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62350

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TITLE OF THESIS/TITRE DE LA THÈSE Self-Efficacy and Academic Task Performance of Test Anxious High School Students

UNIVERSITY/UNIVERSITÉ Simon Fraser University

DEGREE FOR WHICH THESIS WAS PRESENTED/ GRADE POUR LEQUEL CETTE THÈSE FUT PRÉSENTÉE Master of Arts (Education)

YEAR THIS DEGREE CONFERRED/ANNÉE D'OBTENTION DE CE GRADE 1983

NAME OF SUPERVISOR/NOM DU DIRECTEUR DE THÈSE Jack Martin

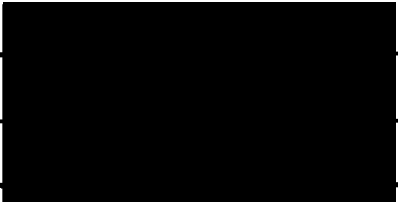
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SELF-EFFICACY AND ACADEMIC TASK PERFORMANCE

OF TEST ANXIOUS

HIGH SCHOOL STUDENTS

by

Tracy Elaine Einarson

B.Ed. (Honours English), University of British Columbia, 1967

A THESIS SUBMITTED IN PARTIAL FULFILLMENT

OF THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF ARTS (EDUCATION)

in the Faculty

of

Education

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March 1983

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SELF-EFFICACY AND ACADEMIC TASK PERFORMANCE OF TEST ANXIOUS

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ABSTRACT

Albert Bandura theorizes that antecedent to the initiation of an action is an assessment of one's current ability to perform the task at hand. This assessment is termed a judgement of self-efficacy. Research has indicated that self-efficacy has a significant influence on the performance of a variety of tasks. The present study consisted of two experiments which: (1) addressed the relationship between self-efficacy and student performance on academic tasks (the Canadian Tests of Basic Skills: reading and mathematics subtests); and (2) examined the relative effectiveness of self-instructional training and rational emotive counselling in improving students' self-efficacy judgements.

In both experiments, test anxious grade ten students were assigned randomly to one of three treatment groups - rational emotive counselling, self-instructional training, or a placebo control group which was structured to parallel the other two groups in format.

Forty-one volunteer students participated in the first experiment. Thirty volunteers participated in the second experiment. Task-specific efficacy probes were administered

to the students on three occasions over a six-week period. Reading and mathematics tests were administered before and after the experimental treatments.

Results from both experiments indicated that students' efficacy judgements neither predicted their performance on the academic tests, nor were affected by the experimental treatment, with one exception. In experiment two, a significant treatment effect was found on the self-efficacy mathematics probes at posttest. This result indicated that the experimental groups scored higher on the posttest self-efficacy mathematics probes than the placebo control group. In general, the results indicated no relationship between students' self-efficacy judgements and their corresponding performances on the Canadian Tests of Basic Skills. Implications of these results for the development of self-efficacy theory and research are discussed.

ACKNOWLEDGEMENTS

I wish to acknowledge Dr. Jack Martin and Dr. Ron Marx for their assistance in the completion of this thesis.

Also, I wish to acknowledge my family, particularly my sister Kristin and my husband Pat, for their encouragement and help.

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CHAPTER I

STATEMENT OF PROBLEM AND LITERATURE REVIEW

The purpose of this study was to examine the effects on the self-efficacy judgements of test-anxious students of two counselling strategies for alleviating test-anxiety. Extensive research has been done on test-anxiety over several decades (Alpert & Haber, 1960; Liebert & Morris, 1967; Mandler & Sarason, 1952; Spence, 1958; Wine, 1971). This research concludes that many adolescents and young adults feel anxiety when they anticipate and/or experience test situations in high school and university (Gaudry & Spielberger, 1971; Meichenbaum, 1972; Sarason, 1957; Wine, 1971). This anxiety can be detrimental to the individual's performance because it draws his/her concentration away from task-relevant cognitive processes. Therefore, the level of success attained is lower than that which she/he is capable of reaching. Strategies which help the individual cope with the anxiety, because of their ameliorative effect on the debilitating anxiety and their facilitation of task-relevant concentration, can increase the level of success attained. Repeated successful use of coping strategies increases the probability of their generalized application to other stressful situations.

For example, the individual's adaptation to the demands of job situations and personal relationships can be improved by her/his application of techniques learned in coping with test anxiety. In contrast, the individual who has not learned to apply coping strategies to her/his experiences with test anxiety is less likely to have positive results from test situations and, is handicapped in new, stressful situations by her/his dearth of successful experiences in using coping strategies to handle test anxiety.

To date, most of the research on test anxiety has concerned itself with university students, despite indications that early identification and treatment would forestall the progressive nature of the problems encountered by test anxious individuals. The negative association between anxiety and achievement tends to increase with the grade level (Gaudry & Spielberger, 1971). Coupling this evidence with an awareness of the frequently stressful nature of the adolescent years points to the wisdom of focussing the treatment of test anxiety at the high school rather than the university level.

Two counselling strategies applicable to the treatment of test anxiety are Ellis' rational emotive counselling (Ellis, 1962, 1977) and Meichenbaum's self-instructional training (1977). Both strategies are cognitive restructuring

methods and, as such, are similar in their identification of cognition as the cause of behavioural and emotional change. They propose that maladaptive thought patterns give rise to emotional disorders, and envision the major task of treatment as being the restructuring of faulty cognitions. However, there are clear distinctions between the two strategies - in their views of maladaptive thought patterns, in their use of behaviour change techniques, and in their exhortative characteristics - which will be discussed in greater detail later in this chapter. Research has been done on the amelioration of test anxiety by rational emotive counselling (Goldfried, Linehan & Smith, 1978; Maes & Heimann, 1972; Montgomery, 1971; Osarchuk, 1974), and by self-instructional training (Holroyd, 1976; Hussein & Lawrence, 1978; Meichenbaum, 1972).

More recently, considerable effort also has been expended in the explication of the relationship between 'individuals' performance on various tasks and their judgements of self-efficacy (Bandura, 1977a; Bandura & Adams, 1977; Bandura, Adams & Beyer, 1977; Bandura, Adams, Hardy & Howell, 1980; Bandura & Schunk, 1980; Schunk, 1981; Biran & Wilson, 1981; Gauthier & Ladouceur, 1981; Kazdin, 1979; Sappington, Russell, Triplett & Goodwin, 1981; Zimmerman & Ringle, 1981). This

study attempts to clarify the role of self-efficacy in the amelioration of test anxiety by examining its utility as an accurate predictor of the performance of test anxious high school students before and after rational emotive counselling and self-instructional training interventions.

This chapter begins with a brief discussion of social learning theory as a preamble to an examination of Albert Bandura's theory of self-efficacy (1977). Self-efficacy theory is the focus of much of the chapter - its functions, sources, and dimensions are described. This leads to a discussion of pertinent studies of the relationship between self-efficacy and performance. Following this major portion of the chapter is a concise examination of test-anxiety theory, rational emotive therapy for test anxiety (Ellis), and self-instructional training for test anxiety (Meichenbaum). These interventions are analyzed in terms of their likely effects on the self-efficacy judgements of participants. The chapter concludes with the formation of specific hypotheses for this study.

Social Learning Theory

The principles upon which social learning theory is based are that human behaviour is largely acquired and that learning principles account for such acquisition (Dollard & Miller, 1941, 1950; Bandura, 1969, 1977). Basic behavioural laws apply but are given a broad scope, one that includes recognition of the role of cognitive mediation and of the influence of social context. For example, observational learning is a powerful factor affecting behaviour. As an intrinsic part of daily life, we observe a wide range of behaviours. Our cognitive skills are used to analyze the implications of these observations for our own conduct, with the complexities of social context influencing the analysis.

The acquisition of novel responses is explained by social learning theory as occurring through observational learning. Learning occurs even if the learner does not overtly rehearse the behaviour or imitate the model. Therefore, the learning is acquired without direct reinforcement. The role of vicarious reinforcement is crucial in observational learning. Consequently, the complexity of social influences on behaviour becomes more evident.

Social learning theory recognizes the diversity of factors which affect the acquisition of a behaviour. The

similarity of the model to the observer, the difficulty of the task at hand, and the pattern of reinforcement experienced by the model can be significant factors. Also, the degree of attention to, and the perception of, salient aspects of the modelled behaviour by the observer are important to the acquisition of novel responses. The individual's cognitive processing of the information and her/his symbolic and/or overt rehearsal will influence the level of observational learning.

A clear distinction is made in social learning theory between the acquisition and performance of behaviours. Myriad numbers of behaviours are acquired which are never performed by the individual for a variety of reasons, most related to reinforcement. Behaviours perceived as beneficial for the model are more likely to be performed than those perceived as disadvantageous. In addition, the individual makes self-evaluative judgements about the range of behaviours she/he acquires, performing those which are appraised as rewarding, congruent with self-image, and within the range of personal ability. Behaviours which are acquired but not performed may be accompanied by inadequate motivation, be perceived as too complex, be incompatible with personal values, or be viewed as having negative reinforcement potential.

Reinforcement is as important to social learning theory as it is to other learning theories. It is classified according to fixed or variable schedules, and ratio or interval bases. Most human reinforcement occurs on a variable ratio or a variable interval basis: both the number of unreinforced responses and the time intervals between reinforcers continually vary. The emphasis in social learning theory is on the social nature of reinforcers - peer approval, financial reward, status; in short, culturally determined rewards. Negative reinforcers generally do not possess the same power to shape behaviour as do positive reinforcers.

Albert Bandura, a prominent social learning theorist, envisions human behaviour as a continuous, reciprocal interaction between cognitive, behavioural, and environmental factors. Emphasis is placed on the social context and the vicarious aspects of social learning. People possess the ability to control their behaviours; therefore, they are an influence on, as well as being influenced by, their environments. Bandura's social learning perspective of the individual is that she/he is neither a self-directed person nor an environmentally controlled object: instead, the individual and the environment interact by the process of reciprocal determinism to constantly shape each other. Bandura stresses

real life situations and the cognitive, symbolic capacities by which humans determine their behaviour. In his more recent work (1977, 1978, 1980), he examines the influence of cognition in areas like self-reinforcement, self-control, and self-efficacy.

Self-Efficacy Theory

Bandura's theory of self-efficacy suggests that performance of a given task, no matter how elementary and repetitious the task itself, is influenced by intricate, often obscure, and everchanging factors which affect the overall performance and its subskills. Therefore, antecedent to the initiation of an action is an assessment of one's current ability to perform the task at hand. This assessment is what Bandura calls a judgement of self-efficacy. The construct of self-efficacy is differentiated from that of outcome expectation: "An outcome expectation is defined as a person's estimate that a given behavior will lead to certain outcomes. An efficacy expectation is the conviction that one can successfully execute the behavior required to produce the outcomes" (Bandura, 1977, p. 193). According to self-efficacy theory, psychological procedures affect behaviour by changing perceptions of self-efficacy.

The construct of self-efficacy is differentiated from that of self-concept. Self-concept is a global perspective, encompassing the person's self-image and attitude toward life, and the interaction between these two factors. Self-concept pertains to the unique, comprehensive vision the person has of herself/himself. Self-efficacy is a task-specific construct which directs attention to the intricacies of individual percepts of efficacy in relation to a particular task. Self-efficacy expectations are concerned precisely with the demands of the task at hand, the environmental factors at that specific time, and the performer of the task.

Perceived self-efficacy influences human behaviour in various ways. First, one's selection of activities and environments is affected by one's estimate of personal efficacy. Avoidance of activities deemed beyond one's capabilities can limit personal growth and perpetuate negative perceptions. Inaccurate efficacy judgements in the opposite direction, overestimation of capabilities, influences behaviour by leading the individual into situations involving frustration, failure, and even danger. Obviously, accurate assessment of self-efficacy is a skill essential to the acquisition of coping behaviours.

A second significant influence of self-efficacy on behaviour lies in its determination of the degree and duration of effort that will be invested by a performer, especially when negative factors are associated with the behaviour at hand. An individual with strong perceptions of self-efficacy will persevere in the face of difficulties. Since enduring, concerted effort is favourable to the development of personal capabilities, techniques that foster self-efficacy likely will benefit the individual by providing increased opportunities for success. Hazards, difficulties, and frustrations will provide valuable feedback for the participant who feels highly self-efficacious, often introducing a sense of challenge that leads to greater and longer-lasting efforts. Conversely, the individual who has weaker perceptions of self-efficacy will slacken her/his efforts when confronted with obstacles to success. Her/his application to the task will be less concentrated and sooner terminated, thereby predisposing the endeavour to failure and the individual to an incomplete development of personal skills.

Finally, self-efficacy judgements influence thought patterns and emotional arousal before and during performance of tasks. A person with weaker self-efficacy will be more likely to reiterate negative personal appraisals and to

magnify the challenges of a task than will a person with strong perceptions of self-efficacy. The emotional arousal concomitant with the negative thought pattern hampers successful performance by focussing attention on debilitating self-assessments at the expense of attention to the task. The positive thought pattern and low emotional arousal of the person with strong efficacy expectations encourages her/him to expedite appropriate action, treating challenges as indicators that greater effort is required, not as indictments of personal abilities.

Sources of Information About Self-Efficacy

Self-efficacy judgements evolve from four sources of information: performance accomplishments, vicarious experiences, verbal persuasion, and physiological arousal.

Enactive experiences have been shown to be the most effective source of efficacy information (Bandura, Adams, & Beyer, 1977; Bandura, Jeffrey, & Gajdos, 1975). The pattern of successes and failures in performance accomplishments is crucial to the development of strong efficacy expectations. Successes, particularly at the outset, enhance this development. Occasional, subsequent failures are likely to have little effect. Initial failures weaken efficacy expectations, as do repeated failures.

It is necessary to understand how and to what people attribute successful and/or unsuccessful performances on specific tasks. In making such attributions, individuals may weigh their performances in terms of the task's difficulty, the amount of effort they expended in performing the task, the amount of external assistance they received, and the pattern of successes and failures associated with past exposure to the task. If an unsuccessful performance is viewed as the result of insufficient effort or the difficulty of the task itself, that failure is unlikely to weaken efficacy expectations. If the individual exerted considerable effort, or assesses the task as being relatively simple, or received valuable external assistance in performing the task, and performed unsuccessfully, that failure is likely to weaken efficacy expectations. Judgements of self-efficacy are affected by people's attributions of the importance of these factors to their successes and failures.

Vicarious experiences are another source of information for efficacy expectations. This source is less reliable than is that of performance accomplishments because it depends on social comparison inferences drawn by the individual performer. Perceived similarity to another (in terms of personality and physical characteristics, in effort exerted, or in coping

strategies enacted) is an important variable from which inferences may be drawn (Kazdin, 1974; Brown & Inouye, 1978; Bandura, 1977). The closer the perceived similarity, with respect to these factors, the more powerful the experience will be in providing information for efficacy expectations. The clarity of the relationship between the behaviour of another and the outcome also affects the inferences drawn. Should the association between the observed behaviour and the outcome appear strong and definite, then the information gained from that vicarious experience will have greater significance than it would if the association were vague.

Verbal persuasion is a third, widely used source of efficacy expectations. As with vicarious experience, verbal persuasion produces weaker expectations than does enactive performance because it lacks the power and reliability of direct, personal experience. The degree of consonance between verbal persuasion and an individual's experiences largely determines the impact of this source of efficacy information. Discrepancy between the exhortation and the experience may result in rejection of the message and in significant waning of the persuader's credibility. However, should the persuader be highly esteemed by the performer, she/he may be exhorted to initiate and maintain efforts in activities that otherwise

would have been rejected (Bandura, 1980).

Combining verbal persuasion with circumstances conducive to success is likely to elicit greater effort and greater probability of success. The manipulation of the situation to ensure such circumstances is an essential factor in the positive contribution of verbal persuasion to perceived self-efficacy (Bandura, 1977).

Emotional arousal is the fourth source of efficacy information. Valuable data can be gathered from one's assessment of one's state of physiological arousal in a given situation. High levels of arousal usually are related inversely to success. Awareness of this fact can lead the individual to feel anticipatory arousal, which further impedes the development of strong efficacy expectations.

It is the cognitive appraisal of the arousal information that is significant. Thus, appraisal of an anxiety-fraught task often produces fear which is more debilitating to, and felt more keenly by, the person who has low efficacy expectations (Bandura, 1969, 1970). Changing this person's cognitive appraisal can diminish the level of emotional arousal so that performance is improved. This improvement, in turn, provides a stronger, more positive basis for self-efficacy expectations.

Common social learning theory interventions make use of these four sources of information about self-efficacy. The principle modes of induction of information from performance experiences are participant modelling, in vivo desensitization, performance exposure, and self-instructed performance. Vicarious experiences, the second source of information for efficacy expectations, most commonly occur through strategies which use live and/or symbolic modelling. The third source, verbal persuasion, makes use of interventions marked by exhortation, suggestion, self-instruction, and interpretive techniques. Finally, information derived from emotional arousal is evident in interventions using biofeedback, relaxation, attribution, symbolic desensitization, and symbolic exposure.

The information derived from the four sources previously discussed then must be appraised by the individual. It is this interpretation of efficacy information that is pertinent to the individual's percept of efficacy. She/he may perform successfully in a single "simulated" situation but not transfer the behaviour to a real life situation because of a belief that there is little relationship between the two experiences. Cognitive appraisals of the causes of one's behaviour may result in attributing success to skill, to effort, to external

aids, or to the simplicity of the task. Each of these attributions will have a significantly different effect on self-efficacy. For example, the belief that one succeeded primarily because one exerted extreme effort or received considerable help will not strengthen the personal sense of efficacy as much as the belief that one succeeded primarily because of skill or ability.

The Measurement of Self-Efficacy

Efficacy expectations inherently possess three properties relevant to performance: magnitude, generality, and strength. After consideration of a list of skills, arranged in order of increasing difficulty, which together constitute the task at hand, the individual is asked to indicate how successful she/he expects to be in performing these skills. The property of self-efficacy being measured in this case is termed magnitude. Generality is another dimension of efficacy expectations. It indicates the degree of specificity of the judgement. Does the appraisal of the experience produce a specific, circumscribed expectation or does it produce a widely-ranging, more general one? An efficacy expectation which has high generality encompasses a range of related behaviours. Finally, the strength of an expectation refers to its ability to withstand disconfirming experiences. A weak or uncertain expectation

will be susceptible to change through an unsuccessful encounter, while a strong or certain expectation will be more resilient in the face of adverse conditions (Bandura, 1977). Because these dimensions of efficacy judgements interact with performance, it is important to assess both the expectations and the performance at appropriate times in the activity or intervention in order to determine their reciprocal effects.

Studies of the Relationship Between Self-Efficacy and Performance

Research on self-efficacy has established the value of self-efficacy as a predictor of performance on various tasks. The stronger the perceived efficacy, the greater the effort and the persistence applied to the task at hand. Studies also corroborate the contention that enactment is the most powerful source of strong efficacy expectations.

Bandura and his colleagues conducted a series of empirical studies of self-efficacy, focussing their attention on the treatment of anxiety with snake phobic adults. Bandura and Adams (1977) conducted two studies on the effects of systematic desensitization and participant modelling on avoidance behaviour through the influence of efficacy expectations.

In the first study, Bandura and Adams (1977) examined the hypothesis that systematic desensitization creates and

strengthens efficacy expectations, thereby decreasing avoidance behaviour. They concluded that efficacy expectations accurately predicted changes in avoidance behaviour. The degree to which the participants approached the snakes was a reflection of their efficacy expectations. Also consistent with self-efficacy theory was the finding that strong percepts of efficacy tend to be inversely related to high levels of anxiety arousal. Participants who experienced weak levels of arousal tended to express strong percepts of self-efficacy, while those who experienced high levels of arousal tended to express weak percepts of self-efficacy.

In the second study, Bandura and Adams (1977) employed the technique of participant modelling to examine the hypothesis that this intervention creates and strengthens efficacy expectations. At different points during the treatment, the participants made efficacy judgements concerning their future performance on a hierarchy of tasks. These judgements were distinguished by their congruence with the behavioural change evinced by subsequent performances. Participant modelling emerged as a strong source of efficacy information.

Bandura, Adams, and Beyer (1977) concentrated their efforts on the hypothesis that an increase in the level and strength of self-efficacy is accompanied by a heightened

intensity and persistence of effort. Three treatment groups were formed - performance experiences, vicarious modelling, and control. The enactive treatment was the most powerful of the three. The expectations of efficacy produced were higher, stronger, and more generalized than were those resulting from the vicarious modelling treatment. Also, the measure of self-efficacy was accurate in its prediction of subsequent behaviour.

The influences of cognitive modelling and direct experience techniques on self-efficacy were explored in two studies by Bandura, Adams, Hardy, and Howells (1980). In the first study, snake phobic participants responded to hierarchical scenes of interactions with snakes, before and after treatment with cognitive modelling techniques. The results showed that symbolic modelling strengthened approach behaviour. Again, perceived efficacy was an accurate predictor of subsequent performance.

The second study by Bandura, Adams, Hardy, and Howells (1980) treated agoraphobics in a performance experience programme. Skills of self-relaxation, proximal goal setting, assertiveness, and expressiveness were the primary concern of preparatory group sessions. The ensuing sessions were composed of field mastery experiences, involving a field therapist with a participant in activities specifically

designed to facilitate that participant's mastery of her/his particular fear. The activities were arranged in order of increasing difficulty; for example, the individual fearful of car travel moved progressively from riding in a car on a suburban street to busier streets, local highways, and free-ways, with the therapist controlling the exposure to each level in the hierarchy according to the coping skills evident in the individual's behaviour. The study's results confirmed enactive mastery as a significant enhancer of efficacy expectations and self-efficacy as an accurate predictor of subsequent performance.

This series of studies provided evidence that various treatments can enhance self-efficacy - participant modelling, systematic desensitization, and vicarious modelling were the dominant techniques. They also corroborated the propositions that participant modelling provides the most powerful source of efficacy information, that efficacy expectations can predict the level of behaviour change, and that self-efficacy can predict subsequent behaviour on a variety of tasks.

Subsequent research has extended knowledge about self-efficacy by applying various modes of treatment to a wide range of participants, with measurements of self-efficacy being taken at set points during the intervention.

Work by Kazdin (1979) and Jaremko (1980) showed that treatments of deficits in social skills enhanced self-efficacy in relation to the tasks in question. Kazdin found that increases in self-efficacy were accompanied by improvements in assertive skills. Covert modelling produced significant gains in both self-report and behavioural measures of assertiveness and self-efficacy. Jaremko (1980) treated public speaking anxiety with stress inoculation training, finding that the treatment increased self-efficacy and decreased reported levels of anxiety.

Snake phobia was the focus of studies by Gauthier and Ladoucier (1980) and Sappington, Russell, Triplett, and Goodwin (1981). Gauthier and Ladoucier investigated the possibility that the public or private nature of efficacy statements had an effect on performance. They found no significant difference between public and private efficacy estimates. Also, they reported a positive relationship between efficacy judgements and performance. Sappington, et al. (1981) found that modelling improved relevant percepts of efficacy with snake phobic adults.

Zimmerman and Ringle (1981) moved the focus of research from adults to children, and from anxiety/phobia to performance on wire ring and embedded word puzzles. One hundred first

and second grade children observed a model attempt to solve a wire ring puzzle with varying degrees of persistence and varying statements of confidence. The children were presented with an unsolvable ring puzzle and, after a time lapse of one day, an unsolvable embedded word puzzle. The high persistence of the model and the model's statements of confidence increased the children's persistence on both tasks. However, the results for the self-efficacy judgements seem to indicate a need for further self-efficacy research with a variety of age groups because of the apparently inexplicable relationship between the children's degree of task persistence and their self-efficacy estimates. The five minute modelling treatment, as compared to the thirty second treatment, significantly increased the children's task persistence but decreased their self-efficacy percepts. This result appears to contradict some aspects of self-efficacy theory. Ringle and Zimmerman speculate as to the possible reasons for the apparent contradiction and propose three hypotheses. It could be that the children in the 1981 study felt constrained to behave as the model had behaved, despite their beliefs to the contrary. Also, it could be that the children felt that the situation was relatively private and non-threatening; therefore, that they were able to expend considerable

persistence even in the face of their doubtful expectations of success. A final hypothesis proposed by Zimmerman and Ringle is that it could be that the children's ability to predict their behaviour will improve with age. The authors' conclusion is that further research in the field of self-efficacy is needed, particularly in relation to the effect of age on judgements of self-efficacy.

The studies which have been discussed up to this point have examined the construct of self-efficacy with regard to snake phobia, deficits in social skills, and performance on elementary puzzles. Researchers also have addressed their efforts to the explication of the relationship between self-efficacy and intellectual tasks - the current discussion turns now to a sampling of these studies.

Brown and Innouye (1978) extended the empirical support for self-efficacy theory, working with young adults on an anagram task. Their basic hypothesis was that learned helplessness could be induced by modelling. Their results provided evidence that perceived efficacy predicts performance, and revealed the importance of an observer's belief about the credibility of the model he observed. Forty male college students were assigned randomly to one of four groups: one group was led to believe that its members were of similar

competence to the model; the second, to believe that its members were superior to the model; the third was given no information regarding the model's competence, and the fourth was exposed to no model. Each participant worked at an anagram task; those in the first three groups working alongside a model and observing the model fail at the task, those in the fourth group working at the task without a model. The first and third groups showed less persistence at the task than did the second and fourth groups. In regard to the application of self-efficacy theory, this study supports previous indications that the stronger the percepts of efficacy, the more persistent the individual's efforts on the task in question.

Schunk (1978) also contributed to the empirical support for self-efficacy theory, working with young children in the field of arithmetic achievement. Schunk provided one group with training consisting of modelling, guided performance, corrective feedback, and self-directed mastery. The second group received didactic instruction. Schunk's results were that both treatments enhanced the children's assessments of self-efficacy, that their persistence and accuracy on the tasks were increased, and that their efficacy judgements accurately predicted their subsequent performance.

Continuing the previous study's examination of children's mathematical performance, Bandura and Schunk (1980) researched the hypothesis that self-motivation through proximal goal-setting facilitates the development of competencies, efficacy expectations, and intrinsic interest. They selected children who showed gross deficits and disinterest in mathematical tasks, assigning them randomly to one of four self-directed learning groups. They found that the group with proximal sub-goals developed stronger efficacy expectations and greater interest and competence in arithmetic tasks than the groups with distal goals or no reference to goals. There was a high degree of congruity between the accuracy of performance and interest in the given tasks and the children's efficacy expectations.

In his 1981 study, Schunk again worked with children showing low arithmetic achievement. Two of his three proposed hypotheses were concerned with self-efficacy theory: one predicted that a cognitive modelling treatment, with practise sessions and corrective modelling, would be more beneficial to the development of the skills in question and to the development of self-efficacy than would a didactic instruction treatment. The other hypothesis concerned with self-efficacy predicted that effort attribution in the modelling treatment

would prove more effective in improving achievement, persistence, self-efficacy, and accuracy of self-appraisal than would effort attribution in the didactic instruction treatment. Schunk found that both treatments were beneficial to the development of division persistence, accuracy, and self-efficacy percepts, but that the cognitive modelling treatment was more effective in increasing accuracy. Also, his results confirmed that hypothesis that effort attribution in the modelling treatment would produce self-efficacy judgments which were more accurate predictors of subsequent performance than would effort attribution in the didactic treatment.

This group of studies - Brown and Innouye, 1978; Schunk, 1978; Bandura and Schunk, 1980; Schunk, 1981 - provide evidence of the applicability of the construct of self-efficacy to some intellectual performance tasks.

Test Anxiety

Researchers in test anxiety express somewhat different views on the nature of anxiety and its effect on performance. The currently popular view that anxiety has an adverse effect on performance because the individual must cope with the anxiety as well as the task in question, thereby restricting

the concentration she/he can devote to the task, seems logical (Mandler & Sarason, 1952). Alpert and Haber (1960), however, focussed more detailed attention on individual differences in hypothesized relationships between anxiety and performance, proposing that anxiety may facilitate or debilitate performance in a test situation, depending on specific individual and situational factors. Recognition of the possibility of facilitative effects of anxiety on performance, in certain situations, broadens the earlier theorizing of Mandler and Sarason (1952).

Liebert and Morris (1967) contributed to the understanding of test anxiety by identifying the two distinct components of worry and emotionality within test anxiety. They view worry, rather than emotionality, as the aspect of anxiety which adversely affects performance. Emotionality is perceived as a state of physiological arousal; worry, on the other hand, is characterized as a cognitive concern about performance. Liebert and Morris found a significant correlation between students' level of worry and their judgements about how well they would perform on a test, and no significant correlation between their expressed level of emotional arousal and these same judgements. The research reported by Morris and Liebert appears to confirm Yerkes-Dodson's Law (1908), which proposes

that the relationship between arousal and performance forms an inverted U curve. The extremes of arousal are not as facilitative to performance as are the moderate levels. The lowest extreme of arousal provides little or no basis for performance, and the highest extreme has a debilitating effect on performance.

More recent studies (Frost, 1968; Gaudry & Bradshaw, 1970; Gaudry & Spielberger, 1971) provide further indication that high test anxiety is associated with low performance. Thus, despite variations within test anxiety theory regarding the exact nature of anxiety and its precise effects on performance, there seems to be a general consensus that highly test anxious individuals will perform less successfully than less anxious pupils, because of their extreme anxiety levels.

Cognitive-Behavioural Treatments of Test Anxiety

Cognitive behaviour modification is based on the proposition that emotional disorders stem from maladaptive thought patterns and that the purpose of intervention is to identify and change these maladaptive patterns to more positive, constructive patterns. Within the scope of cognitive behaviour modification lies a wide variety of approaches to, and techniques for, behaviour change. Two strategies which are applicable to the treatment of test anxiety are those devised by Ellis (1962, 1977) and Meichenbaum (1972).

Ellis' rational emotive counselling (REC). Ellis' (1962)

research and writings form the basis for rational emotive counselling. In this approach, irrational beliefs are held to be the source of most problems an individual encounters. Her/his irrational inclinations to hold a distorted view of the world, to fail to profit from experience, and to make unrealistic demands of himself and others - cause beliefs which perpetuate distress. Many individuals have established a firm habit of interpreting preferences as needs and, through powerful inner self-talk, they realize an event's irrational potential instead of its rational possibilities. Revising illogical beliefs by correcting self-talk is the basis of REC: a brief look at these tenets follows.

The most commonly held irrational beliefs are prominent in the development of anxiety and hostility, which are the two most distressing and damaging emotions, in Ellis' opinion. Simply stated, these irrational beliefs are:

- (1) Being loved by everyone is a dire necessity.
- (2) I should be thoroughly competent and intelligent in all efforts.
- (3) Some people and acts are bad and wicked, and should be punished or eliminated.

- (4) It is terrible and catastrophic that life is not working out as I had planned.
- (5) Much human unhappiness is externally caused.
- (6) I should be terribly concerned about things that are, or may be, dangerous.
- (7) Inertia can achieve happiness.
- (8) I need someone or something stronger or greater than myself on which to rely.
- (9) Because something strongly affected me once, it will continue to do so; therefore, I am controlled by my past history.
- (10) What others do is vital to me and I should strive to change them in directions that suit me.
- (11) I have virtually no control over my emotions and cannot help feeling certain things.
- (12) It is better and easier to avoid responsibilities and difficulties than to face them.

Rational emotive counselling focusses initially on the exposure of the client to the basic tenets of rational emotive theory, as briefly delineated above, using the technique of verbal persuasion. Then, the client is encouraged to identify her/his own irrational beliefs. The counsellor challenges these irrational beliefs and provides more rational,

alternative beliefs through her/his modelling of rational versions which contradict the current beliefs. Numerous practice sessions, both in counselling meetings and as homework, involve the gradual elimination of irrational beliefs and their replacement with more constructive, rational ones. To strengthen positive behavioural patterns associated with rational thought patterns, treatment sessions include behavioural rehearsal and practice tasks aimed at the further development of rational beliefs and positive behaviours.

The counsellor's role is active and directive in raising the self-defeating beliefs to consciousness; persuading the client of the illogicality of maintaining them and, concomitantly, her/his own distress; and encourages, through direct confrontation, argument, and homework, a new, more rational perspective. Although aggressive cognitive methods are used to reorganize emotional reactions, general therapeutic methods are eclectic. However, the more emotional a method or a technique, the more wasteful it is considered because emotion is a more excited, less rational kind of thinking that, without control and analysis, can lead to distressing irrational beliefs. Accordingly, emphasis is placed not on a warm, supportive counsellor/client relationship in REC; but

on the counsellor as a teacher; explaining, assigning, and evaluating. Ellis believes that this emphasis accomplishes the dual purpose of avoiding transference and counter-transference difficulties while correcting the irrational belief that the client must be loved by all significant people.

Techniques used with rational emotive counselling are in keeping with its active, pragmatic nature and its utilitarian view of methods and subject matter. The subject matter of counselling sessions focusses on observable learning that can be held accountable for disturbed behaviour, but it includes client history, test data, observed and reported behaviour and feelings - in short, everything that comes to the counsellor's attention is potentially useful. The eclectic choice of techniques encouraged by REC does not imply that its treatment procedures are haphazard or random: REC involves both verbal and behavioural elements in a balanced intervention.

Examination of studies concerned specifically with the effects of rational emotive counselling on test anxiety discloses widely ranging procedures. Uniform, replicable methodology is not a marked characteristic of many of these studies, a situation which may be attributable to a

considerable variety among treatments which are classified as REC, and to a tendency to provide only very general descriptions of treatment procedures. For example, studies by Maes and Heimann (1972), Montgomery (1971), and Osarchuk (1974) all concern themselves with the treatment of test anxiety with REC, and all show REC as either equal or superior to other treatments in the alleviation of test anxiety. However, such methodological aspects as the experience and training of the therapists, the length of the treatment times, the description of REC techniques used, and the comparison between these techniques and the other treatments used, are reported either not at all or so briefly as to make replication of the studies and comparisons between them imprecise.

More recently, Goldfried, Linehan, and Smith (1978), similarly directing their attention to the treatment of test anxiety with REC, found it to be superior to a prolonged exposure therapy and to a waiting list control. The quality that makes this study more useful than those previously mentioned is its methodological precision. All treatments are described carefully and all procedures are outlined clearly. Therefore, more useful conclusions can be drawn and more precise guidelines for further research can be followed.

Meichenbaum's self-instructional training (SIT).

Meichenbaum's (1972) work moves away from that of Ellis, in the direction of more flexible, individual analyses of thinking styles. The client is trained to identify her/his own, particular, maladaptive self-statements which are interfering with her/his ability to perform a particular task. Typically, she/he then observes the counsellor performing the behaviour in question. The counsellor performs successfully and verbalizes the cognitive strategies that are being used to aid the successful performance. Verbalizations used at this point in self-instructional training may include an appraisal of task requirements, self-statements that emphasize personal capabilities and minimize anxiety, and self-reinforcement for successful performance. After such observational learning, the client is invited to perform the task in question, while verbalizing the appropriate self-instructions. The counsellor provides feedback to establish the use of constructive self-statements to replace the previous maladaptive thoughts.

A crucial aspect of self-instructional training is the individual's recognition of her/his own, peculiar thinking style. The counsellor uses a wide range of techniques to enable the client to identify clearly her/his characteristic

thinking pattern, to learn new behaviours and coping strategies that replace the former, unsatisfactory ones, and to use her/his recognition of her/his characteristic cognitive style as an indication that the new behaviours are appropriate at the particular times they are needed.

Examination of studies concerned specifically with the effects of self-instructional training on test anxiety shows that SIT is an effective treatment. Meichenbaum (1972) used SIT and systematic desensitization as his two treatment groups, with a third group which was either no-treatment or waiting list control. He found the results produced by the SIT treatment to be superior than those produced by the other two groups. Holroyd (1976) compared SIT with a carefully constructed control group and alternative forms of treatment, finding it to be the most effective in its alleviation of test anxiety. Similarly, Hussain and Lawrence (1978) structured a study which encompassed two treatment groups, a discussion control, and a waiting list control, with test anxious participants. They found that the SIT treatment group equalled the others on behavioural measures and was superior on subjective measures.

Comparisons and contrasts between REC and SIT. Both rational emotive counselling and self-instructional training operate from the common ground of emphasis on the causal importance of self-statements and thought patterns for behaviour. They both seek to change maladaptive to adaptive behaviour through cognitive restructuring. However, REC emphasizes an established set of irrational ideas, and uses exhortation and persuasion as primary techniques in the counsellor/client relationship. The assumption of an aggressive, challenging personality by the counsellor is important to the success of rational emotive counselling. On the other hand, self-instructional training tends to emphasize the importance of individual thought patterns rather than a common core of irrational beliefs. SIT also employs a wider range of techniques for behaviour change than does REC - focussing in particular on the graduated practice of new, adaptive behaviours and the self-statements needed to support and strengthen them.

Reflection on REC and SIT, with respect to the sources of information about self-efficacy discussed earlier in this chapter leads to two conclusions. First, rational emotive counselling emphasizes one mode of efficacy information, that of verbal persuasion. REC uses the mode of enactive

performance to some degree, and those of emotional arousal and vicarious performance as well, to a lesser degree.

However, verbal persuasion emerges as the dominant mode through which information about self-efficacy is transmitted. The second conclusion to be drawn here is that SIT tends to use all four sources of efficacy information somewhat more equally - enactive performance, vicarious performance, verbal persuasion, and emotional arousal - but still with an emphasis on the first two sources named.

Hypotheses and Predictions for the Current Study

The current study examines the effects of rational emotive counselling and self-instructional training on high school students with test anxiety. Consistent with Bandura's analysis of sources of information about self-efficacy, the present study predicts that, since self-instructional training employs techniques drawing more evenly from all four sources of self-efficacy information, it will be more powerful in producing stronger percepts of efficacy than will rational emotive counselling, which relies to a greater extent on verbal persuasion as a primary source of self-efficacy information. Specifically, the study tests the following

hypotheses:

1. Based on self-efficacy theory, it is predicted that SIT will be more effective than REC in increasing efficacy expectations.

2. It is hypothesized that measures of self-efficacy with respect to performance during tests will serve as accurate predictors of such performance and will predict and correlate highly with performance measures regardless of the counselling intervention employed to treat test anxiety.

This study extends previous research into the utility of self-efficacy judgements as predictors of behaviour change, and the influence on treatment effectiveness of different sources of self-efficacy information used by different counselling interventions.

CHAPTER II

EXPERIMENT ONE

This chapter has a dual purpose. It discusses the methods used to plan and conduct experiment one, and describes the obtained results. The discussion of methods begins with information on the setting and participants of experiment one. Then, the instruments are described. The study involved screening instruments, pre- and posttesting instruments, and self-efficacy probes. Also contained in the methods section is a description of the design and procedures of experiment one. Completing the discussion of methods is an examination of the three experimental treatments - rational emotive counselling, self-instructional training, and placebo control. The results of experiment one are described in the final section of the chapter. Descriptive statistics are reported, followed by a presentation of correlational analyses and inferential tests of between group and within group differences.

Method

Setting and Participants

The study took place in a junior secondary school (grades 8 to 10), with a total enrollment of approximately 800 students. The school draws students from a largely suburban community whose socioeconomic status is primarily middle class. All grade 10 students were given basic information about the programme by a school counsellor. This information consisted of the concept of test anxiety, the purpose of the screening session, and the organization and format of the counselling sessions.

An initial group of 78 grade 10 students subsequently volunteered to participate in the screening session, each one returning a signed form giving parental consent for the screening session (see Appendix A). This group was assessed on study habits, levels of anxiety, and specificity of anxiety. From this group, 41 participants were selected for the study; 25 females, 16 males (see Haynes, 1982, for specific selection criteria). These 41 students were given further information by the school counsellor about the pretesting session, the goals of the programme, and the schedule of the programme sessions. Also, each student was given a parental consent letter which summarized this information, and was asked to

return it, signed, as proof of permission to participate in the test anxiety programme (see Appendix B).

The participants were assigned randomly to one of three groups - rational emotive counselling (REC), self-instructional training (SIT), or control (CON). To ensure equivalent sex composition across all groups, all female students were assigned prior to the assignment of the male students. The resulting group compositions were as follows: 14 participants in the REC group (5 male, 9 female), 14 participants in the SIT group (5 male, 9 female), and 13 participants in the control group (6 male, 7 female).

Instruments

Three sets of instruments were used in this study. One set was used to screen the volunteer group, a second set measured performance and self-report variables at the pre- and posttesting sessions, and a third set measured self-report variables at pretesting, end of treatment, and posttesting points.

Screening instruments. The screening instruments used in the study were the Study Habits Checklist (Preston & Botel, 1967), the Fear Survey Schedule (Wolpe, 1973), and the Test Anxiety Scale (Sarason, 1978). These three instruments were intended to provide information for the selection

of participants who shared the following three characteristics: high levels of test anxiety, low to moderate levels of general anxiety, and adequate study skills.

To select participants who possessed adequate study skills, the Study Habits Checklist (Preston & Botel, 1967) was used. It is a self-report instrument of 37-items, applicable to grade 9 through university levels. Its questions concern study habits such as previewing, reading, notetaking while reading, remembering, report writing, listening and taking class notes, preparing for examinations, taking examinations, planning time, and arranging physical setting. Norms are available for grade nine to first year university, based on the testing of 5,997 students in Pennsylvania. Brown (1964) reported data regarding the validity of this instrument, indicating that, of 16 variables, 4 distinguished significantly between over- and under-achievers. Average reliability of .91 was determined by split-half correlations at each grade level.

The Fear Survey Schedule (Wolpe, 1973) is a 108-item questionnaire which measures general anxiety. With Dr. Wolpe's permission (see Appendix C), the original Fear Survey Schedule was modified slightly so that it was directed specifically to the age-group in question. The result was

a 99-item questionnaire which was appropriate for the grade 10 volunteer group and was used to identify the individual within this group who showed high levels of general anxiety.

Screening these individuals out of the study meant that the focus of the treatment groups could be test anxiety, not general anxiety.

The Test Anxiety Scale (Sarason, 1978) is a 37-item scale which measures both worry and emotionality aspects of test anxiety. With Dr. Sarason's permission (see Appendix D), the original Test Anxiety Scale was modified to make it applicable to grade 10 students. References to college situations became references to high school situations. This modified scale was intended to provide information for the selection of participants who showed high levels of test anxiety.

Pre- and posttesting instruments. The following four instruments were administered at pre- and posttesting sessions as dependent variable measures: the State-Trait Anxiety Inventory - State Form (Spielberger, 1970), the State-Trait Anxiety Inventory - Trait Form (Spielberger, 1970), the Canadian Tests of Basic Skills (King, 1981), and the Test Anxiety Inventory (Spielberger, 1980).

The State-Trait Anxiety Inventory - Trait Form (Spielberger, 1970) was administered at both pre- and post-testing sessions. It is a self-report measure of individual vulnerability to anxiety-provoking situations, in which the participant is asked to indicate how she/he generally feels. The Trait Form of the State-Trait Anxiety Inventory (STAI) has high internal consistency: the alpha reliability coefficients range from .83 to .92 (Spielberger, Gorsuch, & Lushene, 1970). Test-retest reliability coefficients are high also, ranging from .73 to .86. The STAI-Trait Form correlates with various other anxiety scales, thus providing evidence for its concurrent validity. Spielberger (1970) views the Taylor (1953) Manifest Anxiety Scale and the IPAT Anxiety Scale (Cottell & Scheier, 1963) as alternate measures to the STAI-Trait Scale, the former showing a correlation of .83 with the STAI-Trait Form, and the latter, a correlation of .76.

The Canadian Tests of Basic Skills (King, 1981) also was administered at both testing sessions. The High School Multilevel Edition, Levels 15-18, Form 5 was used. Only the reading comprehension and mathematics subtests were used for this study because the subjects of English and mathematics were common to all grade 10 students. Therefore, these two

subtests were closer than the others to the actual classroom experiences of the participants. The CTBS was employed as the performance measure in this study to permit an examination of the relationship between test anxiety and test performance. Based on the Iowa Test of Basic Skills (Hieronymus, 1961), the CTBS is intended to measure students' proficiency in skills which are accepted as being fundamental goals in secondary education (King, 1981). King's (1981) research reports split-half reliability coefficients for the reading comprehension and mathematics subtests at .86 and .91, respectively. The same research shows a correlation between these two subtests of .71, an indicator of a moderately high degree of commonality between them.

Immediately after completing the two CTBS subtests, the participants were asked to complete the State-Trait Anxiety Inventory - State Form (Spielberger, 1970), a self-report measure of how the individual feels at that particular time. Because situational factors have such profound influence on state measures (Spielberger, Gorsuch, & Lushene, 1970), the low test-retest reliability coefficients for the STAI-State Form (median $r = .32$) is explicable. As with the previously discussed STAI-Trait Form, the State Form has high internal consistency: Spielberger, Gorsuch, and Lushene (1970) report

alpha reliability coefficients ranging from .83 to .92. This research also provides evidence for construct validity, reporting that the mean scores for state anxiety of 977 undergraduate college students were higher in an examination situation than they were in a normal situation.

The fourth and final instruments in this set was the Test Anxiety Inventory (Spielberger, 1980), a self-report measure of the individual's anxiety in test situations. The test-retest reliability coefficients of the TAI drop from .81 over a one month period to .62 over a six month period (Ross, 1978). Spielberger (1980) discusses two possible reasons for this drop - that the personality characteristics of high school students can change considerably over a six month period, resulting in lower coefficients, and that the educational and career goals of high school students can change similarly over such a time period, affecting their reported test anxiety. The two components of test anxiety - worry and emotionality - are measured by the TAI. Its correlation with the Worry and Emotionality Questionnaire (Liebert & Morris, 1967) provides evidence for its concurrent and construct validity. The Worry scale of Liebert and Morris' questionnaire (WEQ) correlated .74 with the TAI worry scale, and the WEQ emotionality scale correlated .84 with the

TAI emotionality scale. The alpha reliability coefficient for the TAI is reported at .91.

Self-efficacy probes. To investigate the relationship between the students' perceptions of self-efficacy and their performance in test situations, efficacy probes were used at three points in the study.

During the pretesting session, the efficacy probes were administered after the performance measures; that is, the reading comprehension and mathematics subtests of the CTBS; to ensure the participants' understanding of the specific tasks referred to in the probes. The same set of probes was administered twice more - at the end of the counselling treatment sessions and during the posttesting session. At the end of the counselling treatment sessions, participants were shown copies of the CTBS subtests prior to completing the efficacy probes. They were asked to recall the situation of the pretesting session during which they worked on the reading comprehension and mathematics subtests, and listened to the reading of a sample question from each of these two tests. As in the pretesting session, during the posttesting, the probes were administered after the performance measures to which the probes referred; i.e., the CTBS subtests. Measurement of efficacy expectations at these three points

were intended to guarantee the participants' familiarity with the particular performance referred to in the probes, to allow for examination of the reciprocal influence between expectations and performance, and to permit tests of the predictive value of self-efficacy judgements.

The set of efficacy probes used in this study was composed of 19 separate probes under the title, Self-Efficacy Questionnaire (see Appendix E). Three sample probes began the questionnaire. These probes used a common task of performing a standing jump of one foot, two feet, and six feet to ensure that all participants comprehended clearly the self-report nature of the probes, the direction of the rating scale used, and the significance of the ten points on the scale. The next six probes related to performance on the reading comprehension subtest of the CTBS, arranged in order of increasing task difficulty. Six more probes were constructed and arranged in the same fashion, and related to the CTBS mathematics subtest. The final four probes were generality probes, asking participants to estimate their confidence regarding their ability to improve test results in courses taken during the school term in question.

The first or lowest level of task difficulty presented by the six reading comprehension probes concerned a simple

task that was constructed with the expectation that all participants would be confident in their ability to perform the task successfully. The remaining five reading comprehension probes increased the task difficulty at regular intervals to the point that, with the sixth and final probe, it was expected that all participants would find task performance extremely difficult. The six mathematics probes were constructed and arranged to represent the same range of difficulty. The four generality probes asked the participants to judge their confidence in their ability to improve their test results in one, two, three, and ultimately four, of the courses taken during that school term.

The rating scale which accompanied each probe ranged from 10 to 100, marked at intervals of 10. Verbal descriptors occurred at four points: 10 - very uncertain, 40 - maybe, 70 - pretty sure, 100 - very certain. During the completion of the 3 sample probes, the participants were encouraged to consider all 10 points of the scale, and to judge the degree of certainty that they could perform the tasks referenced. Using the sample probes, response demonstrations were given and verbal reactions were invited as methods of emphasizing the importance of considering all gradations of the self-report measure.

As indicated in Chapter One, under the heading "Measurement of Self-Efficacy", efficacy judgements may be measured in terms of magnitude, strength, and generality. In this study, all efficacy measures were average strength measures. To obtain average strength scores, individual responses to a given set of efficacy probes (e.g., those referring to CTBS reading comprehension, CTBS mathematics, or generality) were summed and the sum was divided by the number of probes in that set.

Design and Procedures

All grade 10 students were given a brief description of the concept of test anxiety and the proposed test anxiety counselling programme by a school counsellor. All students were encouraged to return a parental consent form permitting them to attend a screening session. Of the grade 10 group, 78 students returned this signed consent form. From these students, 41 participants were selected for the study (see Haynes, 1982). The 41 participants returned the second signed parental consent form permitting them to participate in the study (see Appendix B), and met as one group for the pretesting session. A graduate student in educational counselling conducted the pretesting session using a standardized set of instructions (see Appendix F) and, as a conclusion to this

session, reviewed the purpose of the test anxiety programme, informed the participants of their group assignments, and issued a schedule of each group's eight treatment sessions and the one posttesting session.

Each of the three counselling groups - rational emotive counselling (REC), self-instructional training (SIT), and placebo control (CON) - was scheduled for eight 50-minute sessions over a 5-week period. All three groups met on the same calendar day for each of the eight sessions, with the hourly session times rotated so that each group had experiences similar to those of the other groups in meeting at different times during the school day. All counselling sessions were held in one room of the school: all screening, pretesting, end of treatment, and posttesting sessions were held in the cafeteria of the school. The eight counselling sessions were scheduled so that they occurred at regular intervals over a 5-week time period, and were conducted by a graduate student in educational counselling, not the same student who had administered the screening tests and pretests.

The end of treatment testing, consisting of the administration of the previously described Self-Efficacy Questionnaire, occurred one week after the conclusion of the eighth and final session for each treatment group.

Posttesting, including the third administration of the Self-Efficacy Questionnaire, occurred within two weeks of the eighth treatment session. The same graduate counselling student who had administered the screening tests and pretests conducted the end of treatment probes and the posttests.

Treatments

The three treatments resulted from the development of REC, SIT and CON counselling programmes, which focussed on the treatment of test anxiety in high school students (Merrick, 1983; Wallace, 1983). This counselling curriculum research produced manuals containing detailed plans for all counselling sessions. The concurrent development of these manuals permitted their construction along parallel lines. Accordingly, the format of all lessons was highly similar and the amount of time allotted to instruction, interaction, independent activity, and homework was relatively uniform across treatments.

Each session was 50-minutes in length. There were eight of these sessions in each of the three treatments. The manual was explicit in its presentation of each session: this explicit quality, and the concentrated rehearsal of and reference to each session's material by the counsellor, ensured that the manual's curriculum was performed as directed.

Every session, or lesson, was introduced by a stated goal for that particular lesson, an overview, and a summary of procedures with the amount of time allotted to each procedure. This introduction was followed by a list of performance objectives and a list of materials required for the lesson. The lesson itself was presented in precise detail. Counsellor activities were described, with suggested verbalizations often provided. Accompanying student activities, when appropriate, were arranged so that their correspondence to the counsellor activities was clear. A suggested time allotment accompanied every activity. The lesson was concluded by a summary and/or a homework task. Attendance records were kept for each lesson, as well as notes on homework completion. The manual also provided a form for the establishment of an absentee buddy system, whereby any participant who missed a lesson could depend on another individual to contact him/her with details of activities, hand-out materials, and homework.

Rational emotive counselling (REC). This treatment was based on Ellis' rational emotive therapy (1977). Comprehension of the major REC concepts was the first goal; i.e., the relationship between thinking and feeling, and the way different interpretations of an event can produce different

emotions. Care was taken to establish this comprehension firmly, by repetition, rewording, accurate student verbalizations, examples, and discussion. Individual experiences with test anxiety formed the next subject of the REC treatment. Personal accounts of instances of test anxiety were invited so that individual students could develop the ability to recognize their own irrational beliefs. Building on this ability, skill development progressed to the replacement of the irrational beliefs with more reasonable, rational ones and the establishment of the new rational beliefs and behaviours. The critically important process was that of the replacement of the irrational beliefs with rational ones - in this process, the counsellor's crucial function was actively and aggressively to dispute the irrational beliefs. The final goal of REC was that individual students would be able to recognize their own irrational beliefs and replace them with rational beliefs, particularly within test anxious situations. Use of imagery, role reversal, active disputation, and written homework was evident in the REC treatment.

Self-instructional training (SIT). This treatment was based on Meichenbaum's self-instructional training (1974). The basic concept introduced at the outset was that anxiety stemmed from one's thoughts, or self-statements. In test

situations, self-defeating statements increased anxiety levels. Therefore, awareness of these debilitating self-statements was established as being an essential precursor to their eradication and to lowered test anxiety. Once all participants had become aware of negative self-statements and their concomitant arousal of negative emotions, efforts to create positive responses incompatible with them could begin. The goal was that the positive self-statements would replace the negative ones, with a resulting improvement in handling test anxiety.

The treatment sessions began with discussions of affective and physical manifestations of test anxiety. Working from observational notes made by each participant, the concept of negative self-statements was emphasized. Then, the idea that changing these self-statements could alleviate test anxiety was introduced. Practice of this change began with verbalized positive self-statements, gradually becoming whispered and finally covert self-statements. Techniques used in the treatment sessions were varied - relaxation breathing (modelled and performed), overt self-talk (modelled and performed), in viva homework assignments, role playing, simulated test situation, thought-stopping, guided imagery, group dynamics.

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Placebo control (CON). This treatment was based on research showing that non-directive therapy has minimal therapeutic power, if used in isolation from other therapeutic methods (Rachman & Wilson, 1980). Therefore, the CON sessions focussed on relationship enhancement as the foundation of the treatment. Each session developed a theme related to test anxiety and its format was structured closely to that of corresponding REC and SIT sessions. The themes dealt with were group introductions; definitions of test anxiety; teachers and test anxiety; subject areas and test anxiety; study skills; moral dilemmas, such as cheating; fears; and phobias.

Results

In this section of the thesis, descriptive statistics (means and standard deviations) for all treatment groups for the experimental variables at each administration of the efficacy probes are reported. (See Haynes, 1982, for a discussion of the reliability of the screening instruments.) Later in the chapter, correlational analyses are presented, and inferential tests of between group and within group differences are discussed. The chapter concludes with a summary of experimental results.

Descriptive Statistics

This discussion of descriptive statistics was intended to map trends in the data and to increase the reader's familiarity with the data. There is no intention that any of the discussion in this section should be taken to imply statistical or clinical differences between groups or over time.

As Table 1 indicates, all three treatment groups were relatively similar on the pretest performance measures (CTBS reading and mathematics subtests). Considering pre- to posttest changes on the CTBS reading subtest, the SIT group showed the greatest increase, with control and REC groups showing some improvements. Pre- to posttest comparisons of the CTBS mathematics results indicate that, while all three groups improved, the REC and SIT groups showed the greatest increases.

As Table 2 indicates, all three treatment groups were relatively similar on the pretest self-efficacy probes. In both the reading and the mathematics probes at pretest, the SIT group scored the highest, the REC group next, and the CON group scored lowest. All three groups, on the self-efficacy probes related to mathematics performance, showed an increase from pretest to end of treatment, then a decrease on the posttest probes. In both the reading and the

Table 1

Means and Standard Deviations of All Groups on
CTBS Measures at Pretest and Posttest
in Experiment One

Measure	Treatment Group	Pretest		Posttest	
		\bar{x}	SD	\bar{x}	SD
CTBS Reading	REC	18.67	6.88	20.78	9.23
	SIT	16.25	6.79	21.00	7.06
	CON	20.00	6.78	23.00	8.80
CTBS Math	REC	16.78	7.79	20.56	8.16
	SIT	14.50	5.11	18.25	6.34
	CON	15.11	7.15	17.00	6.33

Table 2

Means and Standard Deviations of All Groups on
Self Efficacy Measures at Pretest, End of Treatment,
and Posttest in Experiment One

Measure	Treatment Group	Pretest		End		Posttest	
		\bar{x}	SD	\bar{x}	SD	\bar{x}	SD
SE Reading	REC	6.35	0.82	6.35	0.83	6.20	1.71
	SIT	6.38	1.67	6.98	1.41	7.10	0.93
	CON	5.98	0.88	7.19	1.36	7.00	1.34
SE Math	REC	6.32	1.33	6.48	1.08	6.24	0.97
	SIT	6.75	1.87	7.22	0.58	6.99	1.40
	CON	5.76	1.62	6.87	1.41	6.70	1.10

mathematics posttest probes, the SIT group scored the highest, the control group next highest, and the REC group scored lowest. Figures 1 and 2 clarify the relative standings of the three treatment groups on the self-efficacy probes for reading and mathematics.

Figures 3 and 4 plot the CTBS and self-efficacy means of all three groups on the reading and mathematics subtests, and are intended to facilitate comparisons between groups and between CTBS and self-efficacy means. Figure 3 shows that the SIT and CON groups had increased performance on the CTBS reading subtest accompanied by increased self-efficacy. The REC group also had increased CTBS performance, but no accompanying increase in self-efficacy. A similar situation is revealed by Figure 4. Both the SIT and CON groups showed increased performance on the CTBS mathematics subtests accompanied by increased self-efficacy, while the REC group showed increased CTBS performance with no accompanying increase in self-efficacy.

Correlational Analyses

A 10-point scale (ranging from 10 to 100 in intervals of 10) accompanied each efficacy probe in the study. The higher the rating on the scale, the higher the judged efficacy. The participants circled one number on each scale to indicate

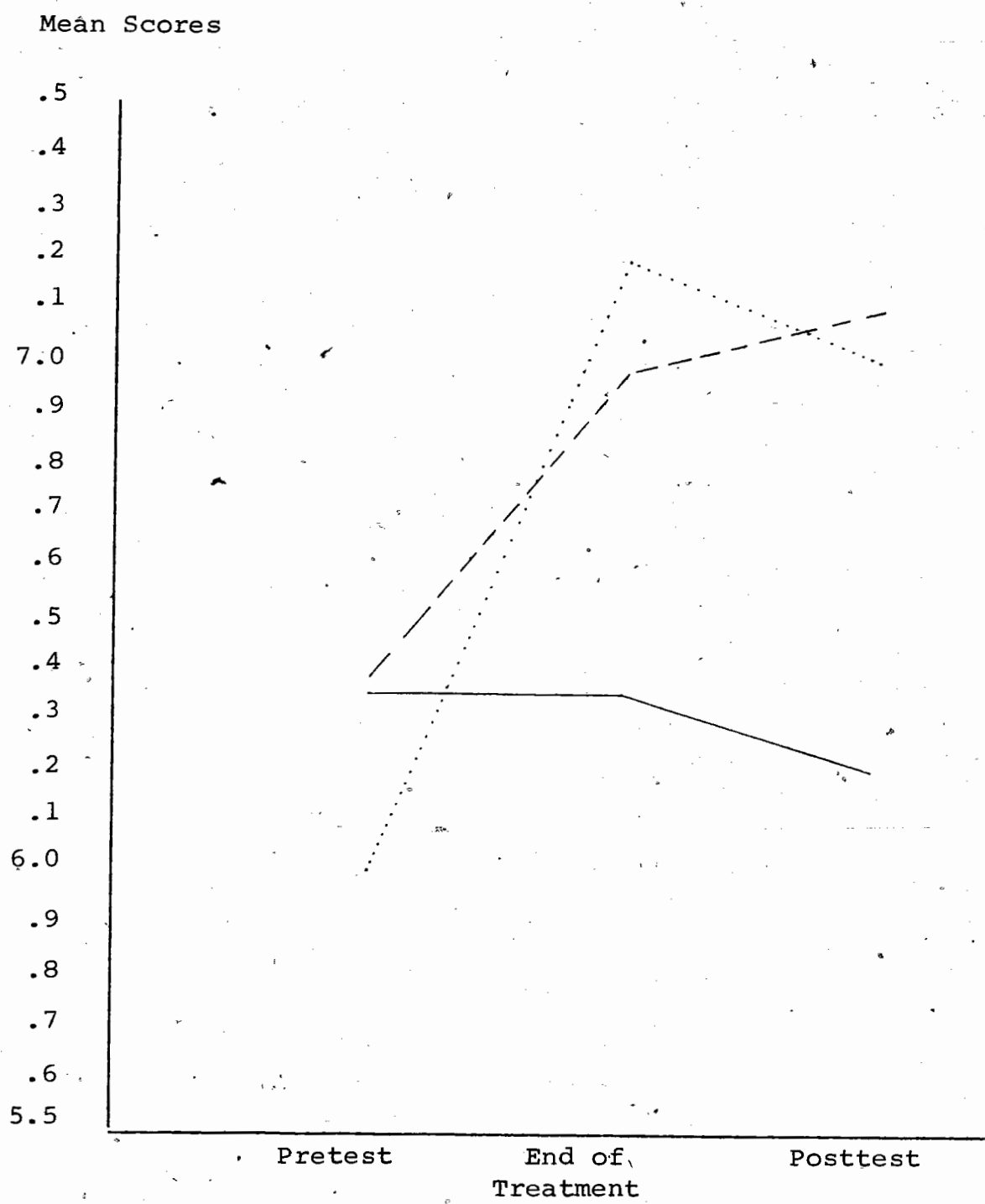


Figure 1: Mean scores of all groups on the self-efficacy reading probes in experiment one.

Legend: ——— REC
----- SIT
..... CON

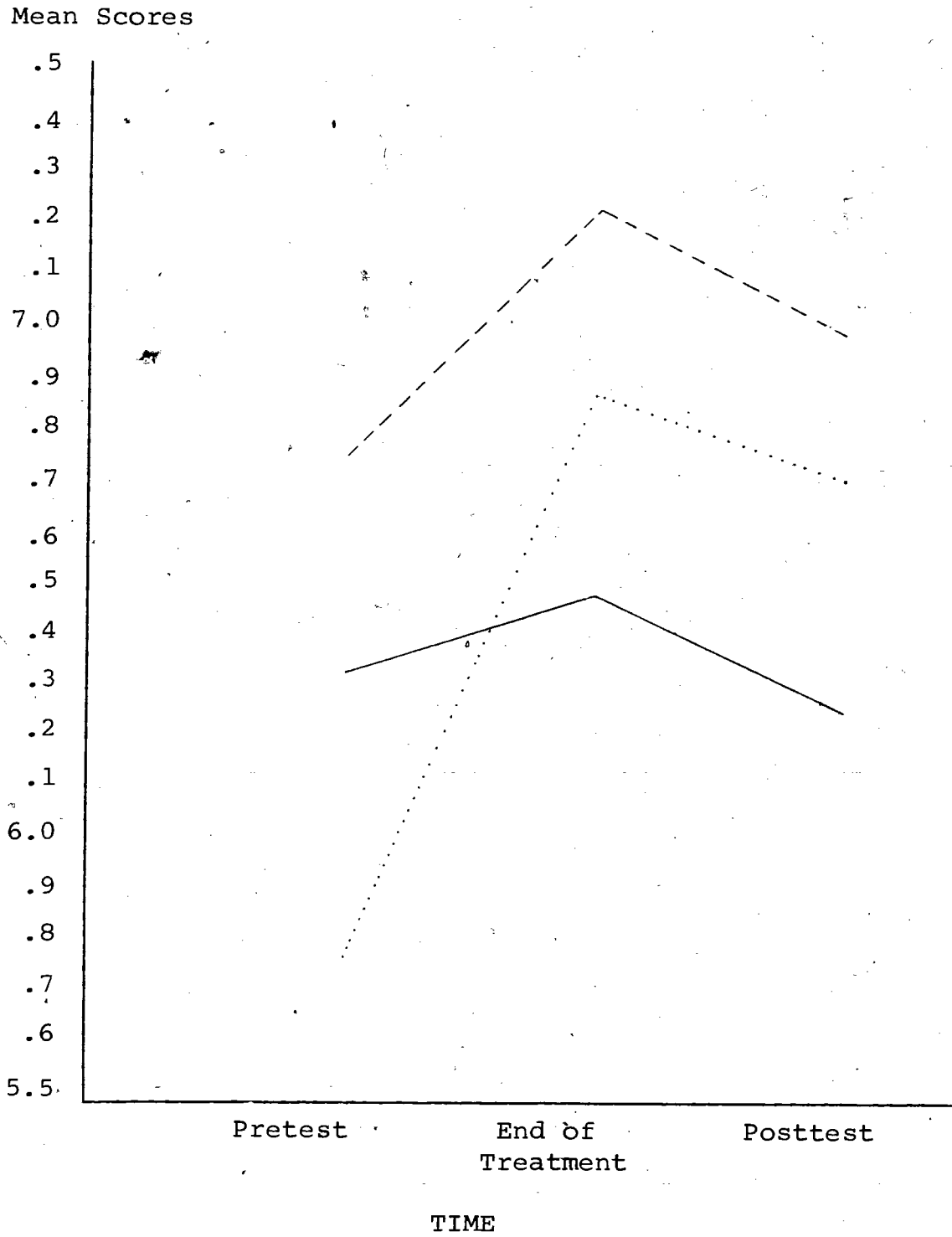


Figure 2: Mean scores for all groups on the self-efficacy mathematics probes in experiment one.

Legend: ——— REC CON
 -----SIT

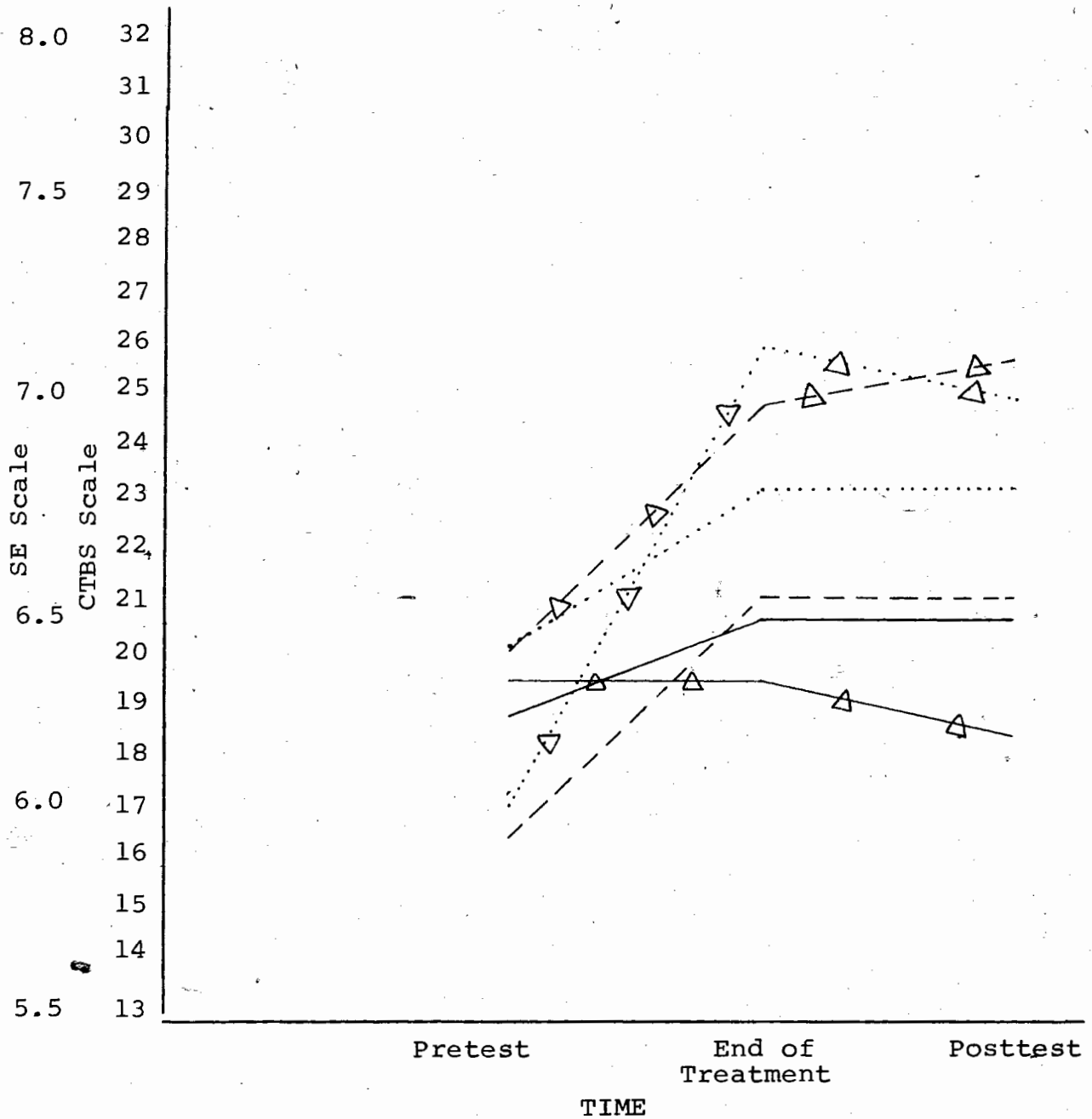


Figure 3: CTBS reading means and self-efficacy reading means of all three groups at three points - pretest, end of treatment, and posttest - in experiment one.

Legend: ——— REC (CTBS) ~~—△—△— REC (SE)~~
 - - - - - SIT (CTBS) ~~-△-△- SIT (SE)~~
 CON (CTBS) ...△...△... CON (SE)

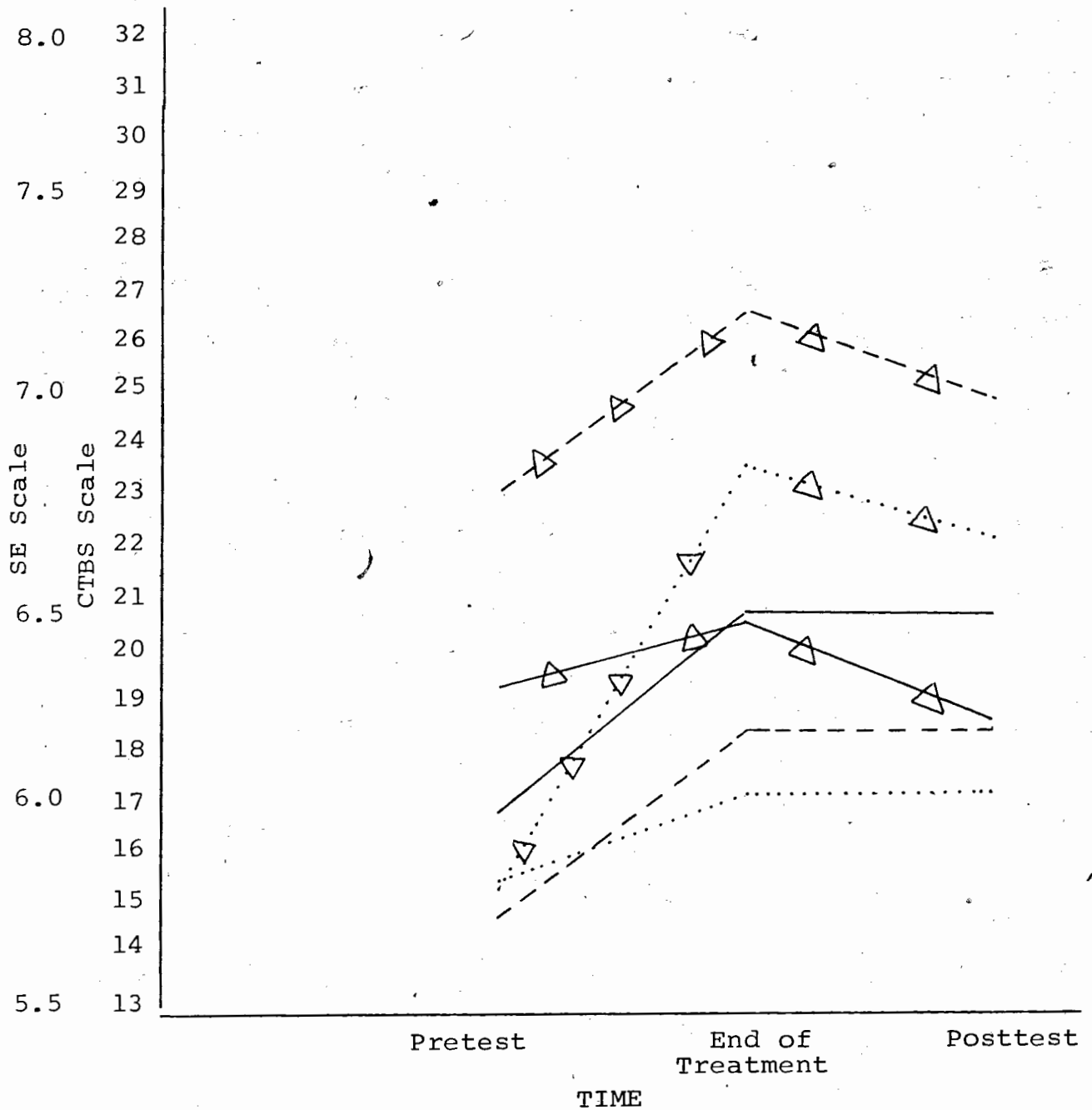


Figure 4: CTBS mathematics means and self-efficacy mathematics means of all three groups at three points - pretest, end of treatment, and posttest - in experiment one.

Legend: ——— REC (CTBS) —△—△— REC (SE)
 - - - - - SIT (CTBS) -△- - - -△- SIT (SE)
 CON (CTBS) ·△·····△· CON (SE)

their certainty about their ability to perform the task described by that efficacy probe. An average strength score was calculated from these responses to the efficacy probes. As previously explained, an average strength score was obtained by summing individual responses to a given set of efficacy probes, and dividing this sum by the number of probes in that set.

The higher the average efficacy strength score, the stronger the judgement of ability to perform the tasks within that group of probes. The lower the average efficacy strength score, the weaker the belief in the ability to perform the tasks in question.

The average efficacy strength scores were correlated with performance results on the CTBS subtests to which they referred. The pretest efficacy strength scores were correlated with both pre- and posttest CTBS subtest performances. The end of treatment efficacy strength scores and the posttest efficacy scores were correlated only with the posttest CTBS subtest performances. These correlations are presented by group in Table 3 and 4.

Only one statistically reliable correlation emerged when the pretest self-efficacy probes were correlated with the pretest CTBS scores for mathematics or reading. The SIT

Table 3

Experiment One
Pearson Correlations Between CTBS Reading Scores
and Average Self-Efficacy Strength Scores

Group	REC 1 (n=12)		SIT 2 (n=14)		CON 3 (n=11)	
	Pre	Post	Pre	Post	Pre	Post
CTBS Reading						
Self-Efficacy Strength Scores						
Pretest Probes	-0.12	0.34	0.66**	-0.04	0.16	0.19
End of Treatment Probes		0.27		0.66**		0.50
Posttest Probes		0.72**		0.56*		0.70*

* $p < .05$ ** $p < .01$

Table 4

Experiment One
Pearson Correlations Between CTBS Math Scores
and Average Self-Efficacy Strength Scores

Group	REC 1 (n=12)		SIT 2 (n=14)		CON 3 (n=11)	
	Pre	Post	Pre	Post	Pre	Post
CTBS Math						
Self-Efficacy Strength Scores						
Pretest Probes	0.51	0.78**	0.31	0.49	0.52	0.68*
End of Treatment Probes		0.72**		0.44		0.68*
Posttest Probes		0.92**		0.63*		0.66*

* $p < .05$ ** $p < .01$

group's pretest self-efficacy probes correlated significantly with this group's performance on the CTBS reading pretest ($\underline{r} = .66, \underline{p} < .01$). These results suggest that, with one exception, the participants were unable to predict their performance on the CTBS pretests.

Significant relationships emerged in two of the three groups, the REC and CON treatments, when average efficacy strength scores for the pretest probes were correlated with performance on the CTBS mathematics posttest ($\underline{r} = .78, \underline{p} < .01; \underline{r} = .68, \underline{p} < .05$). No relationship was found between the average efficacy strength scores for the pretest probes and performance on the CTBS reading posttest. These results suggest that the participants were better able to predict their performance on a mathematically-oriented rather than a reading-oriented task.

When average efficacy strength scores for the end of treatment probes were correlated with performance on the CTBS posttest, the SIT group showed a significant result on the correlation between end of treatment probes and scores on the reading subtest ($\underline{r} = .66, \underline{p} < .01$); and for both the REC and CON groups, correlations between end of treatment probes and scores on the mathematics subtest were significant ($\underline{r} = .72, \underline{p} < .01; \underline{r} = .68, \underline{p} < .05$). Thus, the REC and

CON groups tended to be more accurate than the SIT group in their pretest and end of treatment predictions of their performance on the CTBS mathematics posttest.

Consistently significant relationships became evident when the posttest average efficacy strength scores were correlated with posttest performance on both the reading and mathematics subtests for all three groups. These results indicate that, after completion of the three treatment programmes and the CTBS posttests, all participants were better able to predict their performance on the CTBS reading and mathematics subtests.

Inferential Tests

The description of inferential tests in this chapter will be limited to a discussion of the self-efficacy variables. Inferential tests for the CTBS variables may be found in Haynes, 1982. Briefly, Haynes' analyses indicate that all groups (considered together) improved from pre- to posttest on CTBS reading ($F_{1,27} = 13.36, p < .01$) and CTBS mathematics ($F_{1,27} = 21.23, p < .01$). No between group differences were found on either of the CTBS variables.

In order to test for between group treatment effects, one way analyses of variance (see Appendix G) were performed on self-efficacy, reading, and mathematics scores at each of

the three administrations of these probes - pretest, end of treatment, and posttest. No significant treatment effects were found.

In order to examine experimental changes from pretest to posttest, two way analyses of variance (treatment x time) were conducted (see Appendix G). These analyses revealed no significant main effects on treatment by time interaction effects. Complete 3 (pretest, end of treatment, and posttest) x 3 (REC, SIT, and CON) analyses of variance were not conducted because such analyses were not germane to the central hypotheses of the study.

CHAPTER III

EXPERIMENT TWO

This chapter has a dual purpose. It discusses the methods used to plan and conduct experiment two, and describes the obtained results. The discussion of methods begins with information on the setting and participants of experiment two. Then, the instruments, which are identical to those used in experiment one, are reviewed. Also contained in the methods section is a description of the design and procedures, with the focus on differences between experiment one and experiment two. Completing the discussion of methods is an examination of the experimental treatments, again with the focus on differences between experiment one and experiment two. The results of experiment two are described in the final section of the chapter. Descriptive statistics are reported, followed by a presentation of correlational analyses and inferential tests of between group and within group differences.

Method

Setting and Participants

The study took place in a junior secondary school (grades 8 to 10), with a total enrollment of approximately 550 students. The school draws students from a largely suburban community whose socioeconomic status is primarily middle class. All grade 10 students were given basic information about the programme by a school counsellor. This information consisted of the concept of test anxiety, the purpose of the screening session, and the organization and format of the counselling sessions.

An initial group of 42 students subsequently volunteered to participate in the screening session, each one returning a signed form giving parental consent for the screening session (see Appendix A). This group was assessed on study habits, levels of anxiety, and specificity of anxiety. Because there were not enough volunteer participants to warrant screening as in the first experiment, all 42 volunteers were accepted for participation in the study (see Haynes, 1982, for screening selection discussion). These 42 students were given further information by the school counsellor about the pretesting session, the goals of the programme, and the

schedule of the programme sessions. Also, each student was given a parental consent letter which summarized this information, and was asked to return it, signed, as proof of permission to participate in the test anxiety programme (see Appendix B).

The participants were assigned randomly to one of three groups - rational emotive counselling (REC), self-instructional training (SIT), or control (CON). To ensure equivalent sex composition across all groups, all female students were assigned prior to the assignment of the male students. The resulting group compositions were as follows: 10 participants in the REC group (2 male, 8 female), 11 participants in the SIT group (3 male, 8 female), and 9 participants in the CON group (2 male, 7 female).

Instruments

Three sets of instruments, identical to those in experiment one, were used. One set was used to screen the volunteer group, a second set measured performance and self-report variables at the pre- and posttesting sessions, and a third set measured self-report variables at pretesting, end of treatment, and posttesting points. All of these instruments have been described in Chapter II.

Design and Procedures

All grade 10 students were given a brief description of the concept of test anxiety and the proposed test anxiety counselling programme by a school counsellor. All students were encouraged to return a parental consent form permitting them to attend a screening session. Of the grade 10 group, 42 students returned this signed consent form. Analysis of the screening group's test results revealed no significant differences, therefore all students who participated in the screening session were accepted as participants in the study (see Haynes, 1982).

A total of 31 students returned the second signed parental consent form permitting them to participate in the study, and met as one group for the pretesting session. The same school counsellor who had provided previous information about the study conducted the pretesting, using the same standardized set of instructions as for experiment one (see Appendix F). As a conclusion to the pretesting session, this counsellor reviewed the purpose of the test anxiety programme, informed the participants of their group assignments, and issued a schedule of each group's eight treatment sessions and the one posttesting session. The treatment sessions were conducted by the school counsellor. This counsellor was

known to all the participants as one of three counsellors within that particular school and was a graduate student in educational counselling.

Each of the three counselling groups - rational emotive counselling (REC), self-instructional training (SIT), and placebo control (CON) - was scheduled for eight 50-minute sessions over a 6-week period. All three groups met on the same calendar day for each of the eight sessions, with the hourly session times rotated so that each group had similar experiences to the other groups in meeting at different times during the school day. All counselling sessions were held in one room of the school: all screening, pretesting, and posttesting sessions were held in the cafeteria of the school. The school timetable operated on a 4-day cycle; therefore, the 8 counselling sessions were scheduled so that they occurred every fourth school day, covering a 6-week time period.

The end of treatment testing, consisting of the administration of the previously described Self-Efficacy Questionnaire, occurred at the conclusion of the eighth and final session for each treatment group. Posttesting, including the third administration of the Self-Efficacy Questionnaire, occurred within one week of the eighth treatment session.

LW

The same counsellor who had conducted the pretesting and counselling sessions administered the end of treatment probes and the posttests.

Treatments

The three treatments resulted from the development of REC, SIT, and CON counselling programmes, following the same manuals as used in experiment one which were the product of counselling curriculum research by Merrick (1982) and Wallace (1982). The concurrent development of these manuals permitted their construction along parallel lines. Accordingly, the format of all lessons was highly similar and the amount of time allotted to instruction, interaction, independent activity, and homework was relatively uniform across treatments.

In both experiments one and two, the counsellors followed the same manuals. Also, the two counsellors met at weekly intervals over the duration of the experiments to review the manuals' plans for counselling sessions scheduled for that week, ensuring that their delivery of the treatments was comparable. An additional purpose of these weekly meetings was to review completed sessions, providing feedback to the manuals' designers on the practical application of the counselling treatments (see Merrick, 1982; Wallace, 1982).

Consideration of the results of these meetings and the content of logbooks kept by both counsellors led to the conclusion that the rational emotive counselling and the self-instructional training were conducted in a highly similar fashion in experiments one and two. (For a discussion of these two counselling treatments, please see chapter two.) A second conclusion resulting from examination of the material from the weekly meetings and the counsellors' logbooks was that the placebo control treatment in experiment two had varied at times from the manual. (See Haynes, 1982, for a discussion of the variations of the control treatment in experiment two from the manual.) Detailed perusal of the differences between the control manual and the actual content of the control treatment in experiment two revealed that these differences violated neither the focus on relationship enhancement nor the non-directive orientation which were the dominant characteristics of the control treatment.

Results

In this section of the thesis, descriptive statistics (means and standard deviations) for all treatment groups for the experimental variables at each administration of the efficacy probes are reported. (See Haynes, 1982, for a

discussion of the reliability of the screening instruments.) Later in the chapter, correlational analyses are presented, and inferential tests of between group and within group differences are discussed. The chapter concludes with a summary of experimental results.

Descriptive Statistics

This discussion of descriptive statistics was intended to map trends in the data and to increase the reader's familiarity with the data. There is no intention that any of the discussion in this section should be taken to imply statistical or clinical differences between groups or over time.

As Table 5 indicates, all three groups were relatively similar on the pretest CTBS mathematics. However, on the pretest CTBS reading, the range widened to extend more than 10 points between the mean of the control group and the mean of the REC group. Considering pre- to posttest changes on the CTBS reading subtest, the REC group showed the greatest increase, and SIT showed the least. Pre- to posttest comparisons of the CTBS mathematics results indicate that the improvements of all three groups are similar, with REC and SIT showing more improvement than the control group. The pre- to posttest changes on the reading subtest were greater

Table 5

Means and Standard Deviations of All Groups on
CTBS Measures at Pretest and Posttest in
Experiment Two

Measure	Treatment Group	Pretest		Posttest	
		\bar{X}	SD	\bar{X}	SD
CTBS Reading	REC	23.43	5.74	31.43	7.76
	SIT	18.14	4.41	22.86	5.81
	CON	13.17	3.92	19.17	5.35
CTBS Math	REC	21.71	5.41	24.00	6.30
	SIT	17.57	5.38	19.28	5.50
	CON	15.33	4.84	16.00	2.19

than those on the mathematics subtest.

As Table 6 indicates, all three treatment groups were relatively similar on the pretest efficacy probes. In both the reading and the mathematics probes at pretest, the SIT group scored the highest, the REC group next, and the CON group scored lowest. On the self-efficacy probes related to reading and mathematics performance, the CON group showed the greatest increase from pretest to end of treatment and was the only group that showed a decrease from end of treatment to posttest. The CON group emerged as the lowest of the three groups on the posttest probes. The most consistent changes were shown by the REC group. On the self-efficacy

Table 6

Means and Standard Deviations of All Groups on
Self Efficacy Measures at Pretest, End of Treatment,
and Posttest in Experiment Two

Measure	Treatment Group	Pretest		End		Posttest	
		\bar{x}	SD	\bar{x}	SD	\bar{x}	SD
SE Reading	REC	6.50	1.40	7.23	1.79	7.52	1.40
	SIT	6.74	2.19	6.98	0.91	7.50	1.18
	CON	5.67	1.37	7.22	0.57	6.41	0.97
SE Math	REC	6.42	1.31	6.92	1.69	7.26	1.35
	SIT	6.71	1.76	6.28	1.10	7.50	1.14
	CON	6.23	1.40	6.94	1.02	6.05	1.00

probes related to reading and mathematics performance, the REC group showed an increase from pretest to end of treatment, then a further increase from end of treatment to posttest. All groups showed an increase from pretest to end of treatment, with the exception of the SIT group on mathematics performance. The SIT group then showed the greatest increase from the end of treatment to the posttest probes. Figures 5 and 6 clarify the relative standings of the three treatment groups on the self-efficacy probes for reading and mathematics.

Figures 7 and 8 plot the CTBS and self-efficacy means of all three groups on the reading and mathematics subtests, and are intended to facilitate comparisons between groups and

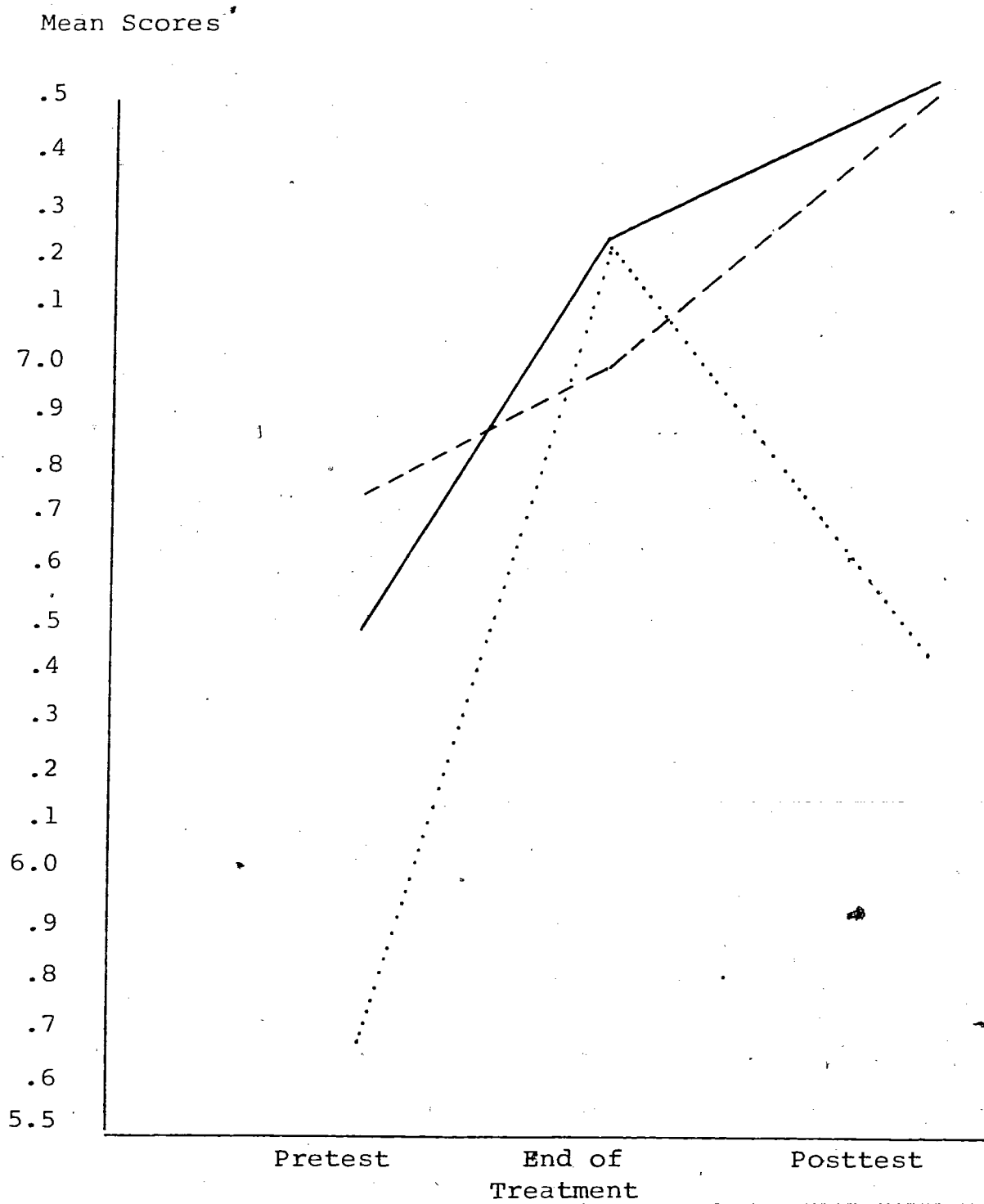


Figure 5: Mean scores of all groups on the self-efficacy reading probes in experiment two.

Legend: ——— REC
 - - - - - SIT
 CON

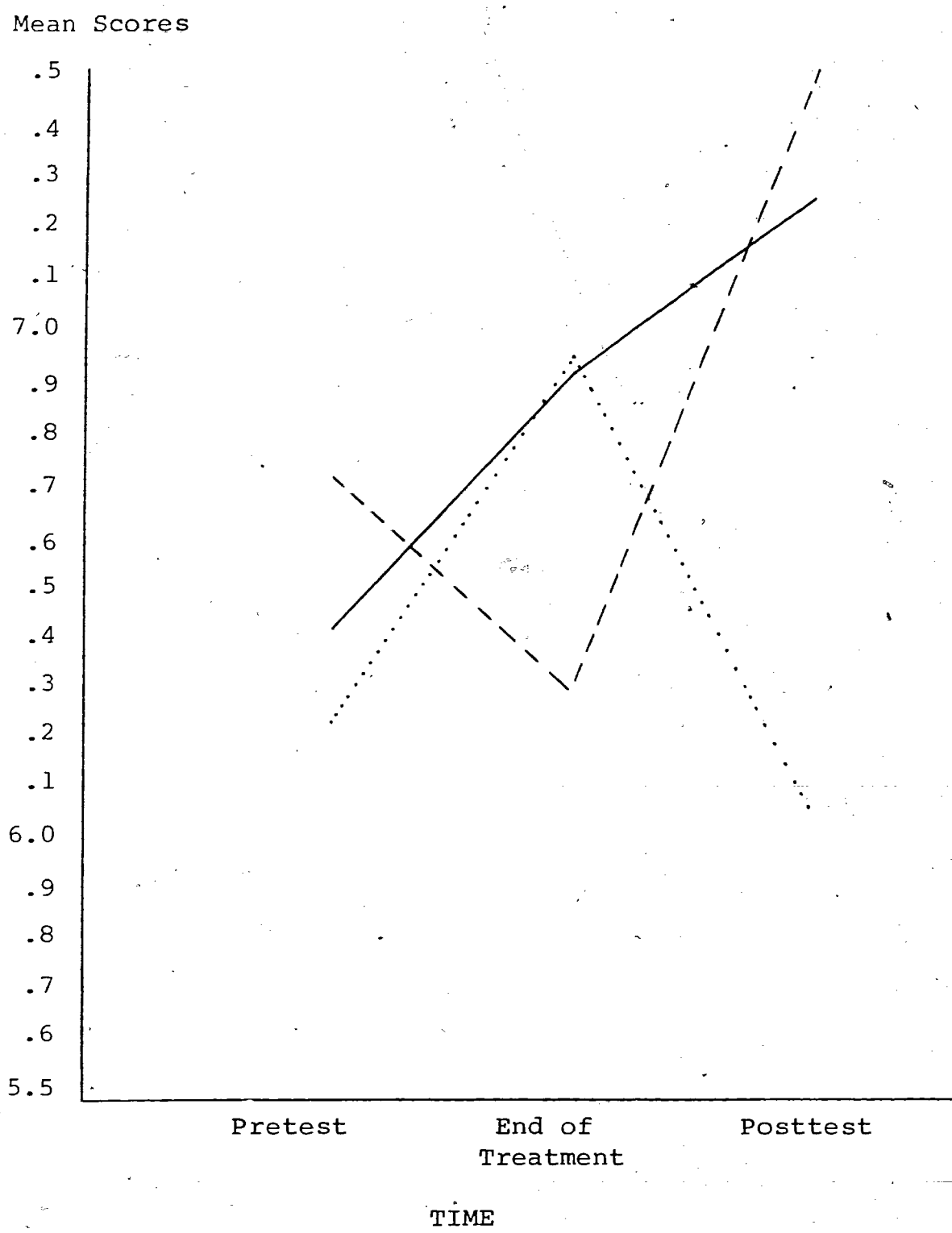


Figure 6: Mean scores for all groups on the self-efficacy mathematics probes in experiment two.

Legend: ——— REC CON
 ----- SIT

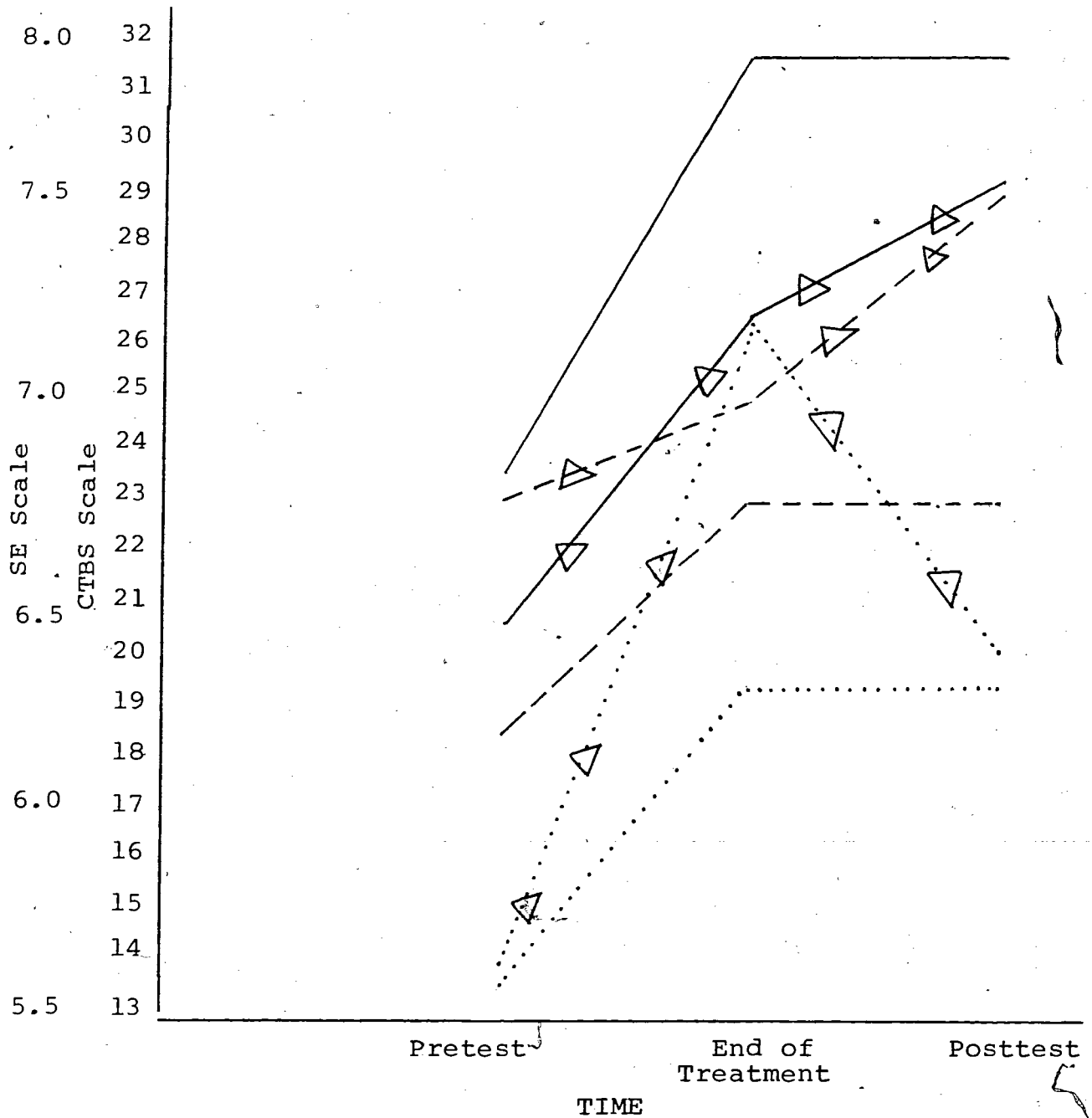


Figure 7: CTBS reading means and self-efficacy reading means of all three groups at three points - pretest, end of treatment, and posttest - in experiment two.

Legend: ——— REC (CTBS) —△—△— REC (SE)
 - - - - - SIT (CTBS) -△- - -△- SIT (SE)
 CON (CTBS) ··△·····△· CON (SE)

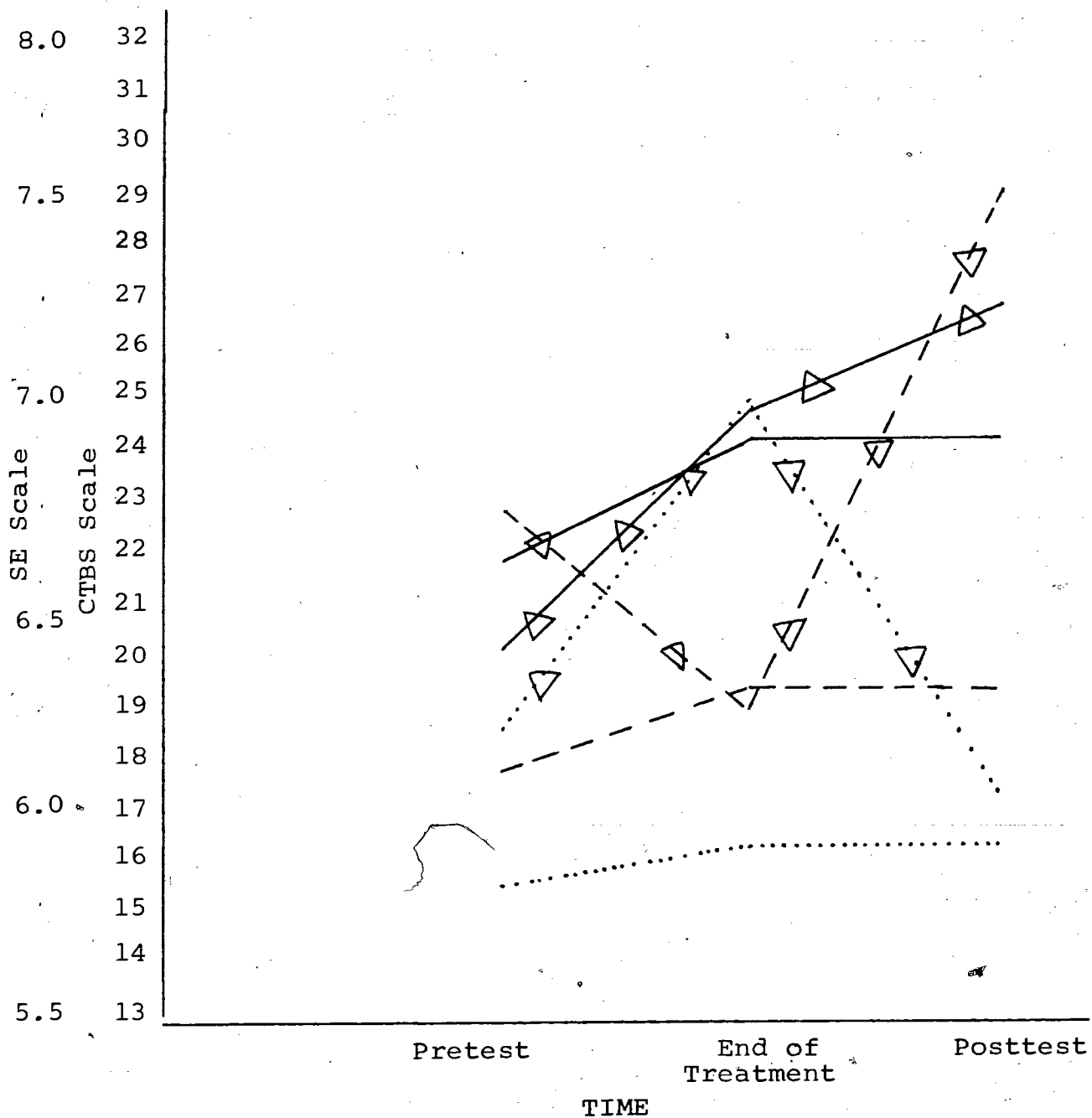


Figure 8: CTBS mathematics means and self-efficacy mathematics means of all three groups at three points - pretest, end of treatment, and posttest - in experiment two.

Legend: ——— REC (CTBS) —△—△— REC (SE)
 - - - - - SIT (CTBS) -△- - -△- SIT (SE)
 CON (CTBS) ..△.....△.. CON (SE)

between CTBS and self-efficacy means. Figure 7 shows that, in reading, the self-efficacy means and the CTBS means follow a more closely aligned pattern for the REC group than they do for the other two groups. At all three assessment times, the self-efficacy means exceed the CTBS means for both the SIT and CON groups, in reading. Figure 8 shows that, in mathematics, the self-efficacy means and the CTBS means again follow a more closely aligned pattern for the REC group than they do for the other two groups. Also, in mathematics, both the SIT and CON groups have self-efficacy means that exceed CTBS means, as they did in reading.

Correlational Analyses

Refer to chapter two, for a discussion of the calculation of average efficacy strength scores. Average efficacy strength scores were correlated with performance results on the CTBS subtests to which they referred. The pretest efficacy strength scores were correlated with both pre- and posttest CTBS subtest performances. The end of treatment efficacy strength scores and the posttest efficacy strength scores were correlated only with the posttest CTBS subtest performances. These correlations are presented by group in Tables 7 and 8.

Table 7

Experiment Two
Pearson Correlations Between CTBS Reading Scores
and Average Self-Efficacy Strength Scores

Group	REC 1 (n=10)		SIT 2 (n=11)		CON 3 (n=10)	
	Pre	Post	Pre	Post	Pre	Post
CTBS Reading						
Self-Efficacy Strength Scores						
Pretest Probes	0.48	0.74*	0.15	-0.05	0.04	0.27
End of Treatment Probes		0.53		0.21		0.63*
Posttest Probes		0.44		0.20		0.19

* $\underline{p} < .05$ ** $\underline{p} < .01$

Table 8

Experiment Two
Pearson Correlations Between CTBS Mathematics Scores
and Average Self-Efficacy Strength Scores

Group	REC 1 (n=10)		SIT 2 (n=11)		CON 3 (n=10)	
	Pre	Post	Pre	Post	Pre	Post
CTBS Math						
Self-Efficacy Strength Scores						
Pretest Probes	0.61	0.88**	0.08	0.10	-0.10	-0.26
End of Treatment Probes		0.42		0.20		0.04
Posttest Probes		0.52		-0.08		-0.04

* $\underline{p} < .05$ ** $\underline{p} < .01$

Only three statistically reliable correlations emerged. When average efficacy strength scores for the pretest self-efficacy probes were correlated with CTBS posttest performance, the REC group showed significant relationships in both reading and mathematics ($\underline{r} = .74, \underline{p} < .05$; $\underline{r} = .88, \underline{p} < .01$). When average efficacy strength scores for the end of treatment probes were correlated with performance on the CTBS posttests, the CON group showed a significant result on the reading subtest ($\underline{r} = .63, \underline{p} < .05$). When average efficacy strength scores for the posttest probes were correlated with CTBS posttest performances, no significant relationships emerged.

Inferential Tests

The discussion of results of inferential tests in this chapter will be limited to a discussion of the self-efficacy variables. Inferential tests for the CTBS variables may be found in Haynes, 1982. Briefly, Haynes' analyses indicate that all groups (considered together) improved from pre- to posttest on CTBS reading ($\underline{F}_{1,17} = 49.96, \underline{p} < .01$). Significant between group differences at posttest were apparent on CTBS mathematics ($\underline{F}_{2,17} = 4.06, \underline{p} < .05$) and CTBS reading ($\underline{F}_{2,17} = 6.30, \underline{p} < .01$), with both differences being attributable to higher scores for the two experimental groups than for the control group.

In order to test for between group treatment effects, one way analyses of variance (see Appendix H) were performed on self-efficacy, reading, and mathematics scores at each of the three administrations of the self-efficacy probes - pretest, end of treatment, and posttest. One significant treatment effect was found - on the self-efficacy mathematics posttest probes ($F(2,28) = 4.36, p < .05$). This result indicated that, after completion of the three treatment programmes, the experimental groups exceeded the performance of the control group on the self-efficacy mathematics probes. No other significant treatment effects were found.

To further analyze the source of treatment effects on the self-efficacy posttest mathematics probes, a priori contrasts were conducted. These a priori contrasts were based on the experimental hypothesis that the SIT treatment would be more effective than either REC or CON in its influence on self-efficacy judgements, and that both treatment groups would be more effective than the control group. Therefore, a priori tests contrasted the two treatment groups against the control group and the two treatment groups against each other. As the tables in Appendix H indicate, these contrasts indicated that the treatment groups (REC and SIT) scored significantly higher than the control group

on the self-efficacy posttest mathematics probes ($t_{(28)} = 2.91, p < .05$), and that there was no statistically reliable difference between the REC and SIT groups.

In order to examine experimental changes from pretest to posttest, two way analyses of variance (treatment x time) were conducted (see Appendix H). These analyses revealed no significant main effects on treatment by time interaction effect. Complete 3 (pretest, end of treatment, and posttest) x 3 (REC, SIT, and CON) analyses of variance were not conducted because such analyses were not germane to the central hypotheses of the study.

CHAPTER IV

CONCLUSIONS

This chapter discusses the results of experiments one and two. The implications of these results for the original hypotheses are analyzed. Finally, the theoretical and practical implications of the findings are discussed.

Two hypotheses were established in chapter one. It was predicted that, based on self-efficacy theory, self-instructional training would be more effective than rational emotive counselling in increasing efficacy expectations. Secondly, it was hypothesized that self-efficacy measures pertaining to test performance would serve as accurate predictors of such performance, and would predict and correlate highly with performance measures regardless of the counselling intervention used to treat test anxiety.

Summary of Results

In experiment one, the inferential tests (see chapter two) revealed that there were no statistically significant treatment, time, or interaction effects on the self-efficacy reading and mathematics probes. In experiment two, the

inferential tests (see chapter three) revealed that there was one statistically significant treatment effect. On the posttest self-efficacy mathematics probes, the performance of both experimental groups (REC and SIT) exceeded that of the placebo control (CON) group. When a priori contrasts were conducted on the self-efficacy probes to further analyze the source of this treatment effect, results indicated that the experimental groups scored significantly higher than the control group on the posttest mathematics probes and that there was no statistically reliable difference between the SIT and REC groups. The conclusion is that the prediction made in hypothesis one, that SIT would be more effective than REC in increasing efficacy expectations, was not supported by the results of experiments one and two.

In experiment one, the correlational analyses (see chapter two) revealed one significant correlation between pretest self-efficacy probes and pretest CTBS performance, and five correlations that did not reach significant levels. When pretest self-efficacy probes were correlated with posttest CTBS performance, two of a possible six significant correlations resulted. When end of treatment self-efficacy probes were correlated with posttest CTBS performance, three of a possible six significant correlations resulted. Finally,

the correlation between posttest self-efficacy probes and posttest CTBS performance revealed significant results in each of the six instances - rational emotive counselling, self-instructional training, and placebo control had significant correlations between posttest probes and posttest performance in reading and mathematics. Therefore, in experiment one, a significant trend emerged across pretest, end of treatment, and posttest correlations, indicating that self-efficacy measures pertaining to performance correlated highly with performance measures, regardless of counselling intervention used. The conclusion is that hypothesis two, which proposed that self-efficacy measures would serve as accurate predictors of performance and would predict and correlate highly with performance measures regardless of treatment used, was supported partially. The trend evident from the correlational analyses in experiment one shows that self-efficacy measures did correlate significantly with performance measures regardless of treatment but that self-efficacy measures did not serve as accurate predictors of performance at all experimental points.

In experiment two, the correlational analyses (see chapter three) revealed no significant correlations between pretest self-efficacy probes and pretest CTBS performance.

When pretest self-efficacy probes were correlated with posttest CTBS performance, two of a possible six significant correlations resulted. When end of treatment self-efficacy probes were correlated with posttest CTBS performance, one of a possible six significant correlations resulted. Finally, the correlation between posttest self-efficacy probes and posttest CTBS performance revealed no significant results. Therefore, in experiment two, no significant trend emerged across pretest, end of treatment, and posttest correlations. The conclusion is that hypothesis two was not supported by the results of experiment two.

In summary, the results of experiments one and two provided no support for hypothesis one. Self-instructional training did not prove to be more effective than rational emotive counselling in increasing efficacy expectations. Comparison of the results of the correlational analyses of experiments one and two with the results reported in other studies of self-efficacy (Bandura & Adams, 1977; Bandura, Adams, & Beyer, 1977; Bandura, Adams, Hardy, & Howells, 1980; Bandura & Schunk, 1980) reveals that the significant correlations reported by this study do not provide sufficient justification for the support of hypothesis two. Self-efficacy measures pertaining to performance were not accurate

predictors of performance, nor were they correlated highly with performance regardless of treatment used, except in the case of posttest measures in experiment one. Even at posttest in experiment one, the relationship between self-efficacy and performance was much weaker than such relationships reported in other previous experiments (Bandura & Adams, 1977; Bandura, Adams, & Beyer, 1977; Bandura, Adams, Hardy, & Howells, 1980; Bandura & Schunk, 1980).

Discussion of Results

This section of chapter four addresses the question of why the results of this study generally did not support self-efficacy theory. A variety of possible factors contributing to these experimental results will be explored. The first group of possible factors to be examined will be some which have an impact on an individual's attribution of attainments to her/his personal efficacy - sex differences, effort attributions, and rate and pattern of achievements will be discussed. This discussion will be succeeded by an exploration of the importance of the definition, the familiarity, and the commonality of a task to self-efficacy judgements in this study. Concluding this section of chapter four will be an analysis of the sources of information for

self-efficacy in this study. This analysis involves an evaluation of Bandura's theory of the sources of self-efficacy information in light of the results of this research.

In both experiments one and two, there was a preponderance of female volunteers and participants. Developmental influences operate to encourage minimal expectations of girls' abilities in many situations (Bandura, 1980). The deleterious effects of the cultural modelling of sex-role stereotypes on female students' performance on achievement tasks has been researched extensively (see Bandura, 1980, for discussion and references). Another subject of research has been the evaluation of girls' achievements by parents and teachers (Bandura, 1980), revealing that there is a tendency to lower expectations, to criticize intellectual aspects, and to attribute failures to ability rather than motivation with female students as opposed to male students. Adolescent girls, therefore, may possess a more persistent sense of inefficacy than adolescent boys, and may tend to attribute their test performances more to factors beyond their control than to those within their power to change. The effects of sex-role stereotypes on girls' perceived self-efficacy are a possible influence on the results of this study.

Attainments gained with great effort can be taken to mean that an individual has lesser ability. Such attainments are likely to have a weaker impact on self-efficacy (Bandura, 1980). This study involved initial visits to all grade 10 classrooms by a counsellor who described the intent, duration, and viability of the proposed test anxiety treatment. Subsequently, volunteers were encouraged by public address notices and printed student announcements to return signed parental consent forms for a screening session. In the same fashion, reminders for screening session attendance and permission from teachers to allow volunteers to attend screening tests were given. The result was a second, similarly publicized consent form. Pretesting of participants was followed by finalization of group meeting schedules, reiteration of the validity of all three treatments, and emphasis of the importance of group attendance and confidentiality. It is possible that one result of these combined actions was the message to participants that they must have a serious problem to warrant such attention. Such an appraisal could, in turn, have diminished the impact of performance accomplishments on self-efficacy.

The rate and pattern of attainments is another area which could have implications for the results of this study.

Bandura (1980) explained that individuals who experience periodic failure within a pattern of continual improvement are more likely to experience increased self-efficacy than those who succeed initially and then perceive a levelling of achievement. The time period involved in this study may have been too restricted to allow this experience of periodic failure within a pattern of gradual, continual improvement. Therefore, the interventions may have had little impact on the development of self-efficacy because of this time limitation.

This discussion now turns to an exploration of the importance of the definition, familiarity, and commonality of a task to self-efficacy judgements in this study.

Most self-efficacy research has concentrated largely on clearly defined tasks which were non-academic (Bandura & Adams, 1977; Bandura, Adams, & Beyer, 1977; Bandura, Adams, Hardy, & Howells, 1980; Biran & Wilson, 1981). These studies were concerned with phobic behaviours which were analyzed and described in minute detail, a situation made possible by the clearly observable nature of the behaviours in question. Construction of self-efficacy probes which reflected the participant's degree of certainty about successful task performance was accomplished because of this characteristic

of the behaviours. Every behaviour in these studies was capable of analysis into a hierarchical series of tasks, arranged in order of increasing difficulty. The detail and specificity of each task was a significant factor in the close relationship between the self-efficacy probes and the behaviours in question.

Even in research which has focussed on academic behaviour (Bandura & Schunk, 1980; Schunk, 1978, 1981), the tasks have been capable of clear definition and detailed analysis in a hierarchical fashion. Their corresponding self-efficacy probes also have been defined clearly, with easily distinguished graduated steps.

The behaviour in question during this study was performance on the CTBS reading and mathematics subtests. None of the participants had had exposure to a test similar in format and content to the CTBS within the current school year. As a result, the communication to the participants of the demands of the tasks involved in performance may have been so vague that discrepancies between self-efficacy judgements and performance resulted. A lack of a clear grasp of the skills necessary for successful performance and a lack of a clear relationship between the self-efficacy probes and the corresponding levels of task performance may have meant that

the probes did not reflect the participants' degree of certainty about successful performance.

In addition to the clear definition of a task and its accompanying probe, the participants' familiarity with a task is important to accurate self-efficacy judgements. Most past research has involved a high degree of familiarity with the behaviour in question (Bandura & Adams, 1977; Bandura, Adams, & Beyer, 1977; Bandura, et al, 1980). Therefore, the corresponding self-efficacy probes had a firm base in personal experience. In this study, the sample probes had a definite foundation in experience - the participants were encouraged to perform, compare, illustrate, and discuss the tasks involved in the sample probes. Hence, it seems probable that the participants felt familiar with the sample task of performing a standing jump of varying distances and grasped the significance of the corresponding self-efficacy probes, asking them to judge their ability to perform the task successfully.

However, the CTBS reading and mathematics subtests, while chosen for their similarity in subject matter to courses common to all grade 10 participants in this study, may have been removed significantly in format and content from the reality of classroom test situations. The system of answering

the questions on the CTBS subtests was not one commonly used in classroom test situations. Also, few of the participants were familiar with the experience of taking short, timed tests in reading and mathematics. Finally, the necessity for self-assessment of test performance was new to all of the participants. Therefore, the situation of completing the two CTBS subtests and their corresponding self-efficacy probes may have meant that the participants had such insufficient past experiences from which to draw efficacy information that their efficacy estimates involved considerable misjudgement.

As well as definition of and familiarity with a task, the commonality of experience with the task in question may be important to the results of this study. The subject areas of reading and mathematics were selected as the academic performance measures in this study because they were the only two subject areas to which all grade 10 students were exposed during the school terms under consideration. Therefore, it seemed that the CTBS reading and mathematics subtests would involve more commonality of experience than any other academic performance measures. In reality, the participants were enrolled in English courses which varied widely in format, content, and testing situations. Testing of reading

skills in other subject areas varied even more widely. Therefore, the relationship between the participants' classroom experiences and the demands of the CTBS reading subtest ranged from a close relationship for some participants to a distant one for others. Similarly, the commonality of experience in mathematics, and the representation of this experience by the CTBS mathematics subtest was overestimated.

An analysis of the sources of information for self-efficacy in this study, involving an evaluation of Bandura's theory of sources of self-efficacy information, concludes this section of chapter four.

Bandura (1978, 1980) theorizes that self-efficacy information is drawn from four main sources. (Refer to chapter one for a complete discussion of the sources of self-efficacy information.) He proposes that enactive performance is the most powerful source of efficacy information because it is based on personal mastery experiences. Vicarious experiences provide the second most powerful source of self-efficacy information and are influential particularly when used in combination with other modes. Bandura (1980) describes vicarious experiences as having less influence in their effect on efficacy expectations than direct experience. The third strongest source of efficacy information is verbal persuasion:

the fourth is emotional arousal. .

It appears that what may have happened in this study is that the participants did not have sufficient past experience with CTBS performance to increase their efficacy expectations. Despite the presence of vicarious experience, verbal persuasion, and emotional arousal as sources of efficacy information, the participants simply may have been affected by their inability to draw information from personal experiences to such an extent that their perceptions of self-efficacy did not increase significantly. Is it possible that self-efficacy is an index of the degree of enactive performance? Perhaps the single significant treatment effect reflects the fact that SIT and REC made considerably more use of enactive performance as a source of efficacy information than did the control treatment. Further, it may be that enactive performance must assume an even more influential position in a treatment to enable the theory of self-efficacy to operate as Bandura theorizes. However, some caution should be exercised in drawing this conclusion solely from the results of the experiments reported in this thesis, particularly given the possibility (even with tightly controlled treatment curricula) of some uncontrolled counsellor confound across the two experiments.

Implications for Research, Theory, and Practice

A concern to which future research could address itself is the methodology of measurement of self-efficacy judgements. Precision in the analysis of the demands of a behaviour and the construction of corresponding self-efficacy probes should be a priority. First, a behaviour should be capable of being analyzed into a series of hierarchical tasks, arranged in order of increasing difficulty. Also, a behaviour should be capable of such clear definition that the relationship between it and the corresponding self-efficacy probe is evident. Finally, the familiarity of participants with the behaviour in question and the commonality of their past experiences relating to this behaviour should be a consideration in future research. Participants who have a firm base in personal experience relating to a behaviour in question could be compared to participants who have little or no experience, in order to clarify the role of task familiarity in self-efficacy judgements. Similarly, participants who have a high degree of commonality of past experience relating to a behaviour in question could be compared to participants who have a wide range of experience.

The influence of the duration of an intervention on self-efficacy judgements could be considered by future research. Experiments one and two covered a 5- to 6- week treatment period. Research that examined the effects of a lengthier treatment period on efficacy estimates would be valuable. Persistence of effects over time could be examined by a more extended intervention period and/or assessment of participants with a time lapse subsequent to intervention.

The developmental aspect of self-efficacy judgements is one that Bandura (1980) discusses briefly, outlining the relationship of efficacy estimates to early childhood, adolescence, adulthood, middle years, and old age. Delineation of the characteristics peculiar to the adolescent age group and the relationship between these characteristics and self-efficacy judgements could be an area of future research. For example, the preoccupation of some adolescents with their immediate social milieu, with their peer relationships, and with their interaction with authority figures could be explored in relation to the development of self-efficacy in academic and non-academic tasks.

In regard to the theoretical implications of this study, self-efficacy theory may be linked inextricably with the mode of enactive performance. The results of the inferential

tests conducted in this study seem to indicate a need for closer analysis of the theory of the sources of self-efficacy information. The crucial aspect of the cognitive assessment of efficacy information could deserve further theoretical consideration.

There are a number of issues stemming from this study which have implications for counselling practice. The merits of group intervention in a public school setting are emphasized by the treatments used in this study (see Haynes, 1982; Merrick, 1983; Wallace, 1983). Group intervention permits the maximum use of time and influence by a school counsellor. However, allotting more concentrated time and/or planning a more extended treatment period than was done by this study may be more productive, despite the fact that the time restraints inherent in many school counselling situations predispose such decisions toward shorter treatment periods.

Another issue related to counselling practice is the influence of an intervention's placement in the school term and school year on its ultimate effects. In this study, the occurrence of the treatments within the final term of the participants' final year in the two schools in question may have had significance in terms of the results.

The fact that the hypotheses proposed at the outset of this study were not supported by the results may have implications for the importance of refined communication skills and classroom observations in school counselling. More sophisticated communication skills and more detailed classroom observations in this study may have facilitated the forging of closer links between the self-efficacy probes, the CTBS reading and mathematics subtests, and the participants' classroom test experience. The importance of these aspects of school counselling to the success of future interventions should be considered.

The idiosyncratic nature of an adolescent group may be a factor in the influence of a group treatment programme on self-efficacy judgements. It is possible that the dominance of the social aspects of an adolescent group minimizes the apparent distinctions between different treatments. Therefore, a counsellor's perception of, and consequent awareness of, a treatment's unique focus and structure may differ radically from an adolescent participant's perception and awareness, because of the participant's preoccupation with group interaction. A resulting implication for counselling practice is the consideration of the affect of the peculiar quality of an adolescent group on a group treatment programme.

While many of the foregoing points relate to the self-efficacy focus of this thesis, it should be remembered that the treatment programmes in this study were very powerful both in alleviating test anxiety and in improving test performance (Haynes, 1982). Consequently, structured group interventions could be researched more widely because of their implications for the relationship between self-efficacy and performance.

Summary

This study initially proposed two hypotheses. First, it was predicted that self-instructional training would be more effective than rational emotive counselling in increasing efficacy expectations. The results of experiments one and two revealed that this hypothesis was not supported. The second hypothesis was that self-efficacy measures pertaining to test performance would serve as accurate predictors of such performance, and would predict and correlate highly with performance measures regardless of the counselling intervention used to treat test anxiety. The results supported this hypothesis partially. In experiment one, self-efficacy measures did correlate significantly with

performance measures regardless of treatment but did not serve as accurate predictors of performance at all experimental points. In experiment two, the second hypothesis was not supported.

APPENDIX A

INFORMATION PROVIDED TO PROSPECTIVE
PARTICIPANTS AND PARENTAL LETTER
OF CONSENT FOR SCREENING



November 20, 1981

Dear Parent:

Taking tests is a large part of high school. Most teachers use tests to determine how much their students have learned. Unfortunately, some students do not do as well on tests as they could because they get anxious about taking tests. Frequently they have studied well and know the information, but they become frightened and blank out when they begin to take the test. This is unfortunate, because these students could be getting better grades if they could control their anxiety.

During the 1981-82 school year, we are conducting a project in which we will be asking about 36 tenth grade students in your school to participate. The purpose of this project is to add to our knowledge of effective methods of helping students deal with their anxiety about tests.

We require a group of tenth grade students who experience high anxiety when they must take tests. These students will be assigned to a class in which a trained counsellor will teach students how to cope with test anxiety. These classes will take place one hour a week, during regular school time, over a period of eight weeks during winter, 1982. The teachers, principal and school district have approved the project.

We would like to assess as many tenth grade students as we can so that we may be sure the selected group is composed of students who are anxious about taking tests. The screening procedure will occur in a one hour class during regular school time. The questionnaires that will be administered during this one hour screening session have one purpose -- to identify those students who are test-anxious. We assure you that all information will be held in the strictest confidence; this information will be available only to the university project staff. Also, if at any time between now and the end of your child's participation, he or she wishes to withdraw from the project, he or she should feel free to do so. We would greatly appreciate a phone call to let us know, should this occur.

If your child is asked to participate in the research project, you will be contacted so that you may receive further information and give your consent to his/her participation in the classes.

. . . Over

If I can provide any further information, please contact me. If your child would like to participate and has your permission, please have him or her sign and return the attached form. Also, would you please sign the form. Thank you for your consideration.

Sincerely,

Dr. Ron Marx
Associate Professor
291-3628

RM/jf

Instructional Psychology Research Group

Faculty of Education
Simon Fraser University
Burnaby, B.C., Canada
V5A 1S6

(604) 291-3395



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Consent Form

The purpose of this form is to obtain your approval for your child's participation in the screening session for a research project we are conducting during the school year 1981-82. The research project, 'Cognitive-Behavioral Counselling and Test Anxiety', will focus on teaching tenth grade students who experience test anxiety how to control their anxiety.

The screening session involves administering questionnaires during a one hour class in order to select students who experience test anxiety. This session will take place during regular school time. Your child's anonymity is assured. You will be contacted following the screening if your child's participation in the research project is requested.

Please sign below if you approve of your child's participation in the screening session. Also, please have your child sign if he or she would like to participate. It is very important that this form be returned to school within three days after you receive it. Thank you.

I hereby grant permission for my child _____ to participate in the screening session for this project. I am aware that my child may withdraw from participating at any time before or during the project.

(name)

Parent's signature _____

Date _____

Child's signature _____

Date _____

APPENDIX B

INFORMATION PROVIDED TO PARTICIPANTS

AND PARENTAL LETTER OF CONSENT

FOR PARTICIPATION

Instructional Psychology Research Group

Faculty of Education
Simon Fraser University
Burnaby, B.C., Canada
V5A 1S6

(604) 291-3395



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Dear Parents,

During the 1981-82 school year, we are conducting a research project, 'Cognitive-Behavioral Counselling and Test Anxiety', in which we are asking 36 tenth grade students from your school to participate. The purpose of this research is to add to our knowledge of effective methods of helping students deal with their anxiety about tests.

You previously gave your consent for you child's participation in the screening session for this research project. The results of that screening indicate that your child is one of a number of students who could benefit from instruction in ways of dealing with test anxiety. We believe that these students will gain from their classes on test anxiety and will enjoy an increased awareness of various aspects of test situations.

The class sessions will take place with a trained counsellor for one hour per week, during regular school time, over an eight-week period during winter, 1982. The teachers, principal, and school district have approved the project.

Your child's identity will not be revealed in any way. All information will be held in the strictest confidence. Also, if at any time between now and the end of your child's participation, he or she wishes to withdraw from the project, he or she should feel free to do so. Should this occur, we would greatly appreciate a phone call to let us know. If you would like to obtain copies of the research report at the completion of the project, please contact me. You can register any complaint about the project with me or with Dr. George Ivany, Dean, Faculty of Education.

At this time we are asking your permission for your child's participation in the one hour assessment session. If I can be of assistance in describing the procedure further, please contact me. If you would like to obtain copies of the research report at the completion of the project, please contact me. You can register any complaint about the project with me or with Dr. George Ivany, Dean, Faculty of Education. If your child would like to participate and has your permission, please sign and return the attached form. Thank you for your consideration.

Sincerely,

Dr. Ron Marx
Associate Professor
291-3628

RM/cmm



Consent Form

The purpose of this form is to obtain your consent for your child's participation in the research project we are conducting during the school year 1981-82. The research project, 'Cognitive-Behavioral Counselling and Test Anxiety', will focus on teaching tenth grade students who experience anxiety when they must take tests, how to cope with that anxiety.

The classes will take place at school during regular school time. They will take one hour a week over an eight week period.

Please indicate your approval for your child's participation in the screening session. Please have your child sign the form also. Thank you.

I hereby grant permission for my child _____ to participate in this project. I am aware that my child may withdraw from participating at any time before or during the project.

Parent's signature _____

Child's signature _____

Date _____

APPENDIX C

LETTER OF PERMISSION TO MODIFY
THE FEAR SURVEY SCHEDULE



TEMPLE UNIVERSITY
OF THE COMMONWEALTH SYSTEM OF HIGHER EDUCATION

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SCHOOL OF MEDICINE

DEPARTMENT OF PSYCHIATRY
BEHAVIOR THERAPY SECTION - c/o Eastern Pennsylvania Psychiatric Institute, Henry Avenue, Philadelphia, Pa. 19129 - Tel. 215-438-9548

Director
Joseph Wolpe, M.D.

Associate Director
Paul Latimer, M.D., Ph.D.

March 22, 1982

Ms. Chris Haynes
Research Assistant
Instructional Psychology Research Group
Faculty of Education
Simon Fraser University
Burnaby, B.C., Canada
V5A 1S6.

Dear Ms. Haynes:

Thank you for your letter which has only now come to my attention. I can see no objection to your using a modification of the Fear Survey Schedule for your study.

With best wishes,

Yours sincerely,

Joseph Wolpe, M.D.
Professor of Psychiatry and
Director, Behavior Therapy Unit

JW:bjs

APPENDIX D

LETTER OF PERMISSION TO
MODIFY THE TEST ANXIETY
SCALE

UNIVERSITY OF WASHINGTON
SEATTLE, WASHINGTON 98195

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Department of Psychology NI-25

October 13, 1981

Christopher R. Haynes
Research Assistant
Instructional Psychology
Research Group
Simon Fraser University
Burnaby, British Columbia
Canada V5A 1S6

Dear Mr. Haynes,

Your revision of the Test Anxiety Scale for use with high school students looks like a first-rate job. You have my permission to use both the original Test Anxiety Scale and your revision of it.

I very much appreciated the kind words contained in your letter. Good luck to you in your own research. Needless to say, I'd appreciate hearing about your work as it develops and as you complete it.

Best regards,

Sincerely,



Irwin G. Sarason
Professor

IGS:jbs

APPENDIX E

SELF-EFFICACY QUESTIONNAIRE

NAME: _____

SCHOOL: _____

DATE: _____

SELF-EFFICACY QUESTIONNAIRE

Cognitive-Behavioral Counselling and Test-Anxiety

Instructional Psychology Research Group

Faculty of Education

Simon Fraser University

Check the number that matches how sure or certain you are that you can standing jump a distance of one foot (.3 metres).

- 10 very uncertain
- 20
- 30
- 40 maybe
- 50
- 60
- 70 pretty sure
- 80
- 90
- 100 very certain

Check the number that matches how sure or certain you are that you can standing jump a distance of two feet (.6 metres).

10 very uncertain

20

30

40 maybe

50

60

70 pretty sure

80

90

100 very certain

Check the number that matches how sure or certain you are that you can standing jump a distance of six feet (2 metres).

10 very uncertain

20

30

40 maybe

50

60

70 pretty sure

80

90

100 very certain

Check the number that matches how sure or certain you are that you can answer one question correctly on the reading comprehension test.

10 very uncertain

20

30

40 maybe

50

60

70 pretty sure

80

90

100 very certain

Check the number that matches how sure or certain you are that you can answer five questions correctly on the reading comprehension test?

- 10 very uncertain
- 20
- 30
- 40 maybe
- 50
- 60
- 70 pretty sure
- 80
- 90
- 100 very certain

Check the number that matches how sure or certain you are that you can answer ten questions correctly on the reading comprehension test.

10 very uncertain

20

30

40 maybe

50

60

70 pretty sure

80

90

100 very certain

Check the number that matches how sure or certain you are that you can answer twenty questions correctly on the reading comprehension test?

10 very uncertain

20

30

40 maybe

50

60

70 pretty sure

80

90

100 very certain

Check the number that matches how sure or certain you are that you can answer forty questions correctly on the reading comprehension test?

10 _____ very uncertain

20 _____

30 _____

40 _____ maybe

50 _____

60 _____

70 _____ pretty sure

80 _____

90 _____

100 _____ very certain

Check the number that matches how sure or certain you are that you can answer sixty questions correctly on the reading comprehension test?

10 very uncertain

20

30

40 maybe

50

60

70 pretty sure

80

90

100 very certain

Check the number that matches how sure or certain you are that you can answer one question correctly on the mathematics test?

10 very uncertain

20

30

40 maybe

50

60

70 pretty sure

80

90

100 very certain

Check the number that matches how sure or certain you are that you can answer five questions correctly on the mathematics test?

10 very uncertain

20

30

40 maybe

50

60

70 pretty sure

80

90

100 very certain

Check the number that matches how sure or certain you are that you can answer ten questions correctly on the mathematics test.

10 very uncertain

20

30

40 maybe

50

60

70 pretty sure

80

90

100 very certain

Check the number that matches how sure or certain you are that you can answer twenty questions correctly on the mathematics test.

10 very uncertain

20

30

40 maybe

50

60

70 pretty sure

80

90

100 very certain

Check the number that matches how sure or certain you are that you can answer forty questions correctly on the mathematics test.

10 very uncertain

20

30

40 maybe

50

60

70 pretty sure

80

90

100 very certain

Check the number that matches how sure or certain you are that you can
answer sixty questions correctly on the mathematics test?

10	_____	very uncertain
20	_____	
30	_____	
40	_____	maybe
50	_____	
60	_____	
70	_____	pretty sure
80	_____	
90	_____	
100	_____	very certain

Check the number that matches how sure or certain you are that you can improve your test results in one subject by the end of the term?

10 very uncertain

20

30

40 maybe

50

60

70 pretty sure

80

90

100 very certain

Check the number that matches how sure or certain you are that you can improve your test results in two subjects by the end of the term.

10	_____	very uncertain
20	_____	
30	_____	
40	_____	maybe
50	_____	
60	_____	
70	_____	pretty sure
80	_____	
90	_____	
100	_____	very certain

Check the number that matches how sure or certain you are that you can improve your results in three subjects by the end of the term.

10 very uncertain

20

30

40 maybe

50

60

70 pretty sure

80

90

100 very certain

Check the number that matches how sure or certain you are that you can improve your results in four subjects by the end of the term.

- 10 very uncertain
- 20
- 30
- 40 maybe
- 50
- 60
- 70 pretty sure
- 80
- 90
- 100 very certain

APPENDIX F

STANDARDIZED INSTRUCTIONS
FOR THE ADMINISTRATION OF
SCREENING TESTS, PRETESTS, AND POSTTESTS

Faculty of Education

Simon Fraser University

Cognitive-Behavioral Counselling and Test Anxiety

SCREENING TEST INSTRUCTIONS

Materials Required:

Adequate supply of Study Habit Checklists.

TAS/FSS booklets.

Face sheets.

Sharpened pencils.

1 stapler.

1 red pen.

Directions:

1. Assemble the students together. They will need a pencil. Have the tests in two stacks at the front of the room. One stack will be the Study Habits Checklist, the other will be the combined Fear Survey/Test Anxiety Booklet.

2. Begin with the following introductory statement:

"Taking tests is a large part of high school. Most teachers use tests to determine how much their students have learned. Unfortunately, some students do not do as well on tests as they could because they get anxious about taking tests. Frequently they have studied well and know the information, but they become frightened and blank out when they begin to take the test. This is unfortunate, because these students could be getting better grades if they could control their anxiety. The project you are now involved in may help you to deal with any anxiety you have about tests. This particular screening session will assist us in determining who would most benefit from participation in this project."

3. Explain briefly to the students the structure of the testing session:

i.e. "There are three sets of tests here and I will explain what

you have to do before each test."

4. Continue by handing out the Study Habits Checklist and saying,
"This is the Study Habits Checklist; please do not write on this yet."
5. When every student has a copy you will say ...

"You will notice on the front a place for your name, age, school, sex, and date of birth. Where it asks for your date of birth I would like you to write only the year and month of your birth. Any questions? O.K., please write that information on the front and then put your pencils down."

Emphasize for each test that all questions should be answered and that they should write clearly.

6. When everyone is finished, read the instructions on the front of the S.H.C. to the group. The example is self-explanatory. Ask them to begin. The test should take no more than ten minutes.
7. When they have completed this test give one copy of the FSS/TAS booklet to each student. Tell them to complete their names and schools on the front.
8. Read the instructions to them as before and have them complete the first test in the booklet, which is the TAS. Explain clearly that they are not to turn to the second test until told to do so. No one should begin the second test until you have explained the instructions.
9. Read the instructions for the final test (FSS), emphasizing the fact that they need not sit and think about each answer for a long time.
10. When all tests have been completed ask them to place the S.H.C. on top of the FSS/TAS booklet and then collect all tests.
11. Take your supply of face sheets and staple together a face sheet and the two test booklets completed by each student. The order should be: face sheet, Study Habits Checklist, TAS/FSS booklet. At this point you may wish to alphabetize all tests.

12. On the front of the face sheet write in the appropriate school code, I.D. number, and sex code.
13. In the spaces left blank for age, use the year to month conversion table and write in the appropriate number of months.
14. In order to convert the Study Habits Checklist responses into a form that can be keypunched, you will need to go through each student's test and do the following:
 - (a) For each section the student has marked an X in, determine which number on a scale of 1 to 5 that this would correspond to. The column on the left will be one and on the extreme right, five.
 - (b) Once the number has been determined write it in the margin with a red pen. If there is no response, enter a "9".
 - (c) Do this for all responses and on all Study Habits Checklist booklets.
15. Look through each test and check if an answer is provided for each item. If an item is blank insert a "9". Briefly check each sheet for legibility.
16. Return all tests to I.P.R.G., S.F.U.

Instructional Psychology Research Group
 Faculty of Education
 Simon Fraser University
 Cognitive-Behavioral Counselling and Test Anxiety

Y E A R T O M O N T H C O N V E R S I O N T A B L E S

AGE IN MONTHS TAKEN FROM THE 1ST DEC. 1981

Date of Birth	Months
1964 - 12	204
1965 - 1	203
1965 - 2	202
1965 - 3	201
1965 - 4	200
1965 - 5	199
1965 - 6	198
1965 - 7	197
1965 - 8	196
1965 - 9	195
1965 - 10	194
1965 - 11	193
1965 - 12	192
1966 - 1	191
1966 - 2	190
1966 - 3	189
1966 - 4	188
1966 - 5	187
1966 - 6	186
1966 - 7	185
1966 - 8	184
1966 - 9	183
1966 - 10	182
1966 - 11	181
1966 - 12	180
1967 - 1	179
1967 - 2	178
1967 - 3	177
1967 - 4	176
1967 - 5	175
1967 - 6	174
1967 - 7	173
1967 - 8	172
1967 - 9	171
1967 - 10	170
1967 - 11	169
1967 - 12	168

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TEST INSTRUCTIONS

Materials required:

Adequate supply of Self-Evaluation Questionnaires (STAI X-1 and X-2).
 Canadian Tests of Basic Skills Booklets (Form 5).
 CTBS - answer sheets.
 Test Anxiety Inventory.
 Face sheets.
 Sharpened pencils.
 1 stapler (loaded).
 1 time piece.

Directions:

1. Assemble the students together. They will need a pencil. Have the tests in four (4) stacks at the front of the room. One stack will be the STA 1 (X1 and X2). One stack will be the CTBS booklets with the answer sheets inside the front cover. The third stack will be the TA 1. Finally, you will have a stack of cover sheets.

2. Begin with the following introductory statement.

"As you are aware you are all involved in a project designed to help you deal with the anxiety you feel about taking tests. Part of this project is designed to let us know just how effective we have been in helping you overcome anxiety. This session will help us to evaluate how well we do."

3. Explain briefly the structure of the testing session.

"There are four tests to be completed altogether. This will require you to listen to my instructions and to follow them carefully."

4. Continue by handing out STA 1. Hand this out with the side marked X2 face up. When you have done this say the following.

"This is a Self-Evaluation Questionnaire. Please put your name on the top. Make sure that the side you are writing on says, 'STA 1 Form X2'."

Continue by reading through the directions with the class. Emphasize the four categories that range from "Almost never" to "Almost Always." Ask the students to begin and to put down their pencils when the questionnaire is complete. Time allocated to this test is 10 minutes.

5. As the class finishes, hand out the CTBS (Form 5) booklets complete with answer sheets inside the front cover.

"This is the Canadian Test of Basic Skills. It looks like a very long test but we will be using only part of it today."

Every student will now have a booklet.

"Take out the answer sheet marked Reading Comprehension and write your name and school in the top right hand corner."

6. When this is complete have the students turn to Page 3 of the CTBS. Read the section marked "Directions" and explain the sample item to the students. Continue by saying,

"In this booklet you will see it says you have 40 minutes. We will do this particular test for only 15 minutes. You will begin at question 1 and you will answer as many questions as possible. You may begin now. I will tell you when 15 minutes has elapsed."

7. Begin timing and in 12 minutes say,

"You have now had 15 minutes, please put your pencils down. Now take out the second answer sheet marked 'Mathematics'. Put your name and school on the top and then turn to Page 21."

8. On Page 21 of the CBTS once again read the directions and then inform the students as before that they will have only 12 minutes to complete this test. Have the students start and begin timing them.

9. Continue in 15 minutes by saying,

"You have now had 15 minutes. Please stop writing and put your pencils down. Please close your booklet and put it at one side of your desk. Keep the answer sheets out. Now we will go back to the first test I gave you. Please turn to the back of the Self-Evaluation Questionnaire; it will say on the top STA-1 Form X-1. Put your name on the top as before."

10. Continue by reading the directions at the top of the STA 1 Form X-1. Make a special note of pointing out the difference in the scale description, i.e. it ranges from "Not at all" to "Very much so."

"You may now begin this test. It should not take very long. Please work quickly and quietly." *Remember not get just finished - taking a test.*

Time allocated is 10 minutes.

11. While the students are doing this test the teacher will collect the CTBS booklets making sure students have not left answer sheets inside the covers.

12. After ten minutes, or before if every one has finished . . .

"Thank you for being so cooperative in helping me complete this task. We have nearly finished all the tests."

13. Take the stack of Test Anxiety Inventories and distribute one to each student. Say the following,

"This is a Test Attitude Inventory. Please write just your name on the top."

14. Now read the directions to the group as printed at the top. The 20 questions in this test should take no more than 10 minutes, and most students will probably be finished before that.

PLEASE NOTE: INSTRUCTION 15 APPLIES TO MARY HILL AND PORT MOODY SCHOOLS ONLY (CODE 1 AND CODE 3). IF YOU ARE NOT INVOLVED WITH ONE OF THESE SCHOOLS PROCEED WITH INSTRUCTION 16.

15. When all students have finished distribute the Self-Efficacy Probes. Ask the students to write their names on the top as indicated. Read through the instructions with the students and allow them five minutes to complete the probes.
16. Every student should now have on their desk the following answer sheets.
- a copy of the STA 1 (X-1 and X-2)
 - a Reading Comprehension answer sheet for the CTBS
 - a Math answer sheet for the CTBS
 - a TA 1 sheet
 - the Efficacy Probes (Code 1 and 3 schools only)
17. The Counsellor will now take the face sheets and the stapler and will collect the tests of each student, taking the tests and stapling them to the face sheet. Ask the students the following:
- "I will now collect all four answer sheets (all five for Code 1 and 3 schools). Please make sure you have your name on each test. Thank you for helping me to get through this task smoothly. Please don't leave until I tell you to do so."
18. When all answer sheets and tests are collected and stapled to a face sheet the students may be dismissed.
19. The counsellor will now take the tests and complete the information on the face sheet.
20. In completing the face sheet you will need the student list and corresponding I.D. numbers. The following information will also assist you:

<u>School</u>	<u>School Code Number</u>
Mary Hill Secondary	1
W.J. Mouat (Clearbrook)	2
Port Moody	3
West Vancouver	4

<u>Treatment Group</u>	<u>Treatment Group Code</u>
Rational Emotive Counselling	1
Self Instructional Training	2
Control	3

20a Add code 6 to face sheet for test period

1 = pretest
2 = posttest
3 = delay

21. Return all tests to IPRG, SFU.
22. Thank you for following the directions carefully.

APPENDIX G

EXPERIMENT ONE

ANALYSES OF VARIANCE TABLES
FOR THE SELF-EFFICACY VARIABLES

Table 1

One-Way Analysis of Variance on the
Self-Efficacy Reading Pretest Probes
Experiment One

Source	SS	df	MS	F	P
Between Groups	1.1268	2	0.5634	0.371	0.6928
Within Groups	51.6300	34	1.5185		
Total	52.7568	36			

Table 2

One-Way Analysis of Variance on the
Self-Efficacy Reading End of Treatment Probes
Experiment One

Source	SS	df	MS	F	P
Between Groups	4.5072	2	2.2536	1.473	0.2435
Within Groups	52.0186	34	1.5300		
Total	56.5258	36			

Table 3

One-Way Analysis of Variance on the
Self-Efficacy Reading Posttest Probes
Experiment One

Source	SS	df	MS	F	P
Between Groups	5.9257	2	2.9629	1.635	0.2100
Within Groups	61.6241	34	1.8125		
Total	67.5499	36			

Table 4

One-Way Analysis of Variance on the
Self-Efficacy Mathematics Pretest Probes
Experiment One

Source	SS	df	MS	F	P
Between Groups	6.0672	2	3.0336	1.132	0.3341
Within Groups	91.0872	34	2.6790		
Total	97.1544	36			

Table 5

One-Way Analysis of Variance on the
Self-Efficacy Mathematics End of Treatment Probes
Experiment One

Source	SS	df	MS	F	P
Between Groups	3.5140	2	1.7570	1.604	0.2159
Within Groups	37.2335	34	1.0951		
Total	40.7475	36			

Table 6

One-Way Analysis of Variance on the
Self-Efficacy Mathematics Posttest Probes
Experiment One

Source	SS	df	MS	F	P
Between Groups	3.6195	2	1.8097	1.275	0.2923
Within Groups	48.2414	34	1.4189		
Total	51.8609	36			

Table 7

Two-Way Repeated Measures Anova on the
Self-Efficacy Reading Probes at Pre- and Posttest
Experiment One

Source	SS	df	MS	F	P
Between Groups					
Treatment	2.628	2	1.314	0.700	0.504
Error _b	63.861	34	1.878		
Within Subjects					
Time	5.132	1	5.132	3.533	0.069
Treat x Time	4.418	2	2.209	1.521	0.233
Error _w	49.391	34	1.453		
Total	125.43	73			

Table 8

Two-Way Repeated Measures Anova on the
Self-Efficacy Mathematics Probes at Pre- and Posttest
Experiment One

Source	SS	df	MS	F	P
Between Subjects					
Treatment	6.142	2	3.071	0.895	0.418
Error _b	116.709	34			
Within Subjects					
Time	2.478	1	2.478	3.726	0.062
Treat x Time	3.365	2	1.683	2.530	0.095
Error _w	22.627	34	0.665		
Total	151.311	73			

APPENDIX H

EXPERIMENT TWO

ANALYSES OF VARIANCE TABLES
FOR THE SELF-EFFICACY VARIABLES

Table 1

One-Way Analysis of Variance on the
Self-Efficacy Reading Pretest Probes
Experiment Two

Source	SS	df	MS	F	P
Between Groups	6.5549	2	3.2775	1.131	0.3370
Within Groups	81.1311	28	2.8975		
Total	87.6861	30			

Table 2

One-Way Analysis of Variance on the
Self-Efficacy Reading End of Treatment Probes
Experiment Two

Source	SS	df	MS	F	P
Between Groups	0.4169	2	0.2085	0.173	0.8420
Within Groups	33.7252	28	1.2045		
Total	34.1421	30			

Table 3

One-Way Analysis of Variance on the
Self-Efficacy Reading Posttest Probes
Experiment Two

Source	SS	df	MS	F	P
Between Groups	8.1206	2	4.0603	2.826	0.0762
Within Groups	40.2321	28	1.4369		
Total	48.3527	30			

Table 4

One-Way Analysis of Variance on the
Self-Efficacy Mathematics Pretest Probes
Experiment Two

Source	SS	df	MS	F	P
Between Groups	1.2317	2	0.6158	0.270	0.7657
Within Groups	63.9745	28	2.2848		
Total	65.2062	30			

Table 5

One-Way Analysis of Variance on the
Self-Efficacy Mathematics End of Treatment Probes
Experiment Two

Source	SS	df	MS	F	P
Between Groups	2.9767	2	1.4883	1.007	0.3781
Within Groups	41.3731	28	1.4776		
Total	44.3498	30			

Table 6

One-Way Analysis of Variance on the
Self-Efficacy Mathematics Posttest Probes
Experiment Two

Source	SS	df	MS	F	P
Between Groups	12.0189	2	6.0094	4.358	0.0225*
Within Groups	38.6085	28	1.3789		
Total	50.6273	30			

*significant

Table 7

Two-Way Repeated Measures ANOVA on the
Self-Efficacy Reading Probes at Pre- and Posttest
Experiment Two

Source	SS	df	MS	F	P
Between Subjects					
Treatment	14.565	2	7.282	2.503	0.100
Error _b	81.466	28	2.910		
Within Subjects					
Time	11.012	1	11.012	7.729	0.010
Treat x Time	0.252	2	0.126	0.088	0.916
Error _w	39.895	28	1.425		
Total	147.19	61			

Table 8

Two-Way Repeated Measures ANOVA on the
Self-Efficacy Mathematics Probes at Pre- and Posttest
Experiment Two

Source	SS	df	MS	F	P
Between Subjects					
Treatment	9.965	2	4.983	1.939	0.163
Error _b	71.948	28	2.570		
Within Subjects					
Time	3.522	1	3.522	3.220	0.084
Treat x Time	3.336	2	1.668	1.525	0.235
Error _w	30.633	28	1.094		
Total	119.404	61			

Table 9

A Priori Contrasts on the Self-Efficacy
Mathematics Posttest Probes
Experiment Two

	Value	SE	T	df	P
Contrast 1	1.3135	0.4513	2.910	28	0.007*
Contrast 2	-0.2143	0.5131	-0.418	28	0.679

*significant

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