic goal-setting was considered as a possibility for this paper's main topic.) The addition of Anxiety reduced the number to 3,668; Tests further reduced the number to 24; a final addition of Elementary Education limited the number of hits to four. A reorganization of descriptors yielded fourteen titles, two of which were eventually used. Several other ERIC searches used combinations of Education, Remedial Reading, Tests, Anxiety, and Attitudes. The number of usable titles from these last searches was low.

Experience with ERIC showed that the use of Elementary Education and Remedial Reading as descriptors should be discontinued. Consequently, a search in the Psychological Abstracts database used Intrinsic Motivation, Self-Prediction, Goals, Internal/External Locus of Control, Test Anxiety, and Standardized Tests. The addition of the last two descriptors narrowed the search considerably.

The Dissertation Abstracts International database yielded 21 hits when a combination of the descriptors Test Anxiety, Attitude Change, and Goals was used. A second such search using Test Anxiety and Locus of Control was also held, yielding a few more possibilities.

An explanation for the rather circuitous route taken in the computer research might be in order. As mentioned earlier in this chapter, the investigation was for a time focused on one method of alleviating test anxiety. The subject for this temporary search was

training for realistic goal-setting. Later the paper's topic was again broadened to the consideration of more ways to lessen debilitating test anxiety.

Initial use of the many titles generated by the various databases was disappointing. Most of the dissertation abstracts were unavailable in the UNI library. Requests for loans from other universities were made, but these other universities denied the requests, offering to sell microfilms of the dissertations instead. The UNI library declined interests in such purchases. Acquisition of articles from the other two databases was easier. More literature was locally available--more of what was unavailable was either borrowed or purchased by the UNI library.

The articles themselves sometimes offered less than expected, however. The research on test anxiety was usually merely descriptive, reporting correlations of various traits with test anxiety. Seldom was research found which reported testing ways to reduce test anxiety. Also, very few studies used children as subjects. Titles which seemed to promise information about child-subject experiments almost always turned out to be reviews of literature. Although the topics discussed in these reviews were child-oriented, the authors usually had based most of their opinions on adult-subject research.

Nevertheless some of the articles were informative and many of them proved to be valuable secondary sources. They did in fact lead to a cluster of books which proved most informative. (Bibliographies from the books of course led to more articles and more books). Most of the books which proved valuable are edited works such as

Achievement, Stress and Anxiety (Krohne & Laux, 1982) and the eight volume Stress and Anxiety (Spielberger & I. Sarason, 1975-1982). A key book was a single work, Test Anxiety in Elementary Children, by S. Sarason, et al. (1960). This work was cited throughout subsequent test anxiety literature, particularly if such literature dealt with children.

A final manual search through 1984 ERIC was worthwhile, particularly in the area of practical education implications. One last computer search, this time in the Mental Measurements Yearbook Database for a review of Sarason's Test Anxiety Scale for Children, produced nothing. The computer database includes 1984 material and was therefore tried after an exhaustive search of available works by Buros. Perhaps the TASC is not reviewed in this literature because it is an unpublished, non-commercial test.

Research procedures may be summarized as starting with the topic of test anxiety, broadly surveying reading and educational measurement literature, and eventually narrowing the field to the topic of decreasing test anxiety in elementary remedial readers. Although manual and computer searches did not yield much specific information about test anxiety in elementary remedial readers, the focus of the paper remains the same. In the opinion of this writer, these children need such help. What help may be found, if it seems applicable, should be adapted and tried in the elementary remedial reading setting.

CHAPTER III

REVIEW OF RELATED LITERATURE

Test anxiety creates academic difficulties for many students (Carver, et al., 1983). Interest in this phenomenon has grown in the last decade, as shown by recent volumes of research in the area (Krohne & Laux, 1982; I. Sarason, 1980; Spielberger & I. Sarason, 1975-1982). As a background for finding ways to alleviate test anxiety, this chapter will examine what has been done in this area. The first section will deal with the standardized test itself, inspecting some of its strengths and weaknesses. One possible weakness, test anxiety, will be discussed more fully in section two. The third section will discuss traditional ways to deal with test anxiety, and the fourth section will consider cognitive restructuring, a more recent development in the field.

Standardized Testing

Standardized, or norm-referenced, testing is firmly established in the elementary remedial reading room. As Traxler (1958) has stated, such testing helps us define achievement and think quantitatively. It also gives direction to students and teachers alike. In other words, standardized tests help the teacher to diagnose. A well-designed, adequately-normed test helps us make comparisons of achievement, but of course effective diagnosis cannot be limited to the administration of standardized tests. Nor can effective teaching be limited to diagnosis. Standardized tests do, however, provide one of several ways diagnosis can make teaching more effective.

Such reasons for the use of standardized tests might not always be necessary for their presence to remain in the classroom, however. Snygg lamented in 1966 that once an educational practice becomes generally used, it no longer needs an argument to defend its existence. Perhaps in some cases, the actual use of standardized testing over a period of time has given it legitimacy. Supported by logic or not, most elementary students across the country find themselves in the standardized testing situation (McKensie, 1976). This is also true in remedial reading rooms, particularly those following Chapter I guidelines of the Education Consolidation and Improvement Act of 1981.

Some Issues Concerning Tests

In an article titled "Testing: Proceed with Caution," McKensie (1976) claimed that tests can be positive, instructional experiences for children if they are used properly. Tests can be devastating, however, for both children and the education process, and McKensie particularly rejected the misuse of results from normed tests:

> If a test is too difficult, the pupil will feel that he has done poorly, regardless of what he is told, and his sense of self-confidence will be reduced. . . . There is no pedagogical justification for comparing scores of individuals on group tests. (pp. 266, 267)

Ebel (1979), however, defended the use of standardized tests. Although he conceded that test scores might be invalidated if the child is frightened by the test situation, he doubted that test programs are truly damaging. In fact, he considered them to be

possibly the least feared of all fearsome things for most children, and further stated:

> Common sense suggests . . . that the majority of pupils are not harmed by testing. There are no substantial survey data that would contradict common sense on this matter. Teachers seem much more often concerned with pupils who don't care enough how well or how poorly they do on such tests, than with the relatively exceptional instances of pupils who seem to care too much. . . . Most low test scores . . . go to pupils, who, for one reason or the other, have not tried very hard to learn. . . . Claims that testing harms pupils tend to be exaggerated, and are seldom based on substantial evidence. (pp. 8-14)

While these issues may be applied to the elementary remedial reading situation, there are related issues which are directly pertinent to remedial reading. In this paper's introduction, Traxler (1958) was quoted as saying that reading tests are subject to problems peculiar to reading. The first problem is found in the nature of the reading act itself. If reading were mostly a mechanical process, as some teaching of reading suggests, then valid measurement would be relatively simple. Measurement of eye movements, rate, and reading subskills is possible, but this is not measuring reading. Reading is a complicated, unified, continuous activity which does not break down into distinct parts. Other basic skills such as spelling or arithmetic can be subdivided into isolated, measurable units such as a list of ph words or a set of multiplication problems. But reading ceases to be reading when the process is scrutinized in such a way.

In addition to the problem of reading being a necessarily unified process, Traxler noted that we have the problem of being unable to observe reading. Although much may be inferred from listening to oral reading, most real reading is an associative process which is in the

reader's mind. There is no way we can tell if a student reading silently is gathering literal details or making inferences or in fact reacting to any of the printed page at all. So, until a better way of studying comprehension is found, we ask the student a series of questions when reading is finished and hope we are testing the quality of comprehension.

In addition, Lennon (1970) observed that the test situation requires different motivation from the normal reading situation. Unfortunately this difference can affect test validity because motivation will vary from one subject to the other. Our interpretation of subtest scores must always be influenced by the knowledge that the subject performed while aware of being measured.

The above issues--whether standardized test scores are damaging to students, whether they produce valid test scores, whether they can be used to measure reading--all are interrelated. These issues deal with the constructs of motivation, self-concept, and performance, which are all interrelated as well.

Also associated is a fourth construct, test anxiety. Since dealing with test anxiety is the focus of this paper, the next paragraphs will take a closer look at this perplexing trait.

Test Anxiety

Although Ebel (1979) stated that claims of debilitating test anxiety are often unsubstantiated, much has been written about the subject. The following paragraphs review position statements and research reports from the sixties to the present decade.

The landmark work Anxiety in Elementary School Children (S. Sarason, et al., 1960) presented the Test Anxiety Scale for Children with a thorough discussion of the construct. Conventional tests of intellectually average test-anxious children, according to Sarason et al., may contain more error than scores of children of average intelligence who have less test anxiety. The hypothesis is that test-anxiety interferes with problem solving. This is because the test-anxious child is more aware of inner feelings than of the task in front of him. The anxiety narrows field of vision, preventing an intellectual assessment of the problem.

Sarason et al. continued with the charge that little attention is paid to the child's attitude toward testing. Such attention is unnecessary to many educators who assume that attitudes have little bearing on performance and behavior.

Educators cannot be blamed entirely for this "serious inadequacy" (p. 270), however. Early identification of test anxiety is not the aim of standardized tests. Budgeting and staff restrictions reduce the scope of testing to academic achievement, curriculum composition, placement in special classes, and criterion for promotion. The test-anxious child will not be accurately reflecting learning, but teachers will not notice this. The problem goes unnoticed because test anxiety is usually a set of covert responses, often unexpressed. The significant adult in the classroom cannot be psychologist and teacher too. The teacher is unaware of the situation and therefore cannot help.

There are situations which alleviate test anxiety. Problem-solving tasks may be given in an un-testlike way, as in a game, or the examiner can maintain a supportive relationship with the child throughout the test, meeting dependency needs. These situations are not possible with standardized tests, however.

In light of these restrictions, Sarason nevertheless called for early identification of test anxiety. Locating and helping children with this problem is important for education and society, because how the problem is treated will affect how these children will meet test situations the rest of their lives. It is therefore strange, according to Sarason et al. (1960), that a study of such attitudes has not been systematically incorporated in testing programs.

More recent statements also show an interest in the study of test anxiety. Several reviews of research concerning test anxiety conclude that subjects who are ranked high in the trait will tend to perform more poorly than subjects who are less anxious (Carver, et al., 1983; Wine, 1982). Recent volumes of such literature reflect the positions taken by Wine and Carver. In addition, B. Sarason's 1960 hypothesis continues to be quoted and developed (Atkinson & Feather, 1966; Fyans, 1978; I. Sarason, 1980; Spielberger & I. Sarason, 1975-1982).

Several descriptions of experiments follow which seem to question Ebel's statement concerning the unimportance of test anxiety. The experiments with children as subjects used the Test Anxiety Scale for Children, an unpublished self-response measure developed by S. Sarason and associates (1960). The acronym for the Test Anxiety Scale is TASC. Because this scale was used in many studies of children's test anxiety reviewed in this paper, a discussion of the TASC follows.

The TASC consists of thirty questions which are read to the children. Subjects respond by circling "yes" or "no." Examples of questions are:

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

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

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

Feld and Lewis (1969) have reversed some of the TASC items so that part of the answers showing anxiety are negative. This is to remove acquiescence response set (Johnson & Bommarito, 1971). Because highly defensive children (particularly boys) might falsely report low test anxiety, S. Sarason's eleven-item Lie Scale is usually incorporated into the TASC (Hill, 1978). Following are sample items from the Lie Scale:

> Do you worry about knowing your lessons?
> Do you ever worry about what other people think of you?
> When you were younger, were you ever scared of anything?
> Do you ever worry that you won't be able to do something you want to do?
> Do you ever worry about something bad happening to someone you know? (S. Sarason et al, 1960, p. 111)

O. K. Buros used S. Sarason's reviews and citations in the Mental Measurements Yearbook (1959-1977), Tests in Print (1961-1983), and Personality Tests and Reviews (1970-1974). Buros did not, however, review the TASC. (A special computer search was conducted on the Mental Measurements Yearbook to further look for a TASC review.) Other writers do discuss Sarason's scale, however. Hill (1978), in his

discussion of test anxiety measures for children, describes the TASC as "the major measure of anxiety" (p. 44). Cotler and Palmer (1970) state that the TASC "provides excellent discrimination among groups of children performing in a demand test situation" (p. 217). The review in Tests and Measurements in Child Development (Johnson & Bommarito, 1971) calls evidence given for validity by S. Sarason (1960) as "impressive" (p. 246). Numerous ways of measuring the scale's validity are described by S. Sarason (1960) in Chapter Six of his book Anxiety in Elementary School Children. Validity was partly based on the fact that the symptoms studied are reportable. The validity ratings are mostly concurrent checks with teacher ratings and with situations where test anxiety could be expected to reach great heights.

S. Sarason later cautioned against over-reliance on the TASC, however (1966). This scale, or any other self-report measure of anxiety, often tells more about the individual and how that individual is coping with test anxiety than about the level of anxiety itself. Since most children very soon learn that concealment of anxiety is desirable, they often hide it so well they do not even recognize it. This is particularly true of older children.

S. Sarason (1966) also warned that many constructs are involved in anxiety measurement. These constructs are very complex and are all interrelated. For this reason, Sarason compared the TASC and similar scales to tests of intelligence. These measures do have worth. They demonstrate relationships with other, more clearly defined variables. Sarason concluded that, as long as we realize their limitations,

measures of intelligence and of anxiety do have practical value in contributing to educational decisions.

In the same chapter, S. Sarason (1966) described research in which he relied upon the TASC to discriminate between high and low text-anxious students. The upper and lower fifteenth percentiles of the anxiety score distributions were used to designate high and low test anxiety.

Other experiments have also reported using the TASC as discriminator. The most recent study is by Zatz and Chassin (1983) and is discussed in the cognitive restructuring section of this paper. Penney and McCann (1962) used the TASC in a study of conditioning of anxious and non-anxious children. Zimbardo, Barnard, and Berkowitz (1963) used the TASC as a discriminator to test the prediction that high-anxious children would evidence speech disturbance in an evaluative interview. Ruebush, Byrum, and Farnham (1963) used it in investigation of defensiveness in low-anxious boys. Ryan and McMillan (1970) used the TASC for selection of subjects in order to try various methods of teaching social studies. Dusek and Hill (1970) used the Tasc as a discriminator in an experiment which showed a surprising lack of effect of test anxiety on boys' performance. This experiment is described in the following paragraphs.

Dusek and Hill (1970) divided 40 boys and 32 girls into groups according to their level of test anxiety as measured by the TASC, their grade point average, and the level of reinforcement they were to be given during treatment. Subjects, whose ages were nine and ten, were given a probability-learning task which included 210 responses.

Half the subjects were given high reinforcement (verbal praise) and the other half were given low reinforcement. Dependent variables included number of correct responses and observed patterns of learning strategies.

A consistent pattern which was observed in the high reinforcement group was the minimization of praise in order to concentrate on the task at hand. This was observed significantly ($p < .01$) more with high and low anxious boys than with high and low anxious girls. Sex differences were also found in effects of test anxiety on performance: TA had a significant ($p < .05$) depression effect on girls' achievement, but not on the achievement of boys (Dusek & Hill, 1970).

Four experiments which used the TASC but not as discriminator were reported. Bryan and Loder (1962) studied after effects of a previous anxiety-provoking situation, but no relationship was found with the TASC. Dunn (1964, 1965) and Feld and Lewis (1967) investigated technical aspects of the TASC. Most experiments which use the TASC, however, use it to discriminate between high- and low-anxious examinees. More research using the TASC as discriminator is in fact reported later in this paper.

Interference Effects of Test Anxiety

In 1959 S. Sarason designed an experiment which studied the effects of anxiety upon children's responses in a test-like situation. Thirty-two pairs of subjects were watched for grade, sex, and IQ score. One of each pair was high anxious and one was low anxious, as measured by the TASC. The children responded to Rorschach cards. High test-anxious (TA) children could not respond as often or so

completely (level of significance = .05) as low TA children, in spite of the same IQ (S. Sarason, 1960).

Dusek and Dusek conducted two experiments in 1978 to study interference effects of test anxiety. In both experiments, incidental learning was used to assess selective attention in high TA children and low TA children. It was hypothesized that high TA children would have higher incidental learning scores than low TA children.

In Experiment 1, 24 boys and 24 girls, each from second, fourth, and sixth grades, were assessed for test anxiety by the TASC. Two groups were formed from the Scale; 24 children were designated high TA and 24 were considered low TA. Each subject was tested individually on ability to remember locations of pictures in panels. The focus was on animal pictures; other pictures were incidental learning. Low TA children had a higher mean central learning score (5.8) than did the high TA subjects (5.1). Statistical significance was not reported in this test, however.

Experiment 2 is perhaps a better demonstration of the interference effect of test anxiety. Subjects were second, fourth, and sixth grade boys and girls, 24 of each sex from each grade level. Half were high TA and half were low TA. The procedure was similar to Experiment 1, but incidental pictures were spatially separated. After a pre-test, all subjects were trained in specific test-taking strategies. The training helped the high TA children focus on central learning to a significant extent; low TA central learning scores were not affected much. In spite of this, the performance of the low TA subjects was significantly greater (mean = 6.4) than that of the high TA subjects (mean = 5.4).

Cotler and Palmer (1970) focused on the effects of children's locus of control on maze performance, but this study also revealed the effects of test anxiety. Four experiments showing decreased performance in anxious adults were reported by Spielberger (1966). Many authors, including Atkinson (1966), Feather (1966), and Fyans (1978) review the subject, referring most often to adult-subject investigations.

In a study of 28 male college students, Becker (1982) might have shown why test anxiety is not considered a major problem by many teachers (Ebel, 1979). The aim of the experiment was to survey behavior of students at several points of time prior to an exam to investigate the relationship of achievement behavior and fear. Charts were made of fear curves in relation to other variables, including self-evaluation of competence, self-evaluation of fear, level of aspiration, achievement motivation, and attitudes and beliefs about the exam. Students with low self-estimates of competence tended to have low achievement motivation. Their level of aspiration was low, and they usually considered the exam to be unimportant. Becker's explanation for this phenomenon is that low achievement motivation is a defense against high fear, alleviating the disappointment of getting a low grade. A weakness of this study is that the measures are not reported. Generalizability to elementary students is not known. The theory proposed by Becker is an interesting one, however, and merits testing with elementary children.

To summarize research on test anxiety, a difference of opinion exists concerning its importance. Ebel (1979) dismisses its effect as

minimal, while S. B. Sarason (1960) and others feel test anxiety investigation is needed.

A Combination of Strategies to Lessen Test Anxiety

A review of the literature calls for a combination of strategies to be used in helping children deal with test anxiety. Desensitization is suggested, as well as a variety of other treatments, including training in self-relaxation, reinforcement of school attendance, instruction in coping responses, and cognitive restructuring (Prout & Harvey, 1978). Coaching for test-wiseness has been related to achievement (Millman, Bishop, & Ebel, 1965) and could possibly also influence test anxiety (I. Sarason, 1975; Sarnacki, 1979). These strategies are all interrelated and are built on the construct of self-concept (Felker, 1974). Reports of research in this area tend to fall into two main categories, however. These categories, symptom reduction and cognitive restructuring, will be used as organizers in this paper.

Symptom Reduction

This paper's definition of test anxiety has been in terms of symptoms such as uneasy feelings and body tension. Training in self-relaxation (Prout & Harvey, 1978), biofeedback (Omiza, 1980), physiological exercises and use of mantra (Heide & Borkovec, 1983), are all efforts to reduce these symptoms. Counter-conditioning (desensitization) is also used, according to Prout and Harvey. This is a pairing of an anxiety-provoking stimulus with a response antagonistic to anxiety. For instance, muscle relaxing exercises could be paired with imagining a difficult test. Of the various

methods used to reduce anxiety symptoms, desensitization and biofeedback training seem most prominent.

Desensitization

Prout and Harvey's (1978) extensive review of the subject indicated that various types of desensitization procedures are effective with a wide range of anxieties, including school anxieties. Test anxiety is considered a situational anxiety state and has been researched extensively with college students. Less research has been done with younger students, but Prout and Harvey concluded that effective desensitization procedures exist in treating school- related anxieties. Group therapy is particularly effective, using a combination of systematic desensitization, practice, and reinforcement. Prout and Harvey suggested that desensitization be utilized with other treatments. They called for more research in the area, particularly with children. They also pointed out cognitive restructuring as a means of reducing school anxiety which bears further investigation.

Leamon (1982) investigated the effects of desensitization on anxiety in college students who had scored above the mean on the Taylor Manifest Anxiety Scale (1953). The volunteers were taken from a target population which was 68% white, 32 % black, 73% female, and 27% male. Average age of the target population was 28.1 years. The students came from 20 area communities, none larger than 14,000 population. A similar description was not given for the 54 students who agreed to participate in the experiment.

Subjects were randomly assigned to two treatment groups and one control group, each numbering 18 participants. The treatment group discussed in this paper received an audio cassette training program of systematic desensitization developed by BMA Audio Cassette Programs by Thomas H. Budzynski, Ph.D. This program consisted of six tapes with six different lessons in body/mind relaxation. The lessons were designed to help students distinguish between sensations of tension and deep relaxation and to identify which muscle areas of the body are being affected.

At each session the subjects were instructed to verbalize their sensations and to get in a comfortable position. The desensitization lesson sequence was as follows: (a) tense-slow-relax exercises, (b) relaxation in different parts of the body, (c) feeling limb heaviness, (d) feeling heaviness and warmness in arms and legs, (e) forehead and facial relaxation, and (f) anxiety management. When the subjects had reached a relaxed state they were instructed to visualize an anxiety-producing situation. These situations were mildly anxiety-provoking at first, but increased in intensity with later lessons.

The control group received the same number of lessons in an area considered unrelated to anxiety training. These lessons were on group dynamics and were presented with a systematic, experimental approach. Exercises pertained to introductions, self-knowledge, values, moral dilemmas, level of group participation, and working with groups in general.

Data were gathered on the Taylor Manifest Anxiety Scale post-test from the experimental and control groups. Because two other dependent

variables (locus of control and self-esteem) were also measured, a one-way analysis of variance (ANOVA) was used, with pre-test scores as covariates. Course examination grades as achievement pre- and post-test scores were also examined with ANOVA. Dependent variables were: (a) anxiety level as measured by the Taylor Manifest Anxiety Scale (1953), (b) self-esteem as measured by Coopersmith's Self-esteem Inventory (1967); (c) locus of control as measured by Locus of Control for Adults (Nowicki & Duke, 1974), and (d) unit course examination scores. Independent variables were: (a) desensitization training for the group discussed in this paper; (b) transactional analysis for the group not discussed in this paper, and (c) group exercises for the control group.

The hypothesis examined in this study which related to anxiety was that subjects who received desensitization training would have less anxiety (as assessed by the Taylor Manifest Anxiety Scale) than the subjects who received the placebo treatment. Significance was set at the .05 level.

Results showed that the desensitization program had significantly greater impact on anxiety than did the control treatment. A significant increase in locus of control but not self-esteem was also shown as a result of desensitization training. Although effects of desensitization training on achievement were not hypothesized, achievement scores were analyzed statistically and found significantly better ($p < .05$) for the desensitization group than for the control group.

Leamon concluded that there appears to be a relationship between anxiety, locus of control, and academic achievement. He further concluded that desensitization training can have a significant effect on anxiety levels. He cautioned that educators should not expect a decrease in anxiety to have immediate effects on academic achievement, but he did report that subjects' academic performance did show a gradual pattern of improvement in semesters following the experiment.

Although Leamon's experiment is reported at great length, some information is missing: The target population was described but the 54 subjects selected were not. Some statement concerning length of sessions and intervals between sessions is also needed. Another possible weakness in Leamon's report might be inadequate choice of achievement measures. The use of unit test scores from one course as pre- and post-test measures of achievement seems inadequate, particularly in a small subject population. These weaknesses could affect the result of Leamon's experiment. The study was nevertheless reported in this paper because of its subject matter and otherwise careful design.

Transactional analysis is not considered a type of desensitization and was not reported fully in this paper. It was treated separately in the experiment and was not a confounding variable. Using other methods along with desensitization is, however, considered the most effective way to treat test anxiety (Allen, Elias, & Zlotlow, 1980; Prout & Harvey, 1978).

Biofeedback Training

Biofeedback, the process of supplying a person with information about that person's biological activity, has developed as part of a young discipline called psychophysiology. Psychophysiology studies the intricate interrelationships between mind and body in order to provide therapy for psychosomatic dysfunctions. Insights into mechanisms and scope of mind-body interactions are given by biofeedback, thus providing the groundwork for practical applications (Brown, 1975).

Factors involved in biofeedback include instrumentation, recording and measurement techniques, and physiologic and neurophysiologic mechanisms. Psychologic factors such as emotion, learning, and cognition are also implicated. System changes during unusual activity are most often recorded by measurements of perspiration, heart rate, blood pressure, central nervous system, and muscle tenseness. Other system changes which may be recorded are respiratory, salivary, renal, temperature, and vasomotor. Biofeedback training is closely related to other forms of learning, particularly conditioned learning (Brown, 1975).

The effects of relaxation training and biofeedback were the subject of a systematic experiment designed by Omiza (1980). The investigator was interested in effects on five factors of self-concept: (a) leadership and initiative, (b) identification versus alienation, (c) academic interest and satisfaction, (d) level of aspiration, and (e) anxiety.

Subjects were 52 hyperactive boys, aged nine to eleven years. These boys were from five public schools in a large urban school district. Because hyperactivity is six times more common among boys than girls, (Sandoval, cited in Omiza, 1980), only male subjects were available in sufficient numbers to use. Subjects were chosen from teacher's ratings on Connors' Behavior Rating Scale, Abbreviated Form. This is the most extensively used teacher rating scale for hyperactive children, according to Sandoval (cited in Omiza, 1980). A cutoff point of 1.96 standard deviations above the mean of the normative population was applied in selecting subjects. A randomized block design was used to match subjects by rank on the behavior ratings. Two groups were established, then randomly assigned to experimental or control conditions. A *t* test showed no significant difference in hyperactivity ratings between the experimental and control groups. None of the subjects took any form of medication for the duration of the experiment.

A Toomin 507 Digital Integrator was attached to a Toomin 502a Electromyometer to facilitate EMG data collection. Mean EMG readings were displayed every 30 seconds on the integrator. To measure five self-concept factors which are associated with school, the Dimensions of Self-Concept (DOSC) by Michael and Smith (cited in Omiza, 1980) was used. The DOSC is a self-report instrument. The anxiety factor which was measured reflected behavior patterns and perceptions associated with (a) extreme concern about tests, (b) preservation of self-esteem relative to scholastic achievement, and (c) emotional stability. Reliability coefficients for the DOSC were reported as ranging from

.70 to .84, according to Michael and Smith (cited in Omiza, 1980). Validity studies were being conducted at the time Omiza's article was written, and were not available.

Treatment consisted of three sessions, spaced two weeks apart. Number of minutes devoted to each session was not given, though Omiza did refer to the brevity of the investigation. Subjects were treated in pairs to facilitate data collection. Identical conditions (except for treatment) for the experimental and control member of each pair was expected to strengthen internal validity. A partition separated the experimental and control subject. Although both subjects were tested for muscle tenseness, only the experimental subject listened to a relaxation tape (through earphones) and only the experimental subject received visual EMG biofeedback. The experimental subject was instructed to try to bring down the biofeedback readings by relaxing. The control subject listened to a neutral story on tape. Subjects were seen individually for baseline and post-test EMG recordings and were seen as a group for pre- and post-test administrations of the DOSC.

A careful data analysis was made using multivariate analysis of variance to test for significant difference between experimental and control groups. Post hoc procedures of univariate Fs and discriminant techniques were used to investigate further group differences.

Data from EMG readings and DOSC scores indicated that treatment made a significant difference at the .01 level for the self-concept factors of muscle tenseness, aspiration, anxiety, and identification/alienation. Significance was at the .05 level for leadership and

initiative. Treatment did not make a significant difference on academic interest and satisfaction; Omiza suggests short duration of treatment as a reason for this lack of effect.

Although exact time spent in treatment is not reported; a short time span may be a weakness in this study. Follow-up studies are needed to ensure durability of effects. Nevertheless, data seem to indicate that biofeedback training can give students a way to control their anxieties. Since inner control is needed for learning to take place (Satterfield, cited in Omiza, 1980), biofeedback training could be an important educational tool. Although this study restricts itself to male hyperactive children, the remedial reading teacher might consider investigating the possibilities of using biofeedback training with other children.

One interesting experiment (Heide & Borkovec, 1983) has been reported which found symptom-reduction exercises actually increased tension among extremely anxious adults. The low number of subjects involved plus many uncontrolled variables indicates need for replication, however. In addition, generalizability to a younger population is questionable.

A review of literature concerning anxiety symptom-reduction methods indicates that these procedures are valuable. Authors have indicated more research is needed to identify new such methods of relieving anxiety.

Cognitive Restructuring

Prout and Harvey (1978), in their discussion of desensitization as a means of reducing test anxiety, called for additional measures to

be investigated, particularly cognitive restructuring. I. Sarason (1978) calls cognitive restructuring "a promising recent development" (p. 197) in the struggle against anxiety. Earlier (I. Sarason, 1975) he had called for research in cognition to be added to the behavioral research done in the field. Covert behaviors and activities are functions of the individual's past and serve as mediators between experience and behavior. Cognitive behaviors influence stimulus reception, Sarason stated. He added "There seems to be increasing recognition of the need to establish a middle ground between the limited and more precise domain of behaviorism and the broad but murkier domain of the inner life of the individual" (p. 24).

Sarason defined the cognitive restructuring as the acquisition of new cognitive skills to replace maladaptive ones. Training and strengthening adaptive cognitive skills consist of planning a course of action and reducing intrusive self-preoccupation (I. Sarason, 1975). Planning a course of action may consist of learning to set realistic goals, learning to recognize signs of distress, and planning what to do about stress. Learning to talk constructively to one's self when in a stressful situation may help to reduce intrusive self-preoccupation (Meichenbaum, 1977). These techniques will be discussed more fully in later sections of this paper.

Holroyd (1976) compared cognitive restructuring with desensitization in a study of 60 test-anxious university undergraduates, assessed by self-report. Holroyd claimed the cognitive restructuring to be more effective than any of the other conditions in reducing anxiety and improving grade-point average. Results were not

statistically significant, however. Although Holroyd's report might be over-concluded, Wine's (1982) review of literature in the field suggested that contemporary approaches to test anxiety are emphasizing the role played by cognitive variables.

I. Sarason suggested these components of a cognitive restructuring program: (a) coaching for test-wiseness, (b) attentional training, and (c) self-monitoring (I. G. Sarason, 1975).

The following paragraphs will examine the above three cognitive methods of dealing with test anxiety.

Coaching for Test-Wiseness

Ebel and Damrin (1960) listed test-wiseness as a component of response variance in objective test questions. They defined the construct as that which influences the subject to respond to a test item according to knowledge of the design and format of objective tests. Examples are the avoidance of answers with "always" or "never" included, and the avoidance of an answer position which has been frequently used. The definition presented by Millman et al. (1965) is similar, but adds that the subject uses such knowledge to receive a higher test score. They also noted that test-wiseness is independent of the examinee's knowledge of subject matter.

Test-wiseness appeared in literature as early as 1951, when Thorndike described it as a persistent general trait of test-takers. He felt that test-wiseness is undesirable because it reduces validity of the test. He recognized its pervasiveness, however, especially when children are given tests with unfamiliar formats. He suggested reducing test-wise-caused variance in scores by making sure all directions are as clear as possible.

Although Thorndike worried that test-wiseness caused error in measurement, Ebel (1979) stated that measurement error is more likely to come from students who have too little rather than too much skill in taking tests. Research since Thorndike's time has in fact concentrated on the child who knows too little about test-taking. I. Sarason (1975) suggested training in test-taking skills as one weapon against debilitating test anxiety. There is a lack of research which examines the correlation of test-wiseness to test anxiety and Sarnacki (1979) suggested research in this area.

Literature does abound in the field of test-wiseness itself. The wealth of research reported in Sarnacki's extensive review of the subject supports the use of coaching for test-wiseness to increase performance. He concluded that such training is worthwhile, especially in the junior high curriculum. He believed that test-wiseness coaching in the lower grades might be less useful, though he did suggest it on a limited basis for younger children.

Experiments have not always shown coaching for test-wiseness to be successful. Jongsma and Warshauer (1975) found that fifth-grade inner city students who had studied a unit on test-taking skills averaged higher reading achievement scores than students who had received no instruction, but their gains were not statistically significant. Children made significant ($p < .01$ and $p < .05$) gains in certain reading achievement subtests directly after test-wiseness coaching in an experiment by Oakland (1972), but differences in treatment and control groups were not significant four months later.

A closer examination of Oakland's experiment suggests that the skills taught might have developed anyway with maturation. The purpose of the study was to test the claim that many children perform poorly on reading readiness tests because they lack the prerequisite abilities to take standardized tests.

After reviewing five readiness tests, Oakland identified various prerequisites. Examples of these prerequisites are ability to work in columns and rows and knowledge of concepts such as left, right, up, down, opposite, most like, same, and different. Curricular materials were then designed and used in an effort to increase test-wiseness. The thirty pages of materials used several different formats to provide varied experiences with readiness test organization, but no materials were taken from existing tests. Neither was any attempt made to increase content knowledge which might be measured by readiness tests. A description of the coaching provided by the materials is included in this paper's section called "Implications for Education."

Subjects were 61 children (32 Mexican-American, 26 Black, and 3 Anglo) from four Head Start classes, assigned randomly to an experimental or control group. The experimental group, supervised by regular teachers, worked on the test-wise materials during the twice-weekly, 30-minute sessions. The experiment lasted for six weeks. The control group worked in various activities at this time, supervised by teacher aides. The experiment's measure was the Metropolitan Readiness Test, administered as a pre test in March, as a post test in May, and as a follow-up post test the next September. Different forms were used each time.

Analysis of covariance was used to examine group differences on post test one and post test two; pre test scores were used as covariate. Subtests in the Metropolitan were: Word Meaning, Listening, Matching, Alphabet, Numbers, Copying, and Total Score. Tests of homogeneity of regression produced significantly higher F ratios ($p < .05$) on Word Meaning for the experimental group. Significantly higher ($p < .01$) scores were also found for the experimental group on Matching and Total Score. Other subtest scores were higher for the experimental group, but not significantly higher. On the follow-up post test no group differences were found.

Although an attempt was made to employ various formats in the treatment, a matching items of some form were utilized in 78% of the test- wiseness materials. This extra practice in matching was reflected in the Metropolitan data. The test-wiseness materials were instrumental in improving certain test-taking behaviors, but the special coaching had limited value. Oakland was unable to explain the control group's gain over the summer, but suggested that the skills taught might have developed anyway through maturation.

Weaver (1978) and Brown (1982) disagreed with Sarnacki and Oakland; they claimed that coaching for test-wiseness to enhance achievement is worthwhile in all grades, no matter sex or ability. They base their opinions on reviews of related literature. Weaver offers a bibliography of aids for teaching test-wiseness (TW). Various situations are provided for, including TW coaching in first grade to TW coaching for Iowa Tests of Basic Skills. Addresses or ERIC Document Retrieval numbers for these practical approaches may be found in this paper's "Implications for Education."

In summary, training for test-wiseness might decrease test anxiety in elementary children (I. Sarason, 1975) but research is needed to verify this possibility. Studies do exist, however, which relate test-wiseness to achievement. Although some research reports fail to show the effects of test-wiseness coaching on achievement, most authorities advise the practice, particularly with older children.

Attention Training

Test-anxious persons have been shown to be likely to exhibit performance deficits when they feel themselves undergoing evaluation in areas that are of personal importance. In this evaluative situation the test-anxious person is more self- depracatory and self-preoccupied than the low test-anxious subject (I. Sarason & Stoops, 1978). This self-focus decreases test performance (Carver et al., 1983). To help the test-anxious subject focus on the task at hand rather than self has proven to be an effective way to increase test performance (Wine, 1971).

Meichenbaum's landmark work on cognitive restructuring used verbalizations to direct anxious subjects' thoughts away from self and toward the task to be done. Adults and children were taught to covertly talk to themselves in any anxiety-producing situation, although school situations were not directly included in experiments (Meichenbaum, 1977).

Subjects were taught to appraise the situation realistically, to appraise their own abilities realistically and positively, and then to plan a course of action. They were cautioned against over

generalization of a problem, as in "I am going to flunk this test for sure." At first the subjects were told to "think out loud" in group sessions. Later they were encouraged to inconspicuously verbalize to themselves, if they wished (Meichenbaum, 1977).

Such self-talk could be thus carried out in a test setting: "The teacher is passing out that kind of test again. I got discouraged the last time and quit reading the questions. Now I know this is over stuff we haven't studied in class, so of course I'm not going to get all the answers right. I think I will keep reading the questions this time. Maybe I can raise my score by 10 points. Reading isn't easy for me, but I'm smart enough to read the questions. Anybody who can make an A on that last science test is smart enough to get a lot of these answers right. Here the teacher comes with the test. The first thing I will do is read the directions." While taking the test, the student recognizes and corrects debilitating self-thoughts: "I'm going to flunk this test for sure. No, I mean that is a tricky question. I'll try putting it into my own words." While Meichenbaum's (1977) examples were concerned with anxiety-producing settings such as social or phobic situations, their general structure was followed in the above self-talk.

Zatz and Chassin (1983) report one of the few investigations made of test-anxious children's cognitions. Subjects were 294 fifth and sixth graders from a Southwestern school system. Fifty-five percent of the pupils were from working class parents, 57% were female, and 89% were white. The children were divided into high anxious (HA), middle anxious (MA), and low anxious (LA) groups by the Test Anxiety

Scale for Children and Defensiveness Scale for Children (B. Sarason, Hills, & Zimbardo, 1964). HA, MA, and LA children were not significantly different in race, but there were significantly more HA females. Relationships of variables were therefore analyzed separately for each sex.

The purpose of the study was to compare cognitions of HA, MA, and LA children in an analogue test situation. It was hypothesized that HA subjects would report more task-debilitating cognitions (negative evaluations and off-task thoughts), followed by MA and LA subjects. A second hypothesis was that the opposite pattern would be found for task facilitating cognitions. A third hypothesis was that test anxiety and task debilitating cognitions would be negatively correlated to performance. A last hypothesis was that task-facilitating cognitions would be positively related to performance.

Selection instruments were the TASC and the Defensiveness Scale for Children. The Defensiveness Scale for Children was developed from S. Sarason's Lie scale for children (1960). Two experimental tasks were also used: the Wechsler Intelligence Scale for Children-Revised (WISC-R) and an anagram task adapted from Stevenson and Odom, cited by Zatz and Chassin. Both tasks are adversely affected by anxiety, according to I. Sarason and Stoops (1978).

An anxiety-producing test situation was then designed, using examiner statements such as "All children should be able to do this correctly." After completing the tasks, the children were asked to record in a questionnaire their cognitions during the test situation.

Given twice, a reliability test (test-retest, Pearson r) was made to establish internal consistency of the questionnaire.

Because the authors felt that ability would be a confounding variable, partial correlations were computed between test anxiety and performance, partialling out subjects' mean achievement test scores. An analysis of variance and post hoc Tukey comparisons ($p < .05$) were used to find significant differences in self-rated anxiety levels between HA, MA, and LA groups. A multivariate analysis of variance was used to find significant differences on the questionnaire subscale scores. Tukey post hoc comparisons were set at the .05 probability level.

The HA subjects reported significantly more task-debilitating cognitions than the MA or LA groups ($p < .05$). The HA groups reported fewer ($p < .05$) positive evaluations than the LA groups. The MA groups did not differ significantly from either group. The LA children did not have significantly more on-task thoughts. After effects of ability were ruled out, significant correlations between cognitions and performance were found only for boys.

Former authors had suggested that low-anxious subjects might be low-anxious because of low motivation, caused in turn by low ability (Becker, 1982). Findings did not concur with this. Low-anxious children were not significantly lower in performance. The authors concluded that low ability might cause low motivation, but not in significant proportions in normal school populations.

Zatz and Chassin's study appears to be careful, objective, and not over concluded. Its test for a relationship between low ability and low motivation, when applied to a remedial population, might be different; low ability might then be more likely to be related to low motivation.

The questionnaire used to record children's cognitions could possibly contain the study's only serious flaw. The first three sets of cognitions (found in this paper's Appendix F) are labeled Negative evaluations, Off-task thoughts, and Positive evaluations. These labels appear to be valid. The last set, labeled On-task thoughts, however, includes statements such as "Pay attention," "Work faster," and "Stay calm and relaxed." These statements appear to be coping efforts rather than actual on-task thoughts. Perhaps this labeling of the last sub-set kept the low-anxious children from being reported as having significantly more on-task thoughts.

(On-task thoughts are considered by this writer to be more content-oriented. Appendix F was included to help teachers and children recognize different categories of cognitions. For this reason the original items in the On-task set were removed and items relating to test questions were inserted. An example of content-oriented cognitions which replaced the original statements in the last set is: "The answer is (b) elephant.")

Heckhausen (1982) studied task-irrelevant cognitions of 70 volunteer undergrads taking a psychology exam. Anonymity was assured. Prior to the exam, subjects answered a questionnaire which investigated levels of aspiration. Using questionnaire responses, the

experimenter formed Hope of Success and Fear of Failure groups. The groups had equal numbers of males and females.

Immediately after the exam, subjects filled out a three-part questionnaire. The first part referred to the motivation process before and after the exam. The second part referred to the motivation state during the exam, and the third part referred to frequency and effects of various cognitions during the exam. Thoughts about subjects other than test items were considered irrelevant. Irrelevant cognitions were categorized as (a) experiencing competence versus incompetence, (b) failure expectancy versus anticipation of success, (c) internal or external causes of failure, and (d) negative versus positive self-evaluation of preparation before the exam. Affective factors included (a) nervousness versus calmness, (b) feeling overtaxed versus enjoying mastering difficulties, and (c) cool and objective response control versus lack of control. Important variables measured by the questionnaire were (a) aspiration level before exams and goal discrepancy, and (b) causal attributions (ability, preparation, physical condition, luck). Subjects were also asked to report self- evaluating feelings after the exam such as satisfaction, relief, and annoyance.

Results showed that the adverse influence of irrelevant cognitions depended upon the content of the cognitions. Only if cognitions were negative did frequency of cognitions become a problem. The attention hypothesis should therefore be differentiated: Self-focus decreases performance if it is negative.

Lower aspiration levels were highly related to more self-doubts, more thoughts about causes of failure, more awareness of poor performance, and more worry about negative results of a poor score. Exam grades covaried with cognitive self-doubt factors, but not with affective factors. If motivation was failure-oriented, results were attributed to luck. Failure-motivated persons perceived effort and persistence as ineffective.

Heckhausen's suggestions for intervention were aimed at reducing these types of cognitions: failure expectancy, causal attributions, worrying about what others think, worrying about what bad things will happen, and paying attention to nervousness. He pointed out the possibility of response sets in the subjective questionnaires right after the exam grade was given, and indicates the need for more investigation.

Self-Monitoring and Self-Control

Meichenbaum included realistic self-evaluation of performance in his research in dealing with anxiety. Such an approach fits in the self-monitoring/self-control component of I. Sarason's (1975) cognitive restructuring program. Heckhausen's previously described experiment with college students included a measure of aspiration level before the exam, and of goal discrepancy afterward. This aspiration level and goal discrepancy influenced 29% of self-evaluations after the exam (Heckhausen, 1982).

A factor which affects self-monitoring and self-control is locus of control. Locus of control was one of the variables in Heckhausen's experiment, as shown by cognitions concerning internal or external

causal attributions. Many investigations have positively related test anxiety to external locus of control (Bauer, 1975; Blaha & Chomin, 1982; Lusk, 1980; Morris, 1981; S. Sarason et al., 1960). Experiments by Bauer, Blaha, and Lusk used college students as subjects; Morris and S. Sarason et al. studied children. This relationship of test anxiety to external locus of control suggests that the test-anxious student is influenced at least partially by significant others rather than by self-control and self-monitoring. From the standpoint of the child, the teacher's attitude is very important, particularly if the teacher is liked, and particularly if the child is anxious. The anxious child needs approval and feels that high test scores are necessary for that approval (S. Sarason et al., 1960).

Cotler and Palmer (1970) found sex-differentiated dependency needs in children, but concluded that test anxiety functions in a similar way for both boys and girls. A description of their study follows.

Ninety fourth, fifth, and sixth grade subjects representing lower and middle class were selected from two public schools. Cotler and Palmer used the extremes and the center of the TASC score distribution to form three groups of students. The three groups contained equal numbers of girls and boys and represented the three grade levels. The subjects in the low-anxiety (LA), middle-anxiety (MA), and High-anxiety (HA) groups were randomly assigned into praise, criticism, and no-reinforcement conditions.

The 3x2x3 design consisted of 18 groups, each containing five subjects. The subjects were tested individually. Each subject was given instructions and practice preliminary to taking the Porteus maze test. In addition, each child was shown a table of figures and told that his performance would be compared with that of many other children who have taken the test. The administrator then promised a report of how well the subject was doing compared to others after the completion of each item.

During the actual maze-completion, however, feedback was given arbitrarily: 100% positive reinforcement to one group, 100% negative reinforcement to the second group, and a complete lack of reinforcement to the third group. Thorough de-briefing followed the treatment. Results were evaluated with analysis of variance, inspecting the interactions of anxiety, sex, and reinforcement. Speed and error data were analyzed separately. All significant effects were at the .01 level unless reported otherwise.

The main effect of anxiety on speed was significant. The LA subjects performed significantly better than did the MA or HA subjects. Sex or type of reinforcement did not have main effects on speed. There were significant two-way interactions between sex-by-anxiety and anxiety-by-reinforcement. however. The girls' speed of performance was highest in the LA groups, slower in the MA group, and slowest in the HA group. The HA boys were not significantly slower than the LA boys and in fact performed significantly faster than the MA group.

The anxiety-by-reinforcement interaction was also statistically significant. The praise and no-reinforcement conditions yielded similar functions, with the LA groups performing significantly faster than the other two groups. In the criticized groups, the LA-criticized subjects were significantly slower than all the other children. The MA children who were criticized performed about as well as MA children who either received positive or no reinforcement. Surprisingly, the HA-criticized groups performed significantly faster ($p < .05$) than did the HA-praised and HA-no reinforcement groups.

The significant main effects for the error data were for anxiety and sex. The anxiety effects were similar to the anxiety effects on speed. The mean number of errors was significantly lower for all girls than it was for all boys.

The two-way interactions in all three combinations of sex, anxiety, and reinforcement were significant for the error data. The anxiety-by-sex interaction for errors also paralleled the anxiety-by-sex interaction for speed.

The significant anxiety-by-reinforcement data showed that, in the praise and no-reinforcement groups, the MA children performed more poorly than the others, while the LA and HA groups performed better. The significant sex-by-reinforcement interaction showed that girls performed significantly better than boys under praise and no-reinforcement conditions, and were statistically equivalent to boys under criticism conditions.

In their discussion Cotler and Palmer (1970) evaluated the speed data, saying the performance of girls seemed to be more affected by

test anxiety level than by reinforcement. High-anxious boys responded more to negative reinforcement than did the other children.

In the error data for girls, Cotler and Palmer reported that praise appeared to be more effective for HA girls, although criticism proved to be more effective with LA girls. Criticism reduced accuracy among the HA boys while increasing speed.

There were sex differences in the no-reinforcement group for both speed and error data. Girls seemed to view no reinforcement as implied criticism; boys did not. Cotler and Palmer suggested a possible reason for this might be that boys are more used to receiving overt criticism than are girls. The authors also suggest that this indicates children may interpret no-reinforcement conditions differently.

Generalizability of Cotler and Palmer's investigation might be questioned, since region or ethnic background is not given. One also might wonder if sample size allows a probability of less than one percent on practically every difference which was analyzed. Nevertheless, their lengthy, well-documented study seems to be a positive indication that individual differences in locus of control may dictate the motivating effects of teacher reinforcement. Criticism may improve the performance of a child who feels secure, for instance, but may hinder the achievement of a highly anxious child. Cotler and Palmer somewhat paradoxically conclude that, while their report shows sex differences, test anxiety functions in a similar manner for boys and girls.

The 1959 Rorschach study described by S. Sarason et al. (1960) also investigated dependency traits. Examiners recorded when a child reported not being able to trace a response, or stated dissatisfaction with what had been traced, or if the child showed concern in some other way about tracing a response. These behaviors were considered indicative of dependency. Although there was no significant difference ($p < .05$) in dependency behaviors between high anxious and low anxious girls, there was significantly more dependency shown in high anxious boys than in low anxious boys.

These same children were independently observed in their classrooms for one hour. Ten high anxious and three low anxious boys overtly showed insecure behavior by asking an unusual number of questions, misbehaving to get attention, or acting afraid of the teacher. The kinds of differences observed between the high anxious and low anxious boys were not seen between the high anxious and low anxious girls.

S. Sarason suggested that the high anxious boy has a strong need to maintain the approval or avoid the disapproval of someone in the role of a parent-surrogate. In boys, this dependency on the approval of others and way of relating to authority figures can inhibit spontaneity and personal expression. Problem-solving efficiency might thus be reduced, according to S. Sarason et al. (1960).

Although the Rorschach study indicated stronger dependency behaviors in anxious boys than in anxious girls, S. Sarason included test-anxious girls in his general discussion of dependency and locus of control. According to Sarason, the problem-solving effectiveness

of the anxious child is far more dependent on how the problem is presented than is the more secure child. This vulnerability is present because the anxious child is more dependent on how other people structure relationships.

Probably because the teacher-student relationship can be seen by the child as a parent-child relationship, the teacher is the most important person in the classroom. This is true for all children. For the anxious child, however, this relationship possesses an unusual degree of importance which is disproportionate to the external situation. For these reasons the personality and behavior of the examiner-teacher are important factors in the performance of the test anxious child. Although a low anxious child may not be particularly affected by teacher behaviors which may be perceived as aloof, the anxious child could be seriously affected. If such a child (perhaps mistakenly) feels hostility or a rejection of dependency from the teacher, the possibility of failure becomes very real. Also, because anxious children often do not let themselves feel hostility toward authority figures, such feelings may be translated into even more dependent behaviors (S. Sarason et al., 1960).

To fill the anxious child's dependency needs, the examiner/teacher needs to show clearly what is expected, to show what is considered "right," and "good" by the teacher, and to show if the child is conforming to the teacher's standards. Above all, the child wants to know that external support and guidance will be given when feelings of helplessness take over. Of course, it is in the standardized test situation when these needs are most difficult to fill (S. Sarason et al., 1960).

A self-monitoring technique which might help internalize locus of control and reduce test anxiety is the practice of setting realistic goals. The relationship of self-set realistic goals to test anxiety in adult subjects has been considered important (Feather, 1966; Heckhausen, 1982) but there is a lack of research in this area which uses children as subjects. (An exception is Omiza'a 1980 study which does use children's locus of control and anxiety as variables.) The effects of training for realistic goals on test anxiety is particularly lacking but children's expectations for themselves have been studied in related contexts: De Charms (1976) was able to teach children to set realistic goals in a school setting, but test anxiety was not included in the experiment. Studies have found that test-anxious subjects frequently have extremely high or extremely low levels of aspiration (Feather, 1966; Heckhausen, 1983; Kay & Felker, 1975;) but the studies did not include training for realistic self-prediction. Entwhistle and Hayduk (1978) reported that first graders often come to school with unrealistically high expectations which later turn to frustration and anxiety, but Entwhistle and Hayduk did not include training for self-prediction in their design. As mentioned before, Meichenbaum (1977) suggested realistic self-evaluation in dealing with children's anxieties but did not relate this work to the school setting.

An elementary remedial reading teacher who has reviewed the literature on test anxiety will realize that, although the problem has received much attention in recent years, it is not considered important by every authority on testing. Nevertheless the teacher's

opinion might be that excessive test anxiety is a factor to be considered in the remedial classroom. After learning that a combination of strategies to alleviate test anxiety is probably best, the teacher will want to investigate practical suggestions for these strategies.

What actually works for educators in the areas of symptom reduction and cognitive restructuring is of interest at this point. Unfortunately, research has not as yet sufficiently tested practical applications. Many, but not all, of the devices described for biofeedback are out of the question in the classroom. Much of the literature about desensitization, coaching for test-wiseness, and attentional training, however, should produce specific ideas to be tried. Also, the conscientious teacher cannot pass over S. Sarason's discussion of dependency in text-anxious children without resolving to provide support and positive direction.

Some suggestions for implementing these ideas and resolutions are to be found in this paper's "Implications for Education" section. That the suggestions have not been completely tested is understood. One the other hand, perhaps a study and adaptation of these ideas might lead to more valid test scores. More importantly, some students might develop healthier, more realistic attitudes about meeting tests. It seems worth a try.

CHAPTER IV

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

One purpose of this chapter is to summarize the information presented in the previous sections of this paper. A discussion of findings will also be presented as well as implications for classroom practice and continuing research.

Summary

Standardized testing is an established practice in elementary reading. A problem associated with the test situation is an excessive amount of anxiety suffered by some examinees (McKensie, 1976). Although interest in test anxiety has grown in the last decade (Krohne & Laux, 1982; I. Sarason, 1980; Spielberger & I. Sarason, 1975-1982), not all authorities agree that it is an important problem in standardized testing. Ebel (1979) stated that the major concern of teachers is low motivation rather than test anxiety. Many studies do exist which relate test anxiety to depressed performance, however (Carver, et al., 1983; S. Sarason et al., 1960; Wine, 1982). In addition, low motivation might be a defense against test anxiety (Becker, 1982).

Literature suggests a combination of strategies is best to deal with test anxiety. These strategies are closely interrelated, but for organizational purposes may be generally grouped as those treating the symptoms of test anxiety and those dealing with cognitive restructuring.

Test anxiety has been defined in terms of reportable symptoms. Treatments such as biofeedback and desensitization to reduce these

symptoms can be effective, especially if treatment is not limited to one strategy. Symptom-reduction studies using children as subjects are few.

A recent development which has created much interest in the field of anxiety is cognitive restructuring, a process of acquiring new thinking skills to replace maladaptive ones. A cognitive restructuring program may consist of coaching for test-wiseness, attentional training, and training for self-monitoring of thoughts and behaviors (I. Sarason, 1975).

Studies exist which relate test-wiseness in children to achievement, but experiments with children using test-wiseness and test anxiety as variables are lacking in spite of I. Sarason's recommendation. The attentional theory has been tested and experiments show that anxious persons can reduce anxiety and increase performance by directing their thoughts away from themselves (Carver et al., 1983; Heckhausen, 1982; Meichenbaum, 1977; I. Sarason & Stoops, 1978). Such experiments have not been conducted in the elementary school setting, however. The self-monitoring technique suggested by I. Sarason suggests internalizing locus of control. Methods have been investigated to help the child set realistic goals (De Charms, 1976) but specific research such as goal setting has not been conducted with children to develop I. Sarason's idea of self-monitoring to decrease test anxiety.

Discussion and Educational Implications

The First Question

This paper has reviewed educational research literature to find if test anxiety in elementary remedial readers is a problem. Four general works on reading measurement were reviewed; none discussed test anxiety, though other measurement problems were discussed. A fifth major work was also reviewed which dealt with educational measurement in general. This fifth source did mention test anxiety but dismissed it as unimportant.

Test anxiety has received attention from a growing number of investigators, however, particularly since the publication of Anxiety in Elementary School Children (S. Sarason et al., 1960). No report was found which dealt specifically with test anxiety in elementary remedial readers, however.

Although S. Sarason's landmark book on school anxiety dealt with children, the majority of school anxiety studies since then have used college students as subjects. An effort was made to examine at least as many studies using children as those using college students or adults. For this reason all the child-studies relevant to test anxiety which were found have been discussed in this paper, but only a fraction of adult anxiety studies found were discussed. Of all the position papers and experimental studies reviewed, seven position statements and twelve experimental designs specifically dealt with test anxiety in the elementary population. Of these studies on children, no position statements and only one experimental design addressed the problem as it is found in elementary readers. Three

position papers and twelve experiments dealt specifically with adults. The literature reviewed which did not deal with children did deal with some aspect of anxiety or with its treatment.

One authoritative position statement on the subject concluded that although test anxiety can be debilitating, it can facilitate performance when existing in moderate amounts. Two experiments on adults showed that the anxious examinee must be in an evaluative situation of personal importance for test anxiety to become debilitating. A position statement in an article reviewed also indicated the necessity to differentiate the type of evaluation situation. In summary, this review of literature indicates that those investigators dealing with anxiety treat school anxiety as an important issue.

The Second Question and its Educational Implications

If test anxiety was found to be a significant problem, the intent of this paper was to then investigate ways of dealing with it. Strategies found may be generally categorized as those dealing with symptoms and those dealing with cognitive restructuring. In each section a report of research reviewed by this paper is followed by a discussion of educational implications. These implications include practical suggestions not necessarily documented by research.

Symptom Treatment

One major review of symptom treatment literature was reported. Its author concluded that symptom treatment is successful. One major experiment with children was found which tested relaxation training and biofeedback. Symptom treatment in this study was shown to reduce

anxiety significantly. Two adult-subject tests of anxiety-symptom treatment were also reviewed. Results were not significant in one. The other adult-subject study, which investigated desensitization, reported significant effects.

Studies indicate that methods to reduce symptoms of excessive test anxiety should be used in the classroom. The use of biofeedback instruments to measure and record such physiological signs of stress as heartbeat, perspiration, and temperature could possibly be used in the remedial classroom, but such procedures would probably be considered impractical by most teachers. Teaching students to recognize, monitor, and to some extent control physical signs of stress is suggested, however.

Student discussion of test anxiety and individual reactions to anxiety should be encouraged. This may be difficult for students who have coped with the problem by denying its existence. Denying test anxiety does not facilitate test performance, however (Becker, 1982; Sarason, 1960). Love (1981) suggests helping students understand that all people have stress, and that stress is a physical reaction to any good or bad experience we encounter. (In fact, the total lack of stress equals death.)

Some stress can encourage students to successfully study for a test. Only when we have too much stress is it a problem. Then we call it distress. Physical symptoms of anxiety or stress are: trembling hands, rapid breathing, rapid heartbeat, perspiration, a lump in the throat, stomach ache, and a feeling of tension. When these symptoms become bothersome in the test situation the problem becomes debilitating test anxiety.

Specific instructions for reducing symptoms of excessive anxiety are located in this paper's Appendix A and Appendix B. These are relaxation techniques which claim noticeable and in some instances measurable results. They may be adapted for use in the elementary remedial reading room. The teacher may combine these relaxation techniques with directions to think about test-taking, using a desensitization process similar to that described by Leamon. As the children learn to achieve a relaxed state, they may be told to imagine themselves taking progressively more difficult standardized tests, for instance.

A few words of caution: Such methods cannot be expected to relieve anxiety if they are hurriedly introduced just before a test. Subjects in Omiza's and Leamon's experiments received training over a period of time, as do most subjects who are tested for effects of training. It is therefore suggested that symptom-reduction training sessions be of adequate duration. Perhaps one or two brief sessions a week for six weeks would be adequate, with regular reviews throughout the school year.

Other symptom-reduction techniques may be utilized by the teacher who desires to lessen test anxiety. The teacher who praises any effort to take a dreaded test is deconditioning the dread by presenting pleasant experiences along with those considered by the child to be unpleasant. Systematic desensitization could be tried by introducing a small segment of a practice test in an unthreatening way. Giving just enough stress for the child to conquer would be the purpose of this method, which could be implemented by cutting

out-of-date standardized tests into progressively larger sections. The child should be encouraged to independently use this procedure, also. Fearsome situations are often best gone into bit by bit.

Students must be taught to monitor their own anxiety levels. Of course, teachers will want to remind children when an overwhelming situation might cause them to forget their stress training. An unobtrusive signal is suggested for a reminder. But the more children can accept responsibility for self-monitoring and self-control, the more they will be able to meet test situations for the rest of their lives. Crowder (1983) suggests that students wanting to control physical symptoms of stress should be taught the importance of physical exercise, proper diet, and avoidance of drugs or self-medication. Crowder also emphasizes the fact, however, that students must accept self-responsibility in this effort.

To summarize, the describable symptoms of debilitating test anxiety such as muscle tenseness and rapid heartbeat have been shown by research to be controllable. It is up to the teacher to adapt ways of doing this for the classroom. But for stress-control techniques to be truly effective, the student must accept individual responsibility.

Cognitive Restructuring

Ten position statements were reviewed which reported a positive relationship between anxiety and a cognitive variable such as self-evaluation or goal-setting. One of these statements referred specifically to children. The remaining nine referred to any age population. No position statement was found which did not conclude a

positive relationship between anxiety and cognitive variables. No writer went so far as to assume cause and effect relationship, however.

Of the thirteen experiments which tested the relationship between anxiety and cognitive variables, all thirteen showed a positive relationship. Seven of the thirteen experiments used children as subjects.

Three child-subject and two adult-subject experiments studied the effects of cognitive restructuring. All five experiments reported significant results.

Cognitive restructuring strategies have been generally classified in this paper as those having to do with training for test-wiseness, attentional training, self-monitoring, and self-control. Except for training for test-wiseness, these classifications are based on research reviewed. No experiment was found which directly related test-wiseness to test anxiety, however. Since coaching for test-wiseness remains in this paper as an important cognitive restructuring strategy, an explanation seems in order.

I. Sarason, a recognized authority in the field of test-anxiety, did include coaching for test-wiseness in his model of cognitive restructuring. Also, since reduced performance is related to test anxiety (Wine, 1982), training to increase performance in a test situation could logically be considered at least a partial answer to the problem. Studying for a test usually increases test performance but is impossible with standardized reading tests. Millman, Bishop and Ebel (1965) do suggest training for test-wiseness as a way to

increase test performance, a procedure viable in the standardized reading test situation.

Educational implications are clear: If test-anxious students are to achieve their potential, they must change their way of thinking about tests. Suggestions follow which might facilitate this change.

Although the precepts in Oakland's (1972) test-wiseness materials had limited value with pre-schoolers, they are clearly worth trying in the primary grades. His suggestions for developing such materials follow:

1. Begin with few items and options per page and gradually increase them in number until the page is similar in appearance to an actual test page.
2. Provide practice in working in columns and rows.
3. Teach the concepts right, left, up, down, opposite, most like, same, and different.
4. Gradually increase the number of options per frame from two through five.
5. Encourage children to examine carefully all possible responses before choosing the correct one.
6. Progress from big pictures and words with few on a page to small pictures and words with several on a page, again until the final page is similar to an actual test page.
7. Provide practice in putting a mark directly on, directly under, or in the circle under the correct response.
8. Teach the children that biggest can mean the most and that a pencil may be called a marker.
9. Use both dotted lines and heavy black lines to separate the criterion from the options.
10. Refer to each page as a test in order to get children accustomed to the word.
11. Encourage children to ask questions if they do not understand the test directions.
12. Teach children to use a marker for keeping their places as they progress on each page.
13. Gradually increase the length of time children are encouraged to remain task oriented. (p. 357)

Millman, Bishop and Ebel (1965) describe general test-taking strategies as being independent of the test itself. In other words, they would apply to most objective tests. These include strategies

for using time, following directions, checking answers to avoid careless errors, knowing when and how to guess, and using deductive reasoning.

An outline of Millman, Bishop, and Ebel's general test-taking strategies is included in Appendix C. It can be adapted to elementary grade levels. For instance, the first item reads "Begin to work as rapidly as possible with reasonable assurance of accuracy." This could be changed to read "Begin to work as fast as you can, but don't work so fast that you make extra mistakes."

The Oklahoma State Department of Education (1982) has developed test-wiseness material for the upper elementary grades. These activities are to be found in Appendix D. Phillips (1983) has outlined a test-wiseness program, indicating appropriate grade levels for each section. This proposed curriculum is reproduced in Appendix E.

For the teacher who wants to find out more about coaching for test-wiseness, Weaver (1978) has compiled a bibliography which includes ERIC retrieval numbers:

1. Ford, Valeria A. Everything You Wanted to Know about Test-Wiseness, 1973, 30 pp. (ED 093 912). Ford reviews the literature on test-wiseness, then discusses use of books, tapes, video cassettes, slides, and student handbooks for teaching test-wiseness. Teachers are urged to tell students why they are being tested and how the tests will be scored. Practice in working under simulated test conditions is advised.

2. Goolsby, Thomas M., Jr. and Grace A. Wray. Practice Test for Pre-Primary and Beginning First Grade. Prepared for the Evaluation Division, Research and Development Center in Educational Stimulation, University of Georgia, 1969, 8 pp. (ED 054 219). A ten-item pictorial practice test is presented to help prepare young children for standardized tests. Directions are included.

3. Jongsma, Eugene A. and Elaine Warshauer. The Effects of Instruction in Test-Taking Skills upon Student Performance on Standardized Achievement Tests. Final Report. New Orleans: University of New Orleans, Department of Elementary and Secondary Education, 1975, 67 pp. (ED 114 408). Text for fifth grade is designed to use approximately one hour of class time. Purposes of the unit are to increase student motivation and to teach general test-taking strategies. Illustrations are included.

4. Maryland State Department of Education. Improving Student Attitudes and Skills for Taking Tests. Baltimore: Maryland State Department of Education, 1975, 245 pp. (ED 128 352). This material is designed to help students do their best on the Iowa Tests of Basic Skills. Detailed plans for students and teachers are included, as well as sample formats from the ITBS. The sample formats are for grades three, five, seven, and nine. Tips for general test-taking are also included.

5. Sabers, Darrell, Test-Taking Skills. Tucson: Arizona Center for Educational Research and Development, 1975, 29 pp. (ED 133 341). Sabers focuses on practice with time limits and guessing procedures for elementary test-takers. He suggests numerous methods for teaching

strategies and includes practice exercises in taking a reading comprehension test.

Weaver notes that documents are indexed in Resources in Education (RIE). They may also be ordered from the ERIC Document Reproduction Service, P.O. Box 190, Arlington, Virginia 22210. More complete ordering information may be obtained by writing ERIC/RCS, 1111 Kenyon Road, Urbana, Illinois 61801 or by examining the most recent issue of RIE.

Weaver's (1978) concluding statements may be used to help summarize this section on coaching for test-wiseness: "Whatever the grade they teach, elementary school teachers should devote some classroom time to helping pupils acquire test-wiseness. Through such instruction they can help many students improve reading test scores that would otherwise be low as a reflection not of poor reading abilities but of poor test-taking skills" (p. 119). It also seems likely that such an improvement could be partly caused by decreased test anxiety.

Changing ways of thinking about standardized test-taking includes much more than coaching for test-wiseness. For instance, an understanding of realistic goals for standardized test scores might lessen test anxiety. C. Hatcher (personal communication, April, 1984) suggested one way to promote this understanding: students might be presented with two stories, both written at instructional level. One of the stories would be from a recent lesson and one story would be unfamiliar. The children could then be asked to imagine they were going to be given two tests, one on each story. Asking students to

then predict achievement on the two tests should show that they expect to do better on the familiar material, even though it is not necessarily easier.

The pupils could then be presented with a standardized test. Discussion of the three tests should show that the standardized test is like the teacher-made test over an unfamiliar story; scores will naturally be lower. Similar illustrations using perhaps vocabulary lists and actual practice tests along with student predictions of achievement should eventually help the children to set realistic goals for standardized tests.

Zionts (1983) uses Meichenbaum's ideas for self-talk to help children understand and control their emotions. Irrational beliefs about test-taking might thus be corrected, and anxiety reduced. Zionts contends that events such as test-taking do not in themselves produce anxiety; it is the children's beliefs about the event which arouses the emotion. He equates belief with the self-talk which exists when the event occurs. Self-talk which may generate anxiety includes the following:

1. The exaggeration of the consequences of the event. "It's terrible that I didn't raise my score on the post-test" and "This is the worst thing that could happen to me" are two examples.

2. Demands that individuals place on self, others, and the world. "I should get above the 50th percentile every time," or "Standardized tests should be easier," or "We shouldn't have to take those tests" are representative examples. Students can be upset when these demands are not realized. This is different from the situation

in which the individual is not disturbed when a preference is not realized.

3. The evaluation of self or others, especially when linked to performance. "I am a rotten person because I made the lowest score in the class," or "You are a rotten person because you give these unfair tests" are debilitating evaluative self-statements.

Zionts suggests scheduling group discussions to help students recognize destructive self-talk and to develop realistic, productive self-talk. Irrational beliefs can often be changed by teacher's questions. For instance, a student can be asked to prove such self-talk as "Making a low score on the ITBS is the worst thing that can happen to me!"

Once one recognizes an irrational belief, one must learn to apply this newly-found knowledge personally. This second step is much more difficult, according to Zionts. The ultimate goal for cognitive restructuring about tests should therefore be improved attitudes and emotions in the test situation. Self-talk should then include such statements as "I usually catch on quickly to new things."

Positive teacher behaviors can help students reach their goal. Interacting with the students, staying on task, directing attention to the present tense, and individualizing attention are all behaviors which are suggested. Warmth and empathy are necessary teacher characteristics which must be combined with the above behaviors. Empathy implies acceptance of the student no matter what behavior the student displays. It does not imply sympathy, which might reinforce the student's anxiety. Neither does warmth imply sympathy, but rather

an obvious desire to help the student become proficient in self-control.

Staying in the present tense is important to these cognitive-restructuring sessions. Linking past events to the student's present state of mind is seen by Zionts as unproductive. If students insist on using past experience for their present emotional state, the teacher may explain that: (a) others have experienced similar events and are not now upset, and (b) a choice may be made about whether to spend considerable energy on the past without much results or whether to spend that energy on accepting present reality.

Staying on task means the teacher must be able to avoid evasions. When a task is uncomfortable or frustrating, the student may hope to divert attention from the task by saying something like "I'm dumb." Pacing questions is helpful in avoiding such misdirections. At times the teacher may also have to interrupt a long, off-the-subject monologue. Pertinent questions are also helpful in this situation.

Zionts points out that active student involvement in these sessions is a must. This may be promoted by audio- or videotaping discussions. The teacher who employs a sense of humor should be more likely to elicit active response. A playful manner may help with younger children. (I suggest the use of a very anxious puppet.) If students are reluctant to exhibit self-talk, using the term "think out loud" may be more acceptable than "talk to yourself." (Students will of course be encouraged to keep self-talk private when appropriate.)

Student involvement also includes certain responsibilities. In the first place, the children must be honest about their feelings.

Second, they must be tolerant of the feelings and behaviors of others. Third, they must actually decide they want to change illogical thinking. Fourth, they must accept the fact that changing emotions is a long, difficult process. It must be understood that one improved test situation does not mean an instant cure. Neither must the students assume time spent was wasted if test-anxiety is not immediately lessened (Zionts, 1983).

Not all teachers will want to formally schedule discussion sessions like these described by Zionts. Certainly many of the cognitive restructuring methods such as the use of questioning can be incorporated into routine class sessions. Also, whether formally scheduled discussions on test anxiety are used or not, the teacher might want to introduce the idea of positive self-talk to students. Examples of such cognitions found in Appendix F might be helpful to both students and teachers.

A Combination of Strategies

Although no cognition-based literature suggested using a combination of strategies to relieve anxiety, the authors of two symptom-reduction experiments did suggest a combination of symptom reduction and cognitive restructuring. A review of symptom reduction research also suggested that such a combination of strategies is best.

Perhaps enthusiasm for the relatively new field of cognitive restructuring prevented its proponents from considering other strategies. In any case, teachers can safely assume that individual students will react differently to different methods for dealing with excessive test anxiety. Educational implications are that the teacher

should use whatever is effective and appropriate from a combination of symptom reduction and cognitive restructuring strategies.

Also, the teacher should remember the importance of warmth and cheerful empathy (S. Sarason, 1960; Zionts, 1983). That the child is worried or uneasy can be acknowledged, whether or not such feelings are reasonable. The teacher can show acceptance by stating the anxiety for the student. Saying "There's nothing to worry about" will teach the child to deny the existence of test anxiety, but will not teach the child to have positive attitudes towards standardized tests. On the other hand, teaching recognition and control of test anxiety could result in healthier attitudes toward test-taking, as well as improved test scores.

Implications for Research

Additional investigations are needed in many areas. Some of these include:

1. Studies using children are needed to replicate adult-subject symptom reduction experiments.

2. Additional treatments which help elementary remedial readers deal with symptoms of test anxiety need to be identified.

3. Experiments are lacking which directly relate test-wiseness to test anxiety. This need exists in secondary and adult education as well as in elementary education.

4. Heckhausen's, Zatz and Chassins and Meichenbaum's studies regarding attentional theory suggest a valuable strategy for coping with test anxiety, but clearly more such studies are needed in the elementary school setting.

5. Training for self-prediction would seem to be a helpful aid to increase self-monitoring but specific research is needed to investigate this. Both children and adults should be used as subjects.

Although adult-subject studies are lacking in a few of the above areas, child-study experiments are needed in every component of test anxiety. Implications are obvious: Atkinson's call for further research to bridge the gap in research between motivational psychology and educational practices must be echoed. The need is especially strong for studies with children; studies with elementary remedial readers, who have so much to gain by such research, are practically non-existent.

REFERENCES

Allen, G., Elias, M., & Zlotlow, S. (1980). Behavioral interventions for alleviating test anxiety; A methodological overview of current therapeutic practices. In I. Sarason (Ed.), Test anxiety: Theory, research, and applications. Hillsdale, NJ: Lawrence Erlbaum Associates.

Atkinson, J. W. (1966). Motivational determinants of risk-taking behavior. In J. W. Atkinson & N. T. Feather (Eds.), A theory of achievement motivation (pp. 11-29). New York: John Wiley & Sons.

Atkinson, J. W. (1978) Motivational effects in so-called tests of ability and educational achievement. In L. J. Fyans, Jr. (Ed.), Achievement motivation: Recent trends in theory and research (pp. 9-21). New York: Plenum.

Bauer, D. H. (1975). The effect of instructions, anxiety, and locus of control on intelligence test scores. Measurement and Evaluation, 8(2), 12-18.

Becker P. (1982). Fear reactions and achievement behavior of students approaching an examination. In H. W. Krohne & L. C. Laux (Eds.), Achievement, stress and anxiety (pp. 275-290). Washington, DC: Hemisphere.

Bills, R. E. (1981). Self-concept and schooling. West Lafayette, IN: Kappa Delta Pi.

Blaha, J. (1982, January). The relationship of reading attitudes to academic aptitude, locus of control, and field dependence. Psychology in the Schools, 19(1), 28-32.

Blanton, W. E., Farr, R. C., & Tuinman, J. J. (Eds.). (1974). Measuring reading performance. Proceedings of the 1971 IRA Conference. Newark, Delaware: International Reading Association.

Brown, B. (Ed.). (1975). The biofeedback syllabus. Springfield, IL: Charles C. Thomas.

Brown, D. (1982, February). Increasing test-wiseness in children. Elementary School Guidance and Counseling, 16(3), 180-186.

Bryan, J., & Loder, E. (1962). Anxiety and the spiral aftereffect test. Journal of consulting psychology, 26, 351-354.

Burns, R. B. (1979). The self-concept in theory, measurement, development, and behavior. London: Longman.

Buros, O. E. (Ed.). (1959-1977). The mental measurements yearbook. Highland Park, NJ: Gryphon.

Buros, O. K. (Ed.). (1961-1983). Tests in print (Vols. 1-3). Highland Park, NJ: Gryphon.

Buros, O. K. (1968-1975). Reading tests and reviews (Vols. 1-2). Highland Park, NJ: Gryphon.

Buros, O. K. (1970-1974). Personality tests and reviews (Vols. 1-2). Highland Park, NJ: Gryphon.

Carver, C. S., Person, L. M., Follansbee, D. J., & Scheier, M. F. (1983, August). Effects of self-directed attention on performance and persistence among persons high and low in test anxiety. Cognitive Therapy and Research, 7, 333-353.

Chun, K., Cobb, S., & French, J. (1975). Measures for psychological assessment. Ann Arbor, MI: University of Michigan.

Coopersmith, S. (1967). The antecedents of self-esteem. San Francisco: W. H. Freeman.

Cotler, S., & Palmer, R. (1970). The effects of test anxiety, sex of subject, and type of verbal reinforcement on maze performance of elementary school children. Journal of Personality, 38, 216-234.

Cronbach, L. J. (1970). Essentials of psychological testing. New York: Harper & Row.

Crowder, W. (1983). Teaching about stress. Clearing House, 57(1), 36-38.

De Charms, R. (1976). Enhancing motivation: Change in the classroom. New York: Irvington.

De Charms, R., Shea, D., Jackson, K., Plimpton, F. Koenigs, S., & Blasi, A. (1976). Essentials of psychological testing. New York: Irvington.

Deighton, L. (1971). The Encyclopedia of Education (10 vols.). New York: MacMillan.

Dunn, J. (1964). Factor structure of the Test Anxiety Scale for Children. Journal of Consulting Psychology, 28, 92.

Dunn, J. (1965). Stability of the factor structure of the Test Anxiety Scale for Children across age and sex groups. Journal of Consulting Psychology, 29, 187.

Dusek, J. B., & Dusek, J. F. (1978). Interference effects of test anxiety. In C. D. Spielberger & I. G. Sarason (Eds.). Stress and anxiety (Vol. 5). Washington, DC: Hemisphere.

Dusek, J., & Hill, K. (1970). Probability learning as a function of sex of the subject, test anxiety, and percentage of reinforcement. Development Psychology, 3, 195-207.

Ebel, R. L. (1979). Essentials of educational measurement (3rd ed.). Englewood Cliffs, New Jersey: Prentice-Hall.

Ebel, R., & Damrin, D. (1960). Tests and examinations. In C. W. Harris (Ed.), Encyclopedia of educational research (3rd ed.), (pp. 1502-1515). New York: Macmillan.

Education Consolidation and Improvement Act. (1981). Public Law 97-35, Chapter 1.

Entwhistle, D., & Hayduk, L. (1978). Too great expectations: The academic outlook of young children. Baltimore: John Hopkins University Press.

Farr, R. (1981). Reading: Trends and challenges. Washington, D.C.: National Education Association.

Feather, N. T. (1966). The relationship of expectation of success to achievement and test anxiety. In J. W. Atkinson & N. T. Feather (Eds.). A theory of achievement motivation (pp. 261-275). New York: John Wiley & Sons.

Feld, S., & Lewis, J. (1967). Further evidence of the stability of the factor structure on the Test Anxiety Scale for Children. Journal of Consulting Psychology, 31, 434.

Felker, Donald W. (1974). Building positive self-concepts. Minneapolia: Burgess.

Fyans, L. J. (Ed.). (1978). Achievement motivation: Recent trends in theory and research. New York: Plenum.

Goldenson, R. M. (Ed.). (1984). Longman dictionary of psychology and psychiatry (p. 100). New York: Longman.

Heckhausen, H. (1982). Task-irrelevant cognitions during an exam: Incidence and effects. In H. W. Krohne & L. C. Laux (Eds.), Achievement, stress, and anxiety (pp. 247-274). Washington, DC: Hemisphere.

Heide, F. J., & Borkovec, T. D. (1983, April). Relaxation-induced anxiety: Paradoxical anxiety enhancement due to relaxation training. Journal of Consulting and Clinical Psychology, 51(2), 171-182.

Hill, K. (1978). Motivation, evaluation, and educational testing policy. In B. Fyans (Ed.) Achievement motivation: Recent trends in theory and research. New York: Plenum.

Holroyd, K. A. Cognition and desensitization in the group treatment of test anxiety. Journal of Consulting and Clinical Psychology, 44, 991-1001.

Johnson, O., & Bommarito, J. (1971). Tests and measurements in child development: A handbook. San Francisco: Jossey-Bass.

Jongsma, E., & Warshauer, E. (1975). The effects of instruction in test-taking skills upon student performance on standardized achievement tests. (Final Report). New Orleans: Department of Elementary and Secondary Education. (ERIC Document Reproduction Service No. ED 114 408).

Kay, R. S., & Felker, D. W. (1975, March 30-April 3). Level of aspiration: A behavioral expression of self-concept. Paper presented at the annual meeting of the American Educational Research Association, Washington, DC.

Krohne, H. W., & Laux, L. D. (Eds.). (1982). Achievement, stress, and anxiety. Washington, DC: Hemisphere.

La Blanc, G. (1984, March 27). Overemphasis on testing [Letter to the editor]. Des Moines Register, p. 7A.

Leamon, J. (1982, August). Effects of two treatments on anxiety, self-concept and locus of control. Paper presented at the Annual Convention of the American Psychological Association, Washington, D. C. (ERIC Document Reproduction Service No. ED 228 564)

Lennon, Roger T. (1970). What can be measured? In R. C. Farr (Ed.). Measurement and evaluation of reading (p. 32). New York: Harcourt, Brace & World.

Love, J. (1981). Improving self-worth by learning to cope with distress. A teaching model produced for mid-adolescents in the Ann Arbor Public Schools. (ERIC Document Reproduction Service No. ED 233 241).

Lusk, S. L. (1980). Effect of test anxiety, locus of control, and use of information retrieval aids on academic and predicted performance of college students. (Final Report). In Joint Hampton-Michigan Program for Training Minority and Women Researchers. (Volume II of II volumes). Sponsored by National Institute of Education (Ed.,), Washington, DC. (ERIC Document Reproduction Service No. Ed 213 709).

McKensie, G. R. (1976, February). Testing: Proceed with caution. Elementary School Journal, 75(5), 266-271.

Meichenbaum, D. (1977). Cognitive behavior modification: An integrative approach. New York: Plenum.

Meichenbaum, D., & Butler, L. (1980). Toward a conceptual model for the treatment of test anxiety: Implications for research and treatment. In I. Sarason (Ed.), Test anxiety: Theory, research and applications, Hillsdale, NJ: Erlbaum.

Millman, J., Bishop, C. H., & Ebel, R. (1965). An analysis of test-wiseness. Educational and Psychological Measurement, 25, 707-726.

Mitzel, H. (Ed.) (1982). The Encyclopedia of Educational Research (5th ed., 4 vols.). New York: Free Press.

Morris, L. W., & Carden, R. L. (1981, June). Relationship between locus of control and extroversion in predicting academic behavior. Psychological Reports, 48, 799-806.

Nowicki, S., & Duke, M. (1974). A locus of control scale for non-college as well as college adults. Journal of Personality Assessment, 38(2), 136-137.

Oakland, T. (1972). The effects of test-wiseness materials on standardized test performance of preschool disadvantaged children. Journal of School Psychology, 10, 355-360.

Oklahoma State Department of Education. (1982). Study skills: Study your way to success, kindergarten-6th. Oklahoma City: Author. (ERIC Document Reproduction Service No. ED 235 125)

Omiza, M. M. (1980, Spring). The effects of relaxation and biofeedback training on dimensions of self concept (DOSC) among hyperactive male children. Educational Research Quarterly, 5(1), 22-30.

Penney, R., & McCann, B. (1962). The instrumental escape and conditioning of anxious and non-anxious children. Journal of Abnormal and Social Psychology, 65, 351-354.

Peters, E. W. (1977). Diagnosis of reading problems. In W. Otto, C. W. Peters, & N. Peters (Eds.), Reading problems: A muiltidisciplinary perspective (pp. 151-188). Reading, MA: Addison-Wesley.

Phillips, A. (1983). Test-taking skills: Incorporating them into the curriculum. Medford, OR: Jackson County Education Service District. (ERIC Document Reproduction Service No. ED 235 200)

Prout, H. T., & Harvey, J. R. (1978, October). Applications of desensitization procedures for school-related problems: A review. Psychology in the Schools, 15, 533-540.

Ruebush, B., Byrum, M., & Farnham, L. (1963). Problem solving as a function of children's defensiveness and parental behavior. Journal of Abnormal and Social Psychology, 67, 355-362.

Ryan, F., & Macmillan, D. (1970). Effects of interruption during social studies instruction on learning effectiveness and efficiency. Journal of Educational Psychology, 61, 27-32.

Sarason, I. G. (1975). Anxiety and self-preoccupation. In I. G. Sarason & C. D. Spielberger (Eds.), Stress and Anxiety, 2, (pp. 27-43). New York: Wiley.

Sarason, I. G. (1978). The test anxiety scale: Concept and research. In C. D. Spielberger & I. G. Sarason (Eds.), Stress and anxiety, 5, (pp. 193-215). New York: Halted-Wiley.

Sarason, I. G. (Ed.). (1980). Test anxiety: Theory, research and applications. Hillsdale, NJ: Lawrence Erlbaum.

Sarason, S. B., Davidson, K. D., Lighthall, F. F., Waite, R. R., & Ruebush, B. K. (1960). Anxiety in elementary school children. New York: Wiley.

Sarason, S., Hill, K., & Zimbardo, P. (1964). A longitudinal study of the relation of test anxiety to performance on intelligence and achievement tests. Monographs of the Society for Research and Child Development, 29(7), Serial No. 98.

Sarason, I. G., & Stoops, R. (1978). Text anxiety and the passage of time. Journal of Consuting and Clinical Psycholoty, 46, 102-109.

Sarnacki, R. E. (1979, Spring). An examaination of test-wiseness in the cognitive domain. Review of Educational Research, 49, 252-279.

Snygg, D. (1966). A cognitive field theory of learning. In W. B. Waetjen & R. R. Leeper (Eds.), Learning and mental health in the school: 1966 yearbook. Washington, DC: Association for Supervision and Curriculum Development.

Spielberger, C. D., & Sarason, I. G. (Eds.). (1975-1982). Stress and anxiety (8 volumes). New York: Halsted-Wiley.

Taylor, J. A. (1953). A personality scale of manifest anxiety. Journal of Abnormal and Social Psychology, 48, 285-290.

Thorndike, E. L. (1951). Reliability. In E. F. Lindquist (Ed.), Educational Measurement (pp. 568-569). Washington, DC: American Council on Education.

Traxler, A. E. (1958, reprinted 1970). Values and limitations of standardized reading tests. In R. C. Farr (Ed.) Measurement and evaluation of reading (pp. 220-229). New York: Harcourt, Brace & World.

Trollan, C. (1982). Stress management: A challenge for adult education. (ERIC Document Reproduction Service No. ED 233 130)

Weaver, G. C. (1978, October). Teaching children how to take standardized tests. The Reading Teacher, 32, 116-119.

Wine, J. D. (1971). Test anxiety and direction of attention. Psychology Bulletin, 76, 92-104.

Wine, J. D. (1982). Evaluation anxiety: A cognitive-attentional construct. In H. W. Krohne & L. C. Laux (Eds.) Achievement, stress, and anxiety (pp. 207-219). Washington, DC: Hemisphere.

Zatz, S., Chassin, L. (1983). Cognitions of test anxious children. Journal of Consulting Psychology, 51(4), 526-534.

Zimbardo, P. G., Barnard, J. W., & Berkowitz, L. (1963). The role of anxiety and defensiveness in children's verbal behavior. Journal of Personality, 31, 79-96.

Zionts, P. (1983). A strategy for understanding and correcting irrational beliefs in pupils: The rational-emotive approach. Pointer, 27(3), 13-17.

APPENDIX A

THE GOOD NEWS

THE GOOD NEWS

The good news is that Stress Management programs which are offered by adult education programs can teach others how to better cope with stresses of daily life. A typical program may include:

1. Assessing life stressors by calculating stress severity of life changes and studying the relationship between life changes and illness;

2. Active relaxation exercises--aerobics, sports, dance, movement meditation;

3. Passive relaxation exercises--breathing, conditioned relaxation, meditation, guided imagery, massage;

4. Creating a personal stress management program.

Here is a quick, wonderfully effective breathing exercise which will restore the natural oxygen/carbon dioxide ratio of the bloodstream and thereby relieve anxiety caused by rapid, shallow breathing which occurs from too much stress. Here are the steps:

1. Seek a quiet environment, free from noise and distractions;

2. Sit upright, make yourself comfortable in position and clothing;

3. Take your pulse. (Thumb side of wrist, count heartbeats for one minute.) Close your eyes. Exhale strongly;

4. Inhale for 3 seconds. Hold for 12 seconds. Exhale for 6 seconds. Do this 3-12-6 breathing exercise for six cycles;

5. Inhale for 3 seconds. Hold for 20 seconds. Exhale for 6 seconds. Do this 3-20-6 breathing exercise for one cycle;

6. After these 7 cycles, sit quietly for one minute to allow normal breathing to return;

7. Take your pulse again. Usually there will be a drop of 3-5 pulse beats per minute. For extremely stressed persons, the count may drop as many as 20-30 beats per minute.

Note. From Matheney, cited in Trollan, 1982, p. 8.

APPENDIX B

COPING - QUIETING RESPONSE

COPING - QUIETING RESPONSE

CAUTION: The founder of the Quieting Response method of relaxation, Charles Stroebel, Ph.D., M.D., has observed that QR training will change the arousal level in individuals. For diabetics and epileptics, this may lead to an alteration in the chemical balance within the body if they arbitrarily change medication. Since these people usually have been working with a doctor to establish a chemical balance, it is imperative that parents and possibly the doctor be advised that relaxation training is being conducted.

Performance Objective 1 (Suggested time 20-30 min.)

Learn that Quieting Response, hereafter referred to as QR, is a practical relaxation technique.

Author's note: It is highly recommended that the teacher review and practice the QR steps several times before beginning this part of the unit. The practical nature and effectiveness of the technique will probably be helpful to you and, therefore, easier to present to your students.

Suggested Procedure: 1. Inform the group that once the QR technique is learned a person can accomplish it anyplace and anytime within six to ten seconds without anyone else being aware of it. This is unlike most other relaxation methods which require quiet surroundings and

a much longer period of time. (If the class members are interested in relaxation techniques, some group or individual report work could be accomplished on Yoga, Zen, Transcendental Meditation, self-hypnotism, autogenic training and progressive relaxation.)

2. Use the Coping - Quieting Response illustration to introduce the easy to learn five steps of this technique. The students should be given a handout (Appendix B, p. 90) with note space between the steps or encouraged to take notes on their own while the steps are discussed. The teacher's function at this point is to review the steps so that the students become aware of the technique. The purpose of each step will become more obvious in a later exercise.

Awareness of Distress - The person realizes a condition of nervousness, rapid breathing, rapid heart, etc., which is caused by an environmental event or anxiety producing thought. The harmful effects to the body caused by this distress are unhealthy and need to be reduced.

I Can Remain Calm - Upon recognition of our distress, we say to ourselves, "I can remain calm." We are saying in effect that we have the ability and confidence to control this situation when given a chance to identify the alternatives.

One can argue that there are some situations where we don't have a lot of time for problem analysis. This is certainly true, and the QR is not guaranteed as 100% effective against sudden confrontation by a bully. It is also true, however, that it does not take our minds long to produce alternative solutions when we are distressed. If we are reasonably calm, we are able to think more clearly and function better.

Breathe in Slowly - Feet - At the same time we say to ourselves, "I can remain calm" we begin taking in a slow - deep breath through our nose but we imagine that we have holes in the bottom of our feet through which the air enters and ascends upward eventually reaching our neck. Imagery is important in this step. When we learn to believe that we have "imaginary holes" in the bottom of our feet, we can QR standing up and wearing shoes.

Relax Jaw, Lower the Tongue, Exhale - As we begin to exhale, we need to relax our jaw and facial muscles; lower our tongue which is usually pressed against the roof of our mouth during periods of distress; permit the warm air to begin leaving our body through the imaginary holes in our feet.

Imagine Warmth and Heaviness - This step is accomplished simultaneously with our exhale. With our jaw relaxed, tongue no longer pressed on the roof of our mouth and air slowly working its way down and out of our body, we imagine the warm air leaving our neck, shoulders, arms, chest, etc. As the warm air descends, it leaves our muscles feeling relaxed much like we feel when we're lying in the sun and a warm breeze passes over our body.

Author's note: As the QR is being taught, it is helpful to repeat the process three or four times per class period to establish the sequence of the steps. Even the moderately interested student will learn them easily and, therefore, gain some distress relief.

Performance Objective 2 - (Suggested time 35-45 min.)

Analyze why QR is an effective technique in distress reduction.

Suggested Procedure:

1. Teacher may verbally do a QR with everyone. Follow with brief discussion to answer any questions and review the experience in general.
2. The QR reverses the distress reaction in our body when we are subjected to real or imagined stressors. This is why it is effective in distress management. How the technique works to help us to better health should now be reviewed (simplified).

Author's note - Here again, depending on the interest of the teacher and group, lecture and discussion or group work is appropriate. If the group did project work as was suggested in Performance Objective 1 of this lesson, everyone has some idea of the effects of relaxation on the body systems. If no detailed study has been accomplished, the following additional simplified comments will probably suffice to convince students that a form of relaxation is important and QR is practical and effective.

One of the quickest means of detecting and releasing tension is to be aware of the condition of our jaw and facial muscles. As we combine the actions of jaw relaxation, lowering the tongue from the roof of the mouth and exhaling the warm air from the neck area, we experience immediate and obvious relief from our stressor. As the warm air continues to exhale (descend towards the holes in our feet, we progressively relax each skeletal and smooth muscle group. As we continue to practice the QR and become more efficient at it, we experience an increasing degree of muscle warmth and heaviness.

Imagine Warmth and Heaviness - When we first begin using the QR technique, thoughts of muscle and stomach area warmth and heaviness are difficult to achieve. Keep practicing and be patient. Another technique is to think of warm water descending over our body, as in the shower, instead of warm air. If this works, use it! The important factors are progressive relaxation and feelings of warmth.

Performance Objective 3 - (Suggested time 20 min.)

Compare the feelings of tension in the various muscle groups with those of relaxation.

Author's note - All of us have experienced a sudden realization that we were tense and uptight. The purpose of this performance objective is to help us reach the point of tension awareness sooner than we have in the past. We should let our imagination be our guide in developing exercises which personally work to promote muscle relaxation. Following are a few suggestions which may be helpful.

Close our eyes - Begin clenching the teeth-tighter-tighter-tighter-hold it. Begin squeezing eyelids together-tighter-tighter-tighter-hold both teeth and eyelids for six seconds. During this time, use fingertips to touch cheeks and eye area. Relax! Again use fingertips to feel the area and mentally take note of the difference. Practice a QR - remind everyone to think of the warmth and relaxation.

With eyes looking straight ahead and arms down at our sides, try to lift the top of the shoulders up as high as possible. Hold for six seconds. Relax! Feel the difference in the neck area. Practice a QR warm and relaxing.

While standing, hold arms out to horizontal position. Begin squeezing an imaginary ball in the palms of our hands - tighter-tighter-tight as possible - hold six seconds.

Relax! Arms down to sides.

Mental note of the difference.

Practice a QR - feel how warm and relaxing it is.

Etc., etc., on down to the feet using the same ideas.

Create a condition of muscle tension followed by relaxation and mental awareness of the difference. Notice the warm feelings accompanying the relaxation.

Note: Repetition is helpful until everyone in the group remembers the QR steps and is able to experience some degree of relaxation. Remember that the muscle relaxation should be accompanied by feelings of warmth and well-being. A daily QR reminder and a 15-30 minute practice session approximately two weeks after the completion of the unit are helpful reinforcement techniques. (Love, 1981, pp. 30-37)

DISTRESS & COPING

QUIETING RESPONSE

QUIETING RESPONSE IS A PRACTICAL AND EASY TO REMEMBER COPING TECHNIQUE, ONCE LEARNED THIS TECHNIQUE WILL REVERSE THE DISTRESS REACTION.

Q. R. STEPS

AWARENESS OF DISTRESS

I CAN REMAIN CALM

BREATHE IN SLOWLY - FEET

RELAX JAW, LOWER TONGUE, EXHALE

IMAGINE WARMTH & HEAVINESS

APPENDIX C

ELEMENTS INDEPENDENT OF TEST CONSTRUCTOR OR TEST PURPOSE

ELEMENTS INDEPENDENT OF TEST CONSTRUCTOR OR TEST PURPOSE

A. Time-using strategy

1. Begin to work as rapidly as possible with reasonable assurance of accuracy.
2. Set up a schedule for progress through the test.
3. Omit or guess at items (see Section C) which resist a quick response.
4. Mark omitted items, or items which could use further consideration, to assure easy relocation.
5. Use time remaining after completion of the test to reconsider answers.

B. Error-avoidance strategy

1. Pay careful attention to directions, determining clearly the nature of the task and the intended basis for response.
2. Pay careful attention to the items, determining clearly the nature of the question.
3. Ask examiner for clarification when necessary, if it is permitted.
4. Check all answers.

C. Guessing strategies

1. Always guess if right answers only are scored.
2. Always guess if the correction for guessing is less severe than a "correction for guessing" formula that gives an expected score of zero for random responding.
3. Always guess even if the usual correction or a more severe penalty for guessing is employed, whenever elimination of options provides sufficient chance of profiting.

D. Deductive reasoning strategy

1. Eliminate options which are known to be incorrect and choose from among the remaining options.
2. Choose neither or both of two options which imply the correctness of each other.
3. Choose neither or one (but not both) of two statements, one of which, if correct, would imply the incorrectness of the other.
4. Restrict choice to those options which encompass all of the two or more given statements known to be correct.
5. Utilize relevant content information in other test items and options.

APPENDIX D

STUDY YOUR WAY TO SUCCESS: KINDERGARTEN - 6TH GRADE

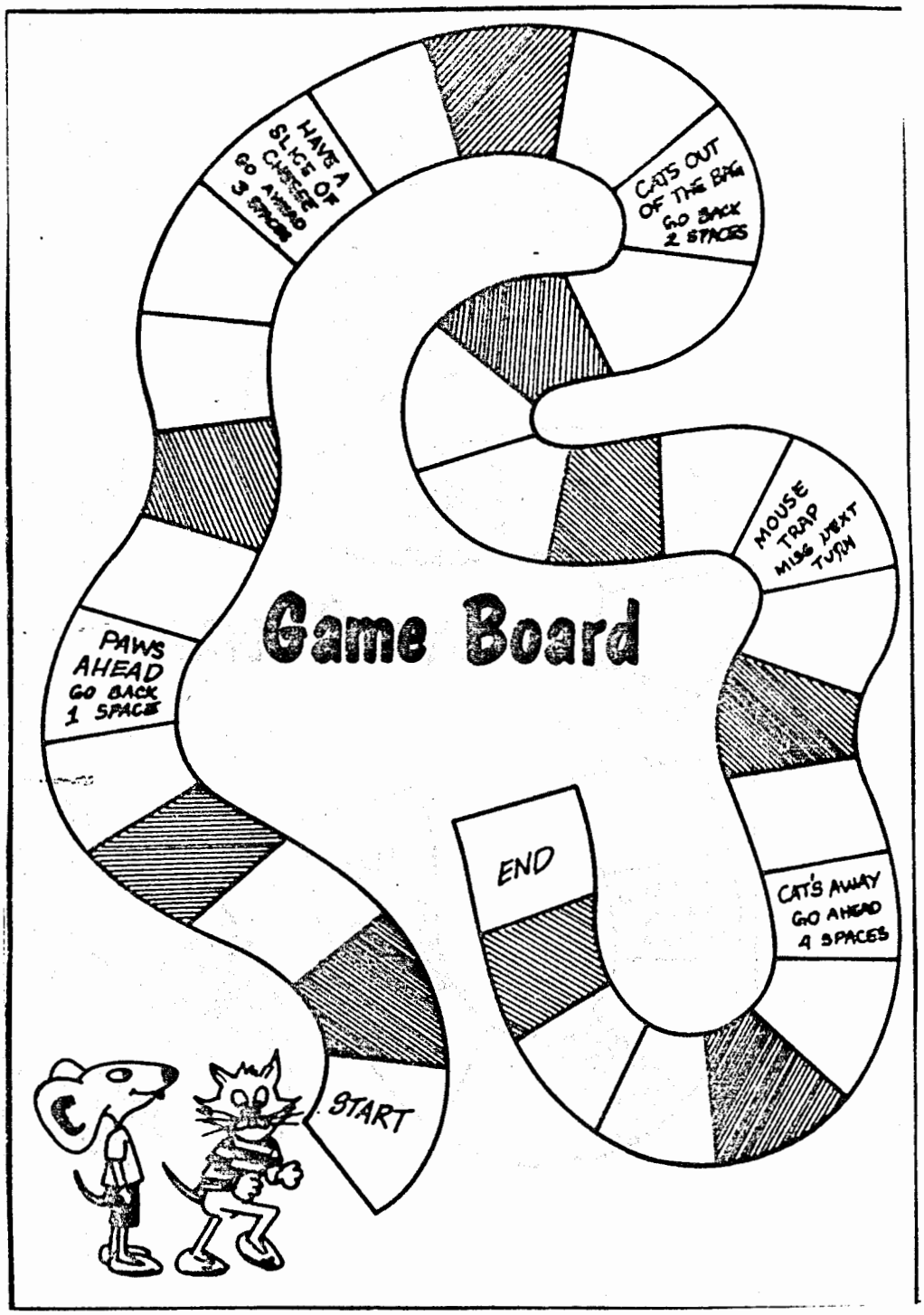
GAME BOARD AND GAME CARDS

Make a game using the game board and the cards on this page and the next. Have the students draw cards and move markers on the game board according to the directions on the cards.

You listened well in class and took good notes. Move ahead six.	You looked the test over to see the types of questions before you began. You decided about how much time to spend on each part. Move ahead three spaces.
You didn't do well on your math test, but you learn from failures as well as from success. Go back one space, then forward two.	You didn't take good notes in math class. Go back three spaces.
You are confident about doing well on your science test. Move ahead one.	You read a book from the library about study skills this year. You did what was suggested in preparing for your social studies test. Move ahead five.
You read each chapter as it was assigned. Studying for tests has been a lot easier since you started doing that. Move ahead four.	You tried to study with a friend last night, but you talked about football instead of studying. Move back two.
You read the directions on your test before you began. Move ahead three.	You stayed up all night to study for your social studies test. Move ahead one for the studying you did, but move back two because you're too tired to do your best on the test.
You spent too much time on the first questions. Now you don't have time to answer some of the easy questions you know. Move back two.	You answered the easy questions first on your Grammar test and then did the others. Move ahead five.
You checked your work when you finished your math quiz. Move ahead three.	You got a good night's sleep before your science test. Move ahead three.

On your essay test, you spelled the words correctly and wrote in your best handwriting. Your teacher was pleased. Move ahead four.	You studied for a science test with a friend. He asked questions and you answered. Then you asked questions and he answered. Move ahead seven.
You were in a hurry and didn't eat breakfast on the day of the BIG TEST. Your stomach growled throughout the test and you couldn't concentrate. Move back two.	A friend wanted you to go eat pizza with some of the kids last night, but you didn't go because you needed to study. Move ahead three.
When you looked at your science test, you thought, "I'm going to fail this test - it's too hard." Move back one space.	You forgot to put your name on your test. Move back one.
You didn't understand some of your math problems, so instead of asking the teacher or a friend, you just hoped that kind of problem wouldn't be on the test. Go back two spaces.	You fell asleep during the spelling test. Go back six spaces.
When you were studying for your social studies test, you tried to predict what questions would be on the test. Move ahead two.	You studied your class notes and reviewed the material in the book. Move ahead four.

GAME BOARD



(Oklahoma State Department of Education, 1982)

APPENDIX E

A SAMPLE TEST WISENESS PROGRAM

A SAMPLE TEST WISENESS PROGRAM

The following outline proposes a curriculum for teaching test wiseness to students. Appropriate grade levels are indicated in parentheses.

I. Developing Familiarity with the Test (Pre-12)

- A. Introduce purpose of the test
- B. Introduce testing materials
  1. Pencil (marker)
  2. Answer sheets
- C. Discuss listening to directions
- D. Practice
  1. Completing requested information
  2. Working in columns and rows
  3. Filling in responses
  4. Asking for information
- E. Make a list of concepts that are not fully understood

II. Developing Familiarity with Test (Pre-12)

- A. Review and define concepts that children may not understand: opposite, most, like, same, usual, left, right, down, up, similar
- B. Explore those concepts as they relate to test
  1. Directions
  2. Test questions
- C. Review Unit I

III. Answering Test Items (4 - 12)

- A. Detail items--ask for specific information (e.g., Who discovered America?)
  1. Scan to find probable answer
  2. Eliminate choices that are definitely wrong

3. Select answer

4. Check

B. Main idea or context questions (ask students to select main idea from paragraph (e.g., In the paragraph you just read, the sea captain intended to . . .)

1. Look for corresponding ideas, words, thoughts

2. Eliminate incorrect answers

3. Select choice

4. Check

C. Inference questions (ask students to draw conclusions, e.g., What is the main idea? or What can you conclude from the information given?)

1. Read carefully

2. Determine section that contains facts on which conclusion is based

3. Eliminate incorrect answers

4. Select best answer

5. Check

D. Help students learn to recognize and answer those kinds of questions by practicing them. Select items from old tests.

1. Read item

2. Children identify type

3. Verbalize answer selection process

E. Guessing

1. Explain guessing strategies

a. Eliminate all incorrect answers

b. Choose one from best

2. Explain correction for guessing formula if used on test

IV. Efficient Time Use (K - 12)

A. What to do if you do not know an answer

1. Omit or guess on items you don't know

2. Do not spend a long time on any one question

3. If you have time, come back later and work on any questions you omitted

4. Look over the test when you have finished to make sure that you have marked all the answers

5. Make the marks on the answer sheet as quickly as possible

V. Teaching Deductive Reasoning Strategies (5-12)

A. Use sample tests or a planned test program to teach the following:

1. Eliminating options you know are incorrect

2. Checking to see if one answer, if correct, would imply the incorrectness of the other item. This can eliminate one answer. The more answers you eliminate, the better chance you have of identifying the correct one

3. Rapidly defining the problem (question), analyzing and evaluating the different possible solutions

4. Watching for key words or terms, and looking very closely for any qualifying conditions or statements. Look especially for words and phrases such as "usually, commonly, in most instances, never, not one of these," etc.

5. Studying the stem of the question. It will often give clues to the correct answer

6. Looking at other similar questions. They may give clues to the correct answer

7. Checking all math problems carefully

8. On essay questions, watching for such words as "compare, contrast, discuss, evaluate, analyze, define, or describe"

VI. Giving Portions of a Practice Test (K-12)

A. Assess difficulties, and reteach. (Phillips, 1983)

APPENDIX F

SELF-TALK

SELF-TALK

Negative evaluations

The others probably think I'm dumb
I have a bad memory
I'm doing poorly
I can't do this--I give up
Everyone usually does better than me
I must be making many mistakes
I don't do well on tests like this
I am too dumb to do this
I'm doing worse than the others
I really feel stupid

Off-task thoughts

I wish I were playing with my friends
I am nervous and worried
I wish I were home
I wish this was over
My mind keeps wandering
I keep on daydreaming
I wonder what the examiner is going to find out about me
I can't seem to sit still
Pretty soon I'll get to do something else
I am hungry

Positive evaluations

I am fast enough to finish this
I do well on tests like this
I usually do better than the others
I am bright enough to do this
This test is easy for me to do
I am doing the best that I can
I usually catch on quickly to new things
I am doing better than the others
I am sure to do fine on this
I am able to do well on different things

On-task thoughts

That question doesn't make sense--I'll read it again
The answer is (b) elephant
I don't know the answer at all so I'll guess
I won't pick this answer because of the word "never" in it
Ten minutes left--time to check over my answers
I'll say the boy was reading because the paragraph said he had a book
(adapted from Zatz & Chassin, 1983)