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THE USE OF RELAXATION AND SUGGESTION
WITH ANXIOUS UNDERACHIEVING GRADE
EIGHT STUDENTS

by

 WILLIAM ROY WILCOX

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH
IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE
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UNIVERSITY OF ALBERTA
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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled The Use of Relaxation and Suggestion with Anxious Underachieving Grade Eight Students, submitted by William Roy Wilcox in partial fulfilment of the requirements for the degree of Doctor of Philosophy.

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ABSTRACT

On the assumption that academic underachievement of students is related to high levels of general anxiety and low measures of study habits, scholastic attitudes and self-esteem, it was hypothesized that the use of techniques to reduce the level of anxiety and to improve study habits, scholastic attitudes and self-esteem would result in higher levels of achievement.

Four groups of anxious underachieving grade eight students were included in this study. Each group met with its counsellor weekly for two months. Specifically, it was hypothesized that Group 1 students, undergoing relaxation training and being presented a series of suggestions aimed at improving study habits, scholastic attitudes and self-esteem and developing productive ways of coping with anxiety, would show significant anxiety reduction and significant improvement in study habits, scholastic attitudes, self-esteem and academic achievement compared to Group 4 non-counselled control students. It was further hypothesized that Group 2 students, undergoing relaxation training without the presentation of suggestions, would show significant anxiety reduction compared to the control students but no significant improvement in any of the other variables. Finally, it was hypothesized that Group 3 students, not undergoing relaxation training but being presented the suggestions similar to those given in Group 1, would not show significant improvement in any of the variables compared to the non-counselled control students.

In order for these hypotheses to be tested, the following

pre- and post-experimental measures were studied:

- (1) The IPAT Anxiety Scale Questionnaire (R. B. Cattell, 1963),
- (2) The Survey of Study Habits and Attitudes (W. Brown & W. Holtzman, 1967),
- (3) The Self-esteem Inventory (Coopersmith, 1959) and
- (4) Three academic course marks.

The results of this experiment were that no one of the treatments was significantly better than the others in affecting the dependent variables. Modification of the present techniques for future research is recommended.

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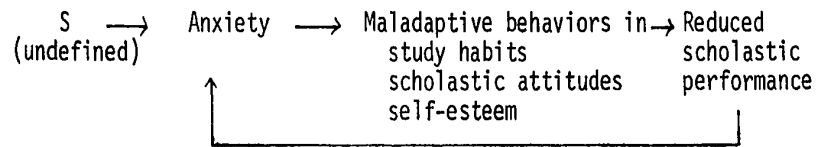
CHAPTER I

INTRODUCTION

Although numerous experimental approaches to alleviate the problem of underachievement have been undertaken, the present techniques are unique to the best of the author's knowledge. The procedures in this experiment were developed to assist underachieving grade eight students who have relatively high levels of general anxiety. It was assumed that the poor scholastic performances of the students selected for this study could be related to their relatively high degrees of general anxiety. Therefore, Wolpe's relaxation technique (Wolpe & Lazarus, 1966) was employed in this research in order to reduce the students' levels of anxiety.

The other technique employed in this experiment was that of suggestion. Many researchers in hypnosis experiments believe that suggestion can be a powerful tool for influencing behavior. The use of suggestion in the present experiment was directed towards: improved study habits and scholastic attitudes, increased self-esteem and heightened awareness of productive ways of coping with anxiety situations. These four variables were chosen because they have generally been found to be important factors in scholastic performance.

The relationship of the variables being measured in the present research may be viewed in the following manner:



This paradigm is simplified in order for the variables pertinent to the present study to be clearly seen.

The formation of hypotheses can be related to the paradigm shown. It is hypothesized that Group 1 students, being subjected to technique intervention (i.e., Wolpean relaxation training) at the anxiety stage and technique intervention (i.e., presentation of suggestions aimed at improving study habits, scholastic attitudes and self-esteem) at the maladaptive behaviors stage, will show significant improvement in these variables and in scholastic achievement compared to non-counselled control students (Group 4).

It is hypothesized that Group 2 students, being subjected to technique intervention (i.e., Wolpean relaxation training) at the anxiety stage, will show significant anxiety reduction compared to the non-counselled control students but will not show significant improvement in any of the other variables.

It is further hypothesized that Group 3 students, being subjected to technique intervention (i.e., presentation of suggestions aimed at improving study habits, scholastic attitudes and self-esteem) at the maladaptive behaviors stage, will not show significant improvement in any of these variables compared to the non-counselled control students. For Group 3 students, improvement in study habits, scholastic attitudes and self-esteem is not hypothesized as the

students' susceptibility to these suggestions is dependent upon a reduced general anxiety level (Das, 1959).

CHAPTER II

UNDERACHIEVEMENT: NATURE OF THE PROBLEM

A review of the literature indicates that researchers have used many different criteria in their selection of underachieving subjects. However, they all compare the actual achievement of the student with the level of achievement the experimenters believe the subject is capable of reaching.

An academic underachiever is a student who has the measured ability to achieve a level of academic success significantly above that which he actually obtains (Golburgh & Penney, 1965, p. 555).

The expected achievement of an individual is usually based on his performance in a recently administered Intelligence Test.

Some researchers prefer to use the terms "potential" and "usable" ability. The former refers to the achievement level a student is capable of reaching (according to Intelligence Test results) and the latter refers to his actual achievement. Usable ability is sometimes called "functioning efficiency (Bricklin & Bricklin, 1967, p. xiv)."

Only recently have researchers made advances in understanding the nature of the problem of underachievement. Often, students achieving less than expected were simply labelled "late bloomers," uncooperative or lazy. But as Bricklin & Bricklin (1967) have pointed out:

Most frequently the "lazy" child is psychologically unable to work efficiently and has no more conscious control over his "laziness" than he would over the course of a cold (p. x).

Underachievement affects not only the underachiever: a number of teachers fight it, some researchers explore it, many parents fear it (Schwitzgebel, 1965, p. 484). Others see it as a social problem (Gardner, 1961):

Our society cannot achieve greatness unless individuals at many levels of ability accept the need for high standards of performance and strive to achieve those standards within the limits possible for them (p. 131).

Data have become available concerning the scope of the problem of underachievement. Bricklin & Bricklin (1967) state the following:

Anywhere from 15 to 40 per cent of all school children are underachievers. More than 60 per cent of the young adults who enter college do not finish. From our own data, we would estimate that almost one-half of all school children are not working up to, or even near, their potential intellectual levels . . . In a recent investigation by the authors, 66 per cent of the male children with at least average intelligence in an eighth grade class had readily discernible reading problems. This number probably represents the true state of affairs in our schools (p. xiv).

It is not surprising that there is a great difference in the statistics of underachievement from the various research articles. For one reason, as noted earlier, there is inconsistency in the definition of underachievement. Clearly, if one researcher utilizes a certain magnitude of discrepancy between predicted and actual performance, and a second researcher uses a greater magnitude, the first would find a greater occurrence of underachievement. Also, statistics may vary depending upon the location of the school: Phillips (1965) found that "middle-class subjects had higher achievement than lower-class subjects (p. 200)." Academic ability was held constant in this study.

Yet another factor may be whether the subjects are under-achieving "average" students or underachieving "gifted" students. Gowan (1965) studied underachieving "gifted" high school students. "Gifted" in this study meant students with an IQ of approximately 130 or over. Gowan states:

In one California high school where seven per-cent of the students were gifted, 42 per-cent of these were underachievers. In another high school where two per-cent of the students were gifted, 16 per-cent of these were underachievers. In an outstanding independent secondary school, 12 per-cent of the students were gifted, and nine per-cent of these were underachievers (p. 75).

Correlates of Underachievement

There are many studies reporting correlations between underachievement and other variables such as study habits, scholastic attitudes, self-esteem and anxiety. Generally, the results of these studies offer support for a fairly high correlation between these variables and underachievement. Following is a brief review of pertinent research in this area.

Good study habits are important in "doing well at school." This advice is not invalidated because of those few who seem to be doing well and yet profess that they do not study. Indeed, the variability of academic ability, just by its existence, makes it clear that some students do not have to put forth as great an effort as others in order to obtain a given course grade. Some of these "high ability" students who claim to make little use of study habits may surprise themselves at their accomplishments if they put forth a

greater effort.

Experiments on the relationship between study habits and underachievement typically are designed to compare the study habits of a group of underachievers with those of a group who are achieving at a level commensurate with their ability.

Early researchers found positive correlations between study habits and achievement (Chapman, 1958; Carter, 1958, 1959; Frankel, 1960; and Wilson & Morrow, 1962). A Portland, Oregon study (cited in Raph et al., 1966) obtained similar results with underachieving gifted boys. Martens (1964) and O'Leary (cited in Raph et al., 1966) reported similar findings with underachieving junior high school students. At the college level, Desiderato & Koskinen (1969) and Lin & McKeachie (1970) found a positive relationship between study habits and scholastic achievement.

At least two studies found that the students' own reasons for underachieving were primarily centered on inadequate study habits. These were Applbaum (cited in Raph et al., 1966, p. 67) and Kerns (cited in Frost, 1965, p. 277).

Some experiments report no significant relationship between study habits and achievement. Working with under- and over-achieving female college students, Lum (1960) found that the two groups did not differ in their professed study habits. Chestnut (1965) was able to improve achievement of a group of students without any measured increase in their study habits. Westfall (cited in Raph et al., 1966) stated that the mechanics of study need not necessarily be a major

problem for underachievers. He found that the students' attitudes can often be playing more of a role in underachievement. Bricklin & Bricklin (1967) support the same view:

(Underachievement) is not caused by having a light-beam shine over the wrong shoulder, or by the child's not devoting an exactly proper number of minutes to studying . . . it is a result of conflicted emotional attitudes, only a re-adjustment of attitudes will be of lasting help (p. 108).

The relationship of the student's attitude toward school and his achievement has been the subject of considerable research. Birch & Veroff (1966) state that "success should breed success, and failure should breed negative attitudes towards achievement (p. 62)."

"Negative" or "poor" attitudes are defined as those which have a negative effect on scholastic achievement.

Coleman (cited in Frost, 1965):

indicted adolescents for attributing high status to athletes and sportsmen and low status to scholars, and indeed, for showing a marked nonchalance and negative attitude toward scholastic matters . . . such attitudes led to poor academic achievement, not only among mediocre students, but also among those with above-average intellectual abilities (p. 277).

Whatever the cause for poor attitude, most researchers are finding a difference in scholastic attitudes between achievers and under-achievers.

Many of the earlier experimenters in this area found positive relationships between scholastic attitudes and academic achievement (Brown & Holtzman, 1955; Barrett, 1957; Chapman, 1958; and Lum, 1960).

Working with high- and low-achieving gifted elementary children, Durr & Schmatz (1964) found that

when compared with high-achievers, (low-achievers) had poorer attitudes toward school, less satisfaction with school work, and a feeling that their needs were less likely to be fulfilled in school (p. 252).

Pierce & Bowman (1965) concluded that "high-achieving boys and girls valued the concepts 'school' (and) 'work' . . . more highly than did their low-achieving peers (p. 251)."

Working with lower socioeconomic class boys, Charette (1968) found that achievers had significantly better attitudes toward education and schooling than did underachievers. The measuring scale used was her own Study Habits and Attitudes Inventory. More recently, Williams (1970), working with high school students, found a significant positive relationship between scholastic attitudes and academic performance. In a study relating attitudes towards courses and achievement in those courses, Willoughby (1968) found significant relationships between course grades and the attitudes toward the course.

Neal et al. (1970), working with grade six students, found that

For boys, attitudes and achievement were significantly correlated ($p < .01$) for social studies . . . arithmetic . . . and reading . . . For girls, attitudes and achievement were significantly correlated only for reading (p. 234).

At least one study showed that students themselves feel attitude is important in school. Katahn et al. (1966) included a

desensitization procedure in successfully improving a group of university undergraduates' achievement. However,

from the students' standpoints, changes in their approaches to studying and in their attitudes toward education were more responsible for their increased academic effectiveness than were the desensitization procedures (p. 548).

Although the vast majority of experiments show a positive relationship between attitude and achievement, a few studies have obtained contradictory results. One factor for the different results may be the different measuring instrument used. Malpass (1953) compared students' perceptions of school with both their Stanford Achievement Test (SAT) scores and their mean semester grades. The results showed little correlation between perception and SAT scores but a significant correlation between perception and mean semester grades.

Jackson & Getzels (1959) found that "Contrary to popular expectations the 'satisfied' and 'dissatisfied' students did not differ from each other . . . in scholastic achievement. Those differences which did appear were linked to psychological rather than scholastic variables (p. 297)."

It is interesting to note what Spielberger & Weitz (1964) state about attitude and achievement. The former may negatively affect the latter, but only with students with personality problems:

It seems . . . likely that in response to the pressures of college life, students with personality problems are predisposed to develop maladjustive study habits and attitudes which, in turn, interfere with the learning process and lead to underachievement (p. 1).

Self-esteem is another variable in research on underachievement:

There is no value-judgement more important to man - no factor more decisive in his psychological development and motivation - than the estimate he passes on himself . . . The nature of his self-evaluation has profound effects on a man's thinking processes, emotions, desires, values and goals. It is the single most significant key to his behavior. To understand a man psychologically, one must understand the nature and degree of his self-esteem (Branden, 1969, p. 103).

It is clear that Branden views man's self-esteem as having a profound influence on all of his activities. According to Coopersmith (1967), self-esteem is:

the evaluation which the individual makes and customarily maintains with regard to himself: it expresses an attitude of approval or disapproval, and indicates the extent to which the individual believes himself to be capable, significant, successful, and worthy. In short, self-esteem is a personal judgment of worthiness that is expressed in the attitudes the individual holds toward himself (pp. 4-5).

The fact that our society stresses the value of education increases the influence scholastic achievement may have on an individual. Coleman (1964) states it this way:

Since our society places such a high premium upon success, failures lead to strong feelings of inferiority and self-devaluation. Successive failures are especially frustrating, as is failing in an undertaking we consider especially important (p. 150).

According to Bricklin & Bricklin (1967), underachieving students usually equate their entire sense of worth with their ability to achieve. The result of this is unmanageable pressure: "He (the underachiever) tenses up when called upon to perform. This needless tension is one of the things that causes him to fail (p. 15)." For

many underachievers, the ultimate consequence may be the belief that "With no attempt there can be no failure; with no failure, no humiliation (cited in Coopersmith, 1967, p. 30)."

Many authors talk of the effect of achievement on self-esteem but one may also consider the effect of self-esteem on achievement. Branden (1969) reports: "It must be emphasized that productive achievement is a consequence and an expression of healthy self-esteem, not its cause (p. 123)." The relationship may indeed be circular. Whatever the causes, self-depreciation is so common among under-achievers that it is included in Roth & Meyersburg's (1965) Non-Achievement Syndrome.

In 1962, Fink (working with high school freshmen) showed that "an adequate self concept is related to high academic achievement and an inadequate self concept is related to low academic achievement (p. 61)." Shaw, Edson & Bell (1960) made use of an Adjective Check List in studying high school students' self concepts. For male students, the results showed that underachievers had more negative feelings about themselves than did achievers. Typically, the self concept of the female underachiever showed considerable ambivalence. These same results were found again by Shaw & Alves in 1963. Todd et al. (1962) suggested that "ability or potential in the academic pursuits is not as vital to the self-concept and self-esteem for a female as it is for a male. Perhaps endowments in other areas are more central to the feminine role (p. 190)." Jones & Strowig (1968), working with high school seniors, concluded that self concept appeared

to be positively related to scholastic achievement. Self-perception was found to be an accurate predictor of academic success for university sophomores (Jones & Grieneeks, 1970).

"Feelings of inadequacy" were found to be more common among low-achieving gifted children than among their high-achieving peers (Durr & Schmatz, 1964). A "sense of personal worth" was significantly lower ($p < .001$) for underachieving elementary children than for their normal achieving classmates (Teigland et al., 1966, and Charette, 1968). In both of these studies, The California Test of Personality was the measuring instrument used.

A few experimental results are not supportive of a positive relationship between self-attitude and achievement. Borislow (1962) found no relationship between general self concept and achievement. He suggested the use of a more specific self concept (perhaps student-role orientated) rather than a general self-evaluation. Kehas (cited in Raph et al., 1966) showed that the way students experienced themselves in the school situation was positively correlated to their scholastic achievement. He found that the self concept (in a general sense) was not an important correlate of underachievement. Working with grade seven students, Dyson (1967) found that patterns of acceptance of self were not significantly different for high achievers and low achievers. However, "High achievers do report significantly different patterns of academic self concept from low achievers (p. 405)."

Impellizzeri et al. (1965) attempted to break down the word "self concept":

One investigator considered twenty-five items on the questionnaire that could be classified as components of the students self-concept. These ranged from estimates of one's ability to take criticism to appearance and intellectual ability. Among both boys and girls, this research showed that achievers rated themselves higher than did underachievers on seven items of intellectual ability, two personality traits and one specialized ability (p. 169).

Branden (1969) gives a more philosophical approach:

(People) do not normally die from a deficiency of self-esteem (although sometimes they do, as in suicide or other forms of self-destruction), but the extent of that deficiency is the extent of their inability to live. That ability or inability is measured in terms of a man's capacity to optimize his intellectual and creative potential, to translate that potential into productive achievement, to function effectively and unimpededly on the emotional as well as on the intellectual level (p. 235).

With few exceptions, it has been found that self concept and academic performance are positively correlated. Researchers who may not totally support this relationship are generally in agreement that certain aspects of self concept (i.e., self concept of academic ability) are important factors in scholastic achievement.

Although most studies consider self-confidence separately from self-esteem, a few writers implicitly (or, on occasion, explicitly) include self-confidence as an important component of self-esteem.

Bricklin & Bricklin (1967) stress the importance of helping the underachiever develop more self-confidence:

The most important thing to be "taught" in the tutoring situations is not just specific content materials, like science or reading, but rather self-confidence . . . Content tutoring alone, in the case of the underachiever, is like putting a patch over an area where reconstruction is required (p. 65).

They see self-confidence as being partially the result of the ability to work in a manner consistent with the "self picture." Unless the student feels some degree of self-confidence, the fear of failure may be sufficiently great so as to prevent him from even starting to work at a job. As a result of this, he may deny himself opportunities to develop self-confidence.

Like many other correlates of underachievement, the relationship between confidence and achievement is most probably circular: low achievement reduces one's confidence and low self-confidence is detrimental to achievement.

Several studies have shown positive relationships between self-confidence and achievement (Lum, 1960, and Carter, 1961). These findings have been supported by the Portland, Oregon, study (cited in Raph et al., 1966) and Faunce (1967). Working with high school students, Hummel & Sprinthall (1965, p. 394) found that "The underachiever (in contrast to the superior achiever) . . . is inclined to be fatalistic in his expectations concerning outcomes of personal effort." More recently, Bachtold (1969) showed self-confidence to be characteristic of high achieving grade five females compared to their underachieving peers.

The relationship of anxiety and underachievement has been the subject of much research recently. Studies on anxiety have proven to be very complex. The words "anxiety" and "anxious" are used many different ways by the layman; unfortunately, this confusion of terminology is only slightly improved in scientific research. The following is a short list of some of the words that have been compared with the concept of anxiety: conflict, stress (Cattell & Scheier, 1961); apprehension, concern, alertness, fright, shock (Rycroft, 1968); anger (Martin, 1961); fear (Dustin, 1969; Lesse, 1970; Atkinson & Birch, 1970); drive (Hull, cited in Hill, 1963) and arousal (Berlyne, 1960; Lader & Mathews, 1968).

An interesting approach to the study of anxiety has been taken by Lesse (1970). He explores the "four components of anxiety":

(1) Motor Component. This component is synonymous with (muscle) tension. The concern of this approach is the tonus of striate muscles.

(2) Affective Component. This component includes the layman's conception of an anxious person. Expressions like "he looks anxious" and "he sounds nervous" come under this heading.

(3) Autonomic Component. This component is concerned with the autonomic nervous system as a measure of anxiety. Included, for example, are respiratory rate and blood pressure.

(4) Verbal Component. This component includes the total number of words spoken over a given period of time. Quality, tone or expression of speech are not included; these measures come under the affective component.

Lesse's work is one of the few studies that takes such a global approach to the problem of anxiety. Most experiments are concerned with only one aspect of the anxiety state.

There are considerable research data concerning the relationships of these aspects of anxiety. Jacobson (1938, 1939, 1940) showed that reduced muscle tension results in lowered blood pressure. Wolpe (1958) also stated that muscle relaxation can considerably lower the pulse rate, as well as slow down respiration (both being autonomic functions). Pinneo (1961) showed that induced muscle tension raised several physiological measures, including heart and respiratory rate. Sainsbury & Gibson (1954) devised a questionnaire to measure subjects' affective states. By means of an electromyogram (EMG), they recorded muscle tension. The results showed that subjects who "felt" more tense than others had greater muscle tension. Finally, Lesse (1970) states that "alterations in autonomic functioning closely parallel changes in affect (p. 34)." For a further (and, at times, contradictory) discussion on some of these inter-correlations, the reader is referred to Martin (1961).

For the purposes of the present research, it is important at this stage to discuss anxiety with reference to "arousal." Arousal appears to be defined strictly on physiological terms. That is, arousal increases as heart rate, muscle tension, etc., increase. According to Lehmann & Ban (1970, p. 10), it differs from anxiety by "the fact that it (arousal) may exist without any specific accompanying affect (feelings or emotion)." However, as suggested by

Lader & Mathews (1968), a pathologically high level of arousal is experienced as anxiety.

One of Hokanson's (1969) measures for the level of arousal is neural reactions (e.g., cerebral activation). He stresses the roles of the cortex, hypothalamus and reticular formation. The following is a brief explanation of neural activity in arousal:

In a situation where the organism assumes a relaxed posture, there is reduced input, via the somatic sensory systems, into the reticular formation. Add to this a diminution of visual and other sensory stimulations which further reduced reticular activity . . . On the other hand, with strong and varied sensory stimulation and postural adjustments involving muscular tension, visceral activity, etc., there are relatively intense and multiple inputs into the reticular formation which, in turn, produce cortical activation patterns. The over-all intensity of this input could be conceived of as determining, in large measure, the subjective sensation of arousal (p. 19).

The important point here is that most of the physiological activities accompanying heightened arousal (or anxiety), including blood pressure and muscle tension are indeed affecting the neural processes. Since cognitive processes exist only because of neural activity, one question immediately stands out: "What is the nature and extent of anxiety on cognitive processes?" Three different views are presented below.

There are neural pathways extending from the cerebral cortex to the reticular formation (French, 1966).

Lindsley (1970) states that:

Such pathways are presumed to mediate the effects of cortical activity such as might be engendered by thinking, worry, apprehension, and the like, activities which tend to re-excite the reticular activating system and in turn tend to make . . . arousal persist, perhaps to the detriment of one trying to . . . avoid such troublesome worries and apprehensions (p. 158).

Hokanson (1969) cites Melzack's suggestion that:

when the arousal level (probably in the reticular formation) goes beyond a certain threshold, an emotional-motivational system is triggered which elicits behaviors designed to reduce aversiveness . . . In a situation involving performance on a task, these defensive behaviors might well interfere with task-related activities (p. 125).

Gellhorn (1966) states the following:

It is suggested that in 'strong' emotions the hypothalamus starts firing nearly maximally under the combined influence of discharges from the reticular formation and the sense organs, the latter impinging on the reticular formation and hypothalamus not only directly but also via the neo- and limbic cortex. Under these circumstances the differentiation in activation pattern and function which exists between various cortical areas under strictly physiological conditions is lessened . . . The resulting 'functional' decortication . . . is due to an excessive excitation of the hypothalamic system which is incompatible with the differentiated action of the cortex necessary for attention . . . and the higher mental processes (p. 156).

If one keeps in mind that the physiological activities of arousal affect the neurological processes in the reticular formation, it is reasonable to assume that small degrees of arousal aid in keeping the cortex aroused or alert via neural pathways from the reticular formation. In other words, low levels of arousal may actually enhance cognitive functioning. It is also believed that high levels of arousal

(anxiety) "interfere with," "disrupt" or may be "incompatible with" the higher mental processes. The natural conclusion is that there is an optimal level of arousal for mental performance.

This conclusion is consistent with the Yerkes-Dodson Law (cited in Eysenck, 1957). This law states that the relationship between arousal and performance is curvilinear.

Researchers, making use of the IPAT Anxiety Scale, tend to obtain supporting evidence:

as recent data on nurses in training (IPAT files) indicate, either low or high extremes of anxiety level may be associated with below-average school achievement, and thus, either extreme bears watching as a help in understanding later failure in a student sufficiently endowed with ability (Cattell & Scheier, 1963, p. 15).

An interesting explanation for the curvilinear relationship between arousal and performance is put forth by Easterbrook (1959). He cites Bruner et al. (1955) for experimental support. Easterbrook discusses the effect of increasing arousal on cue utilization in learning situations. Increase in arousal tends to decrease the range of cue utilization in operations:

Plainly those operations that were facilitated when the use of irrelevant cues was reduced . . . might have been impaired if the reduction had proceeded further so that relevant cues were also excluded. Continued reduction in the range of cue use would thus first improve and then impair proficiency (Easterbrook, 1959, pp. 192-193).

A graphical representation of this explanation would be curvilinear in nature.

Berlyne (1960), Cattell & Scheier (1961) and Coleman (1964)

give further description of the curvilinear relationship between arousal and performance. Experimental support for this relationship can be found in Tecce (1965), Stix (1967), and Sharma, (1970).

Anxiety, as defined with reference to arousal, implies impairment. This pathological condition appears to be a natural result of greatly heightened arousal. However, depending on one's knowledge from life experiences, his intelligence, his initiative, etc., an individual may be able to cope productively under the conditions of anxiety. The important point here is that one needs to learn to use his abilities to cope constructively. Hence, it is possible for anxiety to be "facilitating" or "debilitating" as Albert & Haber (1960) have suggested.

Techniques Used in Reducing Underachievement

Techniques used to ameliorate the problem of underachievement can be classified on the following basis: (1) the placement of underachievers into special classes, (2) group counselling or (3) individual counselling.

Using the special classroom approach, Goldberg (1965) found that:

A comparison of end of first and end of second semester marks showed that the special group (of underachievers) improved in all subjects except social studies in which they showed no change . . . while the control group (of underachievers in ordinary classes) went down in all subjects (p. 568).

Karnes et al. (1965), studying the effects of special classes consisting of underachievers placed in with gifted achievers, found that these underachieving students gained more academically than the control

students.

Subjecting underachieving students to daily or weekly group counselling experiences failed to result in significant academic gains in several experiments: Broedel et al. (1965), Laxer et al. (1966) and Finney & Van Dalsem (1969). These studies, all of a few months duration, tended to support the view that underachievers likely would not significantly improve their scholastic performance, as a result of counselling, for at least one year (Mahler & Caldwell, 1961 and Hogue, 1965).

However, Chestnut (1965), Gilbreath (1967a, 1967b) and Chestnut & Gilbreath (1969) found that a counsellor structured group experience, compared to a group structured group experience, can significantly improve underachieving students' academic grades. Brown (1969) obtained similar results with low anxious underachieving students but found that high anxious students gained most from an unstructured group experience.

Underachieving students have made significant academic gains following group experiments stressing: personal and emotional problems (Teahan, 1960), therapeutic conditions (Dickenson & Truax, 1966 and Perkins & Wicas, 1971), Ellis's rational approach (Sharma, K. L., 1970) and reinforcement of attitudes in the direction of good study skills (Altmann et al., 1972).

Comparing the relative effectiveness of group and individual approaches on academic achievement, Baymur & Patterson (1965) found no difference while Light & Alexakos (1970) found individual counselling

to be slightly superior.

However, Hill & Grieneeks (1966) failed to show that individual counselling of underachieving students was more effective than no counselling. Ewing & Gilbert (1967) obtained similar results but the trend was in favour of the individually counselled students compared to the non-counselled controls. Andrews (1969) individually counselled anxious underachievers using Wolpe's systematic desensitization techniques. This approach was successful in reducing the students' anxiety levels compared to both the group undergoing client-centered counselling and the non-counselled control group. However, none of the groups showed a significant improvement in academic performance. Zingle (1965), however, was successful in improving the scholastic achievement of underachieving students by Ellis's rational emotive approach on an individual basis.

CHAPTER III

RELAXATION TECHNIQUES: RELATED HYPNOSIS STUDIES

The following discussion on hypnosis research is pertinent because of its emphasis on relaxation and suggestion. Principles involved in hypnosis may be applicable to the treatment of anxiety and hence to the treatment of underachieving behavior.

Pavlov's theory of hypnosis relates hypnosis to neural activity. The latter is a function of arousal and, therefore, may be related to performance. According to Pavlov, hypnosis is a state of selective cortical inhibition; sleep also is a state of cortical inhibition but the inhibition in sleep is more global "encompassing large areas of the cortex and mid-brain (Das, 1969, p. 109)." Some implications of this view can be made. If a subject is given a suggestion in the normal waking state, the normal activity of the brain (heavily dependent upon neural facilitation) allows the subject to analyze and to be critical of the suggestion. In hypnosis, if cortical inhibition is increased, the suggestion has greater probability of being followed. An important point here is that "the suggestions of the hypnotist largely determine the areas of inhibition and excitation in the subject's cortex (Das, 1959, p. 71)."

Das (1959) presented a theory that is Pavlovian in nature.

He sees

hypnosis as a learned state of partial cortical inhibition and formalizes it as a multiplicative function of learning and inhibition:

$$H = f(L \times I) \text{ (p. 75).}$$

Since inhibition (I) is a function of arousal, it follows that suggestibility is dependent upon level of arousal. Das further states that there is an optimal level of I for suggestibility. In the present research, one of the objectives is to make use of relaxation techniques in order to reduce the anxious subjects' levels of arousal towards optimal levels for suggestibility. Once this is achieved, the subjects should be more receptive to suggestions directed towards assisting them to become better academic achievers.

Many experiments have measured levels of arousal during hypnotic induction. Paul (1969) subjected each of three groups to a different treatment as follows (p. 425):

- "(a) abbreviated progressive relaxation training as used in (Wolpe's) systematic desensitization training,
- (b) a hypnotic induction emphasizing direct suggestions of relaxation, heaviness, warmth, drowsiness, and sleep,
- (c) a self-relaxation control procedure, included to evaluate the effects of merely resting quietly for an equal period of time with instructions to relax."

Paul recorded the different effects of the treatments on subjective tension and physiological arousal. He found that both the relaxation training group and the hypnotic induction group benefited significantly more than the control group. These are important findings in showing that heart rate, respiratory rate, muscle tension and subjective reports of tension can all be reduced by either relaxation training or hypnotic induction procedures. Previously, it was mentioned that these physiological factors can play an important role in one's state of arousal. The latter, as discussed, has been related to performance.

The principles of relaxation training appear to be relevant to hypnotic induction techniques. Relaxation therapy involves the intensive use of muscles for brief periods of time: immediately following increased muscle tension is heightened muscular relaxation. In hypnosis, muscles of the eye, as well as several other areas of the body, are involved in such procedures.

Barber & Hahn (1963, p. 300) used four groups in a study of hypnosis. Three groups acted as controls, each being instructed to sit quietly for 20 minutes. The experimental group experienced a 20-minute hypnotic induction procedure involving suggestions of relaxation. They found that the "'hypnotic induction' was effective in producing 'relaxation' as indicated by reduction in heart rate, respiratory rate, and palmar conductance." Goldburgh (1968) compared the effectiveness of expressive-directive therapy, chemotherapy and hypno-therapy in treating examination anxiety. His results suggested that "the greatest effect was produced by the hypnotic treatment (p. 44)." After his many years of experience with hypnosis, Ambrose (1968) offers the following:

In the past 30 years that I have been using hypnosis with children, nothing has occurred to change my opinion that if the therapy is used with sympathy, understanding and skill, in selected cases, it still remains the method of choice if we wish to rid the child quickly and successfully of tension and anxiety (p. 1).

Gellhorn & Loofbourrow (1963, p. 268) state the following role hypnosis may have affecting the nervous system:

if a state of muscular relaxation is achieved, it contributes to a lessening of hypothalamic and, thereby, of emotional excitability. Conversely, a reduction in this state of central excitation (as the result of psychotherapy, hypnotic suggestion, etc.) will lessen the hypothalamic-somatic downward discharge and thereby reduce progressively the state of hypothalamic excitation since the feedback from the muscle spindles is diminished (emphasis made by present author).

Hypnotic Suggestions and Performance

Krippner (1963) cites several case studies where hypnosis with suggestions of relaxation has helped to improve students' academic performance. Although these studies lacked a control for a basis of comparison, in each case the subject's scholastic marks were raised following hypnosis (and the latter was felt to be the cause of improvement by both the hypnotist and the subjects involved).

Working with elementary and secondary school children, Krippner (1966) made use of hypnosis strongly emphasizing the importance of relaxation. Measuring improvement in reading, Krippner found that the group undergoing hypnosis made significantly greater academic gains than the control group.

Erickson (1965) hypnotized students suffering from "examination jitters" in order to rid them of this problem. Although there were no controls for comparison, the results "have been uniformly good (p. 357)." Using hypnosis to reduce "examination panic," Eisele & Higgins (1962) state that:

the results have been rather startling both in the increase in relaxation and a sizeable increase in examination grade averages (p. 261).

When using hypnosis to help students perform better academically, the therapist typically works on several variables such as relaxation, study habits, scholastic attitudes, etc. The lack of experimental control makes it difficult to know which of these variables are most affected by hypnotic techniques as well as which are most important in the problem of underachievement.

An experiment by Sears (1956) was based on "hypnotic, habit re-building." His suggestions to the subject included the following:

he was told that whenever he would sit down to study from now on, this degree of concentration would develop and he would be able to study in spite of distractions and would be able to learn and remember the material he studies. He was then awakened and studied the remainder of the period under direct post hypnotic suggestion (p. 166).

All subjects had IQs of 135 or over and were making low C grades prior to the experiment. Although Sears did not report any statistical tests for significant differences, he made use of their grades for the following semester as criteria:

Three had gone up slightly but were still doing C work; three were now achieving a B average; four were making an A average . . . (and one subject was discontinued in the experiment) (p. 167).

Hypnosis as a useful tool for concentration is discussed by Oetting (1964). However, he stresses the importance of avoiding suggestions likely to produce a state of extreme relaxation which may be detrimental to the ability to concentrate. Branden (1969) also sees hypnosis as a valuable tool in enabling a client to "achieve a level of greatly enhanced mental concentration (p. 230)."

For more than 25 years, Mellenbruch (1964) has been using hypnosis to assist college students with their studying patterns:

Where hypnosis has been used it has proved to be effective and durable in its effectiveness. A considerable number of students formerly on probation have become "B" and "A" students by suggesting under deep hypnosis that they will now want to learn, that they will enjoy studying, that they will be able to concentrate in the midst of distractions, that they will complete all of their assignments promptly, etc. Two or three subsequent reinforcing sessions have carried most of the students over the period needed to establish new and better study habits and goals (p. 61).

It can be seen that Mellenbruch includes suggestions toward a positive attitude about scholastic activities. In the same paper, he cites an interesting case of two teachers who asked for help "because of their extreme dislike for their university instructor (p. 61)." In an hypnotic session,

suggestions were made that they would look for desirable and worthwhile traits in the instructor and that they would look for useful and interesting materials from the course. Thus a positive approach . . . was to be substituted for the former negative . . . (approach)(p. 61).

Near the end of the course, each teacher separately (unknown to the other) told the therapist that she felt the instructor was excellent and that she profited greatly from the course.

Another study working with attitude change (along with other variables) was done by Fowler (1961). During hypnotic sessions, Fowler included suggestions for the development of two attitudes: "a love for reading and love for sincere scholarship (p. 224)." Following the sessions the subjects were given remediation in reading. This study lacked experimental controls; also, it did not measure the effects of the treatment on scholastic achievement. However, a year and a half after the experiment, Fowler states that:

Many of the subjects are still coming into the E's office and informing him that they have been able to concentrate deeper and longer, remember more, read faster, and generally continue to enjoy the benefits which they believed were theirs as a result of hypnotic suggestion and remediation in reading. They are quite definite in their beliefs (p. 227).

Suggestions of increased self-confidence were also included in Fowler's study. Many of the subjects (i.e., 66%) reported that they had gained more self-confidence in their academic work following the hypnotic sessions.

Much of the research using hypnosis to improve academic performance is not concerned with general academic gains but rather with more specific cognitive functioning. For example, McCord & Sherrill (1961) hypnotized a university instructor of mathematics in an attempt to increase his speed and accuracy in solving calculus problems. Following an hypnotic session, the instructor's speed was increased by sixfold with no loss of accuracy. Although there were no experimental controls, the results were impressive.

Many researchers have studied the effects of hypnosis on reading performance. Illovsky (1963) used group hypnosis on 15 and 16-year-old boys with reading problems. His results were as follows:

The hypnotized group during the six months of the study had gained an average of two years and three months in their reading . . . The control group during the same period had gained an average of nine months (p. 66).

Knudson (1968) and Donk *et al.* (1968) also showed the effectiveness of hypnosis on reading efficiency.

Salzberg (1960) attempted to test the effectiveness of hypnosis on tasks varying in degrees of complexity. The simple task involved

counting, the task of medium complexity involved memory and the most complex task required concept formation. Subjects who had been hypnotized generally performed better than the controls on the three tasks. Also, the hypnotic subjects "tended to improve more as tasks became more complex (p. 257)."

Hammer (1954) studied the effects of hypnosis on specific skills such as counting by threes, digit span forward and backward, digit symbol, meaningful syllables, etc., and generally found performance improved.

Treloar (1967) provides a more detailed review of experiments studying the effects of hypnosis on learning.

A considerable number of experiments have shown hypnosis not to be effective in improving performance. Barber and Calverley (1962) found support for their hypothesis that "task-motivation" can be equally effective as hypnotic induction techniques in tests of mental performance:

It appears possible that many if not all of the phenomena that have been historically associated with the word "hypnosis" can be elicited without the administration of a procedure that has been traditionally termed a "trance induction" and without the students appearing to be "in trance," provided the students are motivated to perform well on the criterion tasks . . . (pp. 387-388).

In 1964, Parker & Barber obtained data consistent with this hypothesis: "task-motivating instructions produced a comparable enhancement of performance on the digit symbol substitution task in hypnotized and non-hypnotized students . . . (p. 499)." Another interesting result they found was that "task-motivating instructions given alone or following an

hypnotic induction procedure did not significantly affect performance on the memory for words or abstract reasoning tasks (p. 499)."

Edmonston & Stanek (1966) found that hypnosis did not facilitate verbal learning:

The results of this study indicate that the use of hypnosis, as defined by a response to standardized induction instructions, has no significant effect on verbal learning regardless of the meaningfulness of the material to be learned (p. 259).

In the previously mentioned paper by Fowler (1961), an experiment was included which showed poorer reading performance following hypnotic induction techniques. According to Fowler, the subjects reported themselves to be "completely confident" about the tests following hypnosis and, reportedly, testing offered no "mental challenge":

The absence of a challenge in the testing situation and the completely relaxed attitude of those taking the test may conceivably explain the losses in mean test performance (p. 231).

Several experiments have shown hypnosis not to be effective in improving general academic achievement. Lieberman et al. (1968) attempted to improve the final grades of a group of probationary students by the use of hypnosis. Ten minute hypnotic sessions were given daily to the experimental subjects. A control group was included in the study. Following the experiment, they found no significant differences in final grades between the two groups. Interesting, however, was the fact that significantly more experimental subjects were removed from probation at the end of the first quarter.

Working with fourth and fifth grade elementary school pupils, Habbick (1969) found that hypnotic techniques were not effective in

improving academic achievement. Egan & Egan (1968) obtained similar results working with university students.

Many practising psychologists make extensive use of hypnosis. Most experiments tend to support its use by clinicians. The varying knowledge and training of therapists, selection of subjects, etc., are factors which may contribute to the discrepancies in experimental results.

Systematic Desensitization:
Pertinent Research

This section on systematic desensitization is included because it is a specific treatment approach in reducing levels of anxiety and increasing relaxation. Wolpe (1958) divides the procedure into three parts:

- (1) Training in muscular relaxation (Wolpe & Lazarus, 1966).
- (2) Construction of hierarchies: the therapist and client work together to construct a list of situational statements ranging from very mild to very strong sources of anxiety. Best results are with clients who have a specific phobia and who are able to relate exactly how they respond to different real life situations involving the phobia.
- (3) Systematic desensitization proper: with the client deeply relaxed, the therapist instructs the client to imagine himself in the situation which was previously reported by him to be a low source of anxiety. Under the conditions of extreme relaxation, the client does not find the imagined stimuli anxiety-

evoking for relaxation inhibits his usual weak anxiety response. At this stage, the therapist instructs the client to imagine the next (higher source of anxiety) item in the hierarchy. Anxiety is again inhibited. This procedure is continued until the strongest anxiety-evoking stimuli (in the highest situational statement in the hierarchy) no longer are a source of anxiety.

Wolpe (1958) states the principle as follows:

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

In systematic desensitization, the response antagonistic to anxiety is relaxation. There is support for this choice of response since heightened sympathetic activity (anxiety) and heightened parasympathetic activity (relaxation) are by and large opposed to one another.

Behavior theorists equate the symptom (in this case, anxiety) with the neurosis; hence, "get rid of the symptoms and you have eliminated the neurosis (Eysenck, cited in Yates, 1970)." Support for lack of symptom substitution following behavioral treatment is plentiful (Wolpe, 1958; Franks, 1969; Bandura, 1969; and Yates, 1970).

Recently, there has been considerable research concerning the role of muscular relaxation in systematic desensitization. Rachman (1968, p. 159) stated that "muscular relaxation probably facilitates the treatment, but it is by no means clear that it is an essential ingredient." He felt that a state of mental relaxation (induced by reassurance,

etc.) was a more important factor. However, Lomont & Edwards (1967), Kondas (1967), and Davison (cited in Eysenck & Beech, 1971) all found support for muscular relaxation to be an important part of the desensitization techniques. As Eysenck & Beech (1971) state:

The total (muscular) relaxation situation as an element of desensitization therapy serves the vital function of producing a low arousal level (p. 565).

A brief review of recent experiments involving systematic desensitization offers considerable evidence of its effectiveness for certain anxiety reactions. Lomont & Sherman (1971) undertook one of the few studies which failed to show that desensitization procedures were effective in alleviating test anxiety. Working with college students, they compared desensitization techniques with an insight approach. The latter also failed to reduce the subjects' anxiety problems.

Another researcher comparing desensitization techniques with insight approaches was Paul (1966). He found the desensitization procedures to be more "effective in alleviating anxiety of a social-evaluative nature (p. 99)." Doctor et al. (1970) compared the use of desensitization techniques with an affective approach (i.e., discussion of feelings, attitudes, etc.) on students' anxiety and grade point averages. The results were that "Members of the behavior therapy group reported greater reduction of anxiety to test-taking and study situations . . . (p. 88)." Both groups significantly increased their grade point averages compared to non-counselled controls.

The results of many other recent experiments are offering support for the effectiveness of systematic desensitization on test anxiety

(Kondas, 1967; Emery, 1967; Suinn, 1968; Garlington & Cotler, 1968; Mann & Rosenthal, cited in Bandura, 1969; Taylor, 1971; Graff et al., 1971; and Monke, 1971).

Significant academic gains (in controlled studies) following systematic desensitization have been reported by Johnson & Sechrest (1968), Mann & Rosenthal (cited in Bandura, 1969), Doctor et al. (1970), and McManus (1971).

Two recent groups of experimenters have separated the technique of muscular relaxation from those of systematic desensitization proper. Laxer & Walker (1970) subjected one group of subjects to systematic desensitization and another to muscular relaxation alone. Control groups were included. Both experimental groups significantly reduced their levels of test anxiety compared to the controls. However, this study also included pre- and post-experimental measures of general anxiety (i.e., the Taylor Manifest Anxiety Scale which correlates +.85 with the IPAT Anxiety Scale, Cattell & Scheier, 1961). Although no significant differences were found due to treatment, the experimental subjects undergoing systematic desensitization and those undergoing muscular relaxation alone did lower their levels of general anxiety compared to control subjects.

Laxer et al. (1969) divided students into one of three groups: (1) systematic desensitization, (2) muscular relaxation alone (relaxation per se treatment) and (3) no-treatment control group. Their findings were that:

The relaxation per se treatment was more effective in reducing general anxiety than systematic desensitization (p. 446).

In summary, hypnotic techniques and systematic desensitization have been shown to be effective in reducing subjects' anxiety levels. A number of experiments have also shown that both of these approaches have improved academic performance.

CHAPTER IV

THE PRESENT STUDY

It is hypothesized that a high level of anxiety and low measures of study habits, scholastic attitudes and self-esteem are disruptive to academic performance. The purpose of this study is to demonstrate the use of relaxation and suggestion in (1) reducing the level of anxiety and (2) improving study habits, scholastic attitude and self-esteem and (3) measuring the accompanying change in academic achievement.

Operational Definitions

Relaxation - the weekly school counsellor's presentation (to Groups 1 and 2) of an abbreviated form of Wolpe's relaxation training. Refer to Appendix A for details.

Suggestion - the weekly school counsellor's presentation (to Groups 1 and 3) of a series of suggestions aimed at improving the subjects' study habits and scholastic attitudes, increasing his self-esteem and developing ways for the student to cope productively with anxiety when it is experienced. Refer to Appendix A for details.

Anxiety - the sten scores obtained on the IPAT Anxiety Scale Questionnaire (Cattell & Scheier, 1963). A sten score of 5 or higher was required for the student to be considered anxious and therefore to be considered a potential candidate for the experiment.

Study Habits - the combined raw scores of the Delay Avoidance and Work Methods Scales on the Survey of Study Habits and Attitudes, Form H (Brown & Holtzman, 1967).

Scholastic Attitudes - the combined raw scores of the Teacher Approval and Education Acceptance Scales on the Survey of Study Habits and Attitudes, Form H (Brown & Holtzman, 1967).

Self-esteem - the total raw scores (not including the lie items) of the Self-esteem Inventory, Form A (Coopersmith, 1959).

Academic Achievement - the combined report card grades of social studies, mathematics and science. Where report card grades consisted of letters, the following transformation was made:

A = 5, B = 4, C = 3, D = 2 and F = 1. Where report card grades consisted of percentages, the following transformation was made:

80 - 100% = 5, 65 - 79% = 4, 50 - 64% = 3, 40 - 49% = 2 and below 40% = 1. Therefore, the maximum for the aggregate of

social studies, mathematics and social science = 15.

Presentation of Hypotheses

A Hypotheses

- 1) Relaxation plus suggestion will be effective in significantly improving subjects' academic achievement compared to no counselling.
- 2) Relaxation will not be effective in significantly improving subjects' academic achievement compared to relaxation plus suggestion.

- 3) Suggestion will not be effective in significantly improving subjects' academic achievement compared to no counselling.

B Hypotheses

- 1) Relaxation plus suggestion will be effective in significantly reducing subjects' levels of anxiety compared to no counselling.
- 2) Relaxation will be effective in significantly reducing subjects' levels of anxiety compared to no counselling.
- 3) Suggestion will not be effective in significantly reducing subjects' levels of anxiety compared to no counselling.

C Hypotheses

- 1) Relaxation plus suggestion will be effective in significantly improving subjects' study habits compared to no counselling.
- 2) Relaxation will not be effective in significantly improving subjects' study habits compared to no counselling.
- 3) Suggestion will not be effective in significantly improving subjects' study habits compared to no counselling.

D Hypotheses

- 1) Relaxation plus suggestion will be effective in significantly improving subjects' scholastic attitudes compared to no counselling.
- 2) Relaxation will not be effective in significantly improving subjects' scholastic attitudes compared to no counselling.
- 3) Suggestion will not be effective in significantly improving subjects' scholastic attitudes compared to no counselling.

E Hypotheses

- 1) Relaxation plus suggestion will be effective in significantly increasing subjects' self-esteem compared to no counselling.
- 2) Relaxation will not be effective in significantly increasing subjects' self-esteem compared to no counselling.
- 3) Suggestion will not be effective in significantly increasing subjects' self-esteem compared to no counselling.

CHAPTER V

THE EXPERIMENTAL DESIGN

The Pilot Study

A pilot study in preparation for the present research was carried out at Sherbrooke Junior High School in December of 1971. The IQs and most recent report card marks of all grade eight students were recorded. These were converted to normalized T scores. To obtain the discrepancy score for each student, his normalized T score for achievement was subtracted from his normalized T score for IQ. Students with discrepancy scores of less than seven were eliminated from the pilot study: a discrepancy score of seven was chosen because it allowed for sufficient subjects for the purpose of the study. The remaining students were administered the IPAT Anxiety Scale Questionnaire. The eight most anxious students became subjects in the pilot study.

These subjects were randomly divided into two groups, each having four members (Steel & Torrie, 1960). The school counsellor met with each group twice a week for two weeks. The sessions lasted approximately 25 to 30 minutes.

The purpose of the pilot study was to test the students' reaction to the techniques being considered for the main study. The two groups included in the pilot study were: 1) relaxation plus suggestion and 2) suggestion. The students became very involved with the relaxation training. Several changes were made in the wording of the

suggestions as a result of this study to ensure the students' understanding. The final form of the techniques can be found in Appendix A. These were used in the main study.

The Sample of Main Study

Four schools in the Edmonton Public School System were involved in this experiment. These included Avalon, Hardisty, Killarney and Lawton Junior High Schools. A total of approximately 875 grade eight students were considered in the selection of subjects. Students who met the following conditions were considered: average to considerably above-average IQ, achievement level below the expectancy established by their IQ scores, high-average to above-average level of anxiety and a demonstrated degree of suggestibility. Participation was on a voluntary basis.

Selection of Subjects

- (1) Intelligence - Prior to this experiment, all students who were considered for selection had been routinely administered the Lorge-Thorndike Intelligence Test. Separately for each school, the Verbal IQ scores were converted to normalized T scores (having a mean of 50 and a standard deviation of 10). Students with Verbal IQ scores in the following range were considered candidates for the experiment: $95 \leq IQ \leq 129$.
- (2) Underachievement - In early November of 1971, all grade eight students were routinely administered teacher-made achievement tests in social studies, mathematics and science. The sum of these three report card grades were determined for each student.

Where report card grades consisted of letters, the following transformation was made: A = 5, B = 4, C = 3, D = 2 and F = 1. Where report card grades consisted of percentages, the following transformation was made: 80 - 100% = 5, 65 - 79% = 4, 50 - 64% = 3, 40 - 49% = 2 and below 40% = 1. Separately for each school, the students' aggregate achievement scores were converted to normalized T scores (having a mean of 50 and a standard deviation of 10). A discrepancy score for each student was obtained by subtracting his normalized T score for achievement from his normalized T score for IQ. This discrepancy was an indication of the extent of the student's academic underachievement. Students with discrepancy scores of less than seven were eliminated from the study.

- (3) Anxiety - The remaining students were then administered the IPAT Anxiety Scale Questionnaire (Cattell & Scheier, 1963). Students who did not have high-average or above-average levels of anxiety (i.e., sten scores from 5 to 10) were eliminated from the experiment.
- (4) Suggestibility - Das (personal communication) suggested that the body sway test of suggestibility be administered to all candidates for the present experiment. The reason for including this test was that the effectiveness of the technique of suggestion would likely be dependent upon the suggestibility of the students involved. Ten students were eliminated because of their low suggestibility scores. Another 12 students with

slightly higher suggestibility scores (but less than the two inches required for them to be considered suggestible, according to Das) were included in the study in order to obtain a sufficient number of students to carry out the research project. Refer to later section of this chapter for details of this test.

- (5) Voluntary Participation - The remaining 64 students were asked if they wished to participate in the project which, they were informed, was aimed at helping them to become better students. They all agreed to be subjects. The Survey of Study Habits and Attitudes, Form H (Brown & Holtzman, 1967) and the Self-esteem Inventory, Form A (Coopersmith, 1959) were then administered to these students for purposes of pre-experimental measures of these variables.

The Formation of Groups

There was a total of 64 subjects, 16 from each of four schools. Within each school, they were randomly assigned to each of three experimental groups and one control group. Thus, in the overall study there were 16 subjects in each of four schools.

The Treatments

Each group, except Group 4 (the controls), met with its counsellor once a week for approximately 30 minutes per session. The four subjects met together, not individually, with their counsellor. Each group had eight sessions between mid-March and late May, 1972. The

following is a description of the treatment groups. Details of the techniques can be found in Appendix A.

Group 1 - During the first half of each session, the subjects underwent an abbreviated form of Wolpe's relaxation training. At the end of the relaxation exercises, the counsellor presented the subjects with suggestions towards improved study habits and scholastic attitudes, increased self-esteem and heightened awareness of productive ways of coping with anxiety situations.

Group 2 - During the first half of each session, these subjects underwent the same relaxation training as in Group 1. For the second half of each session, the counsellor instructed the subjects to relax and sit quietly until it was time to terminate the session.

Group 3 - During the first half of each session, the counsellor presented the subjects with the same suggestions presented to Group 2. Following the suggestions, the subjects were instructed to sit quietly until it was time to terminate the session.

Group 4 - Subjects in this group (the control group) did not meet with the counsellor during the course of the experiment.

In June, 1972, all subjects were again tested on the five dependent variables (i.e., anxiety, study habits, scholastic attitudes, self-esteem and academic achievement). Post-experimental achievement was measured by final report card grades in social studies, mathematics

and science. The other dependent variables were measured by re-administering the same measuring instruments used in the pre-experimental testing situation.

Statistical Analysis

For the statistical analysis, Group 1 from each school was added to Group 1 from each of the other three schools. The same procedure was followed for Groups 2, 3 and 4. One way analysis of covariance was chosen as a suitable procedure for measuring the effects of treatment on the five dependent variables. Prior to this analysis, a correlation matrix was generated for all the pre-experimental data. The matrix can be found in Appendix B. Correlating variables, where appropriate, were included as covariates in the analyses of covariance.

The Counsellors

The counsellors involved in the present study all have Bachelor Degrees from the University of Alberta, Edmonton. Their training in counselling varies considerably. One counsellor has both a B.A. degree (in Psychology) and a B.Ed. degree, but no specific training in counselling. The second counsellor also has both a B.A. degree (in Psychology) and a B.Ed. degree, and is presently working on a Graduate Diploma in Counselling in the Department of Educational Psychology at the University of Alberta. The third counsellor has a B.Ed. degree and a Graduate Diploma in Counselling and is presently working towards an M.Ed. degree in Educational Psychology. The fourth counsellor has an M.Ed. degree in Counselling from the Department of Educational Psychology

at the University of Alberta.

Experience in counselling among the four counsellors ranges from three and a half years to six and a half years: the arithmetic mean is five years of experience.

Three of the counsellors did not associate themselves with any particular approach to counselling. The fourth counsellor considers himself a Rogerian, making extensive use of the client-centered approach.

Participation in the present project was made optional. All four counsellors felt a strong need to help underachievers and were very willing to be involved in the present experiment.

In late February of 1972, the four counsellors met with Dr. Harvey Zingle and the present author. At that time, the techniques to be used were thoroughly studied by them. During March, April and May, the present experimenter visited each of the four schools once a week to discuss any specific difficulties that had arisen.

The Measuring Instruments

The Lorge-Thorndike Intelligence Tests: Verbal Battery

The Lorge-Thorndike Intelligence Test is routinely administered to all students in the Edmonton Public School System. The Intelligence Test Verbal scores used in the present study were obtained from the files of the schools involved. These tests were administered approximately one year before the start of the present experiment.

Reliability. The Technical Manual reports that for Level 4 (grades 7, 8 and 9), there is an alternate forms reliability of .776. The researcher in this reliability study reports that the two different forms of the test were usually presented to the subjects less than a week apart. A total of 596 subjects were included in the study. Also, for Level 4, the manual shows an odd-even reliability of .928.

Validity. The Technical Manual reports a validity study done on grade 7, 8 and 9 students correlating the Lorge-Thorndike with the Wechsler Intelligence Scale for Children (WISC). For this grade level, the correlation between 4 AN of the Lorge-Thorndike and the WISC was .77.

The Verbal Battery of the Lorge-Thorndike has been correlated with both the California Mental Maturity and the Otis. The Technical Manual reports the correlations (at the grade 7 level) to be .83 and .85, respectively.

The Examiner's Manual states that the Lorge-Thorndike has been very helpful in efforts to "set standards of expectancy for each pupil. Teachers will probably find that the Verbal Battery of the Lorge-Thorndike Tests is most useful for this purpose (p. 15)."

Academic Course Marks

For the purpose of the present research, achievement was measured by teacher-made tests. The alternative of using standardized achievement tests was not chosen after consideration of factors discussed by Andrews (1969). Andrews states:

Research indicates that a result of using these two types of measure (i.e., teacher-made vs. standardized achievement tests) is that two different populations will be selected . . . If standardized achievement tests were used, and if a treatment were found to produce improvement, it would remain to be demonstrated that the treatment would also produce improvement in the somewhat different population which constitutes the main problem (pp. 47-48).

The problem is that certain students (whose standardized Intelligence Test scores show their ability) are not achieving as much (on the same or similar teacher-made tests) as equally able peers. The problem, and the effects of treatment, can well be studied by using teacher-made tests in both the pre- and post-experimental situation. In all cases, the teachers scoring the tests did not know which students were in a particular treatment group.

Another reason for choosing teacher-made tests is stated by Zingle (1965):

school marks might be considered to be more sensitive an indicator of growth in academic achievement because they represent chiefly an assessment of current performance in a subject area, while standardized test scores might reflect total background (p. 42).

IPAT Anxiety Scale Questionnaire

The present research is concerned with free-floating anxiety. According to Cattell & Scheier (1963), the IPAT Anxiety Scale Questionnaire

is a nonstressful clinically valid questionnaire for measuring anxiety . . . appropriate for ages 14 or 15 years . . . The scale gives an accurate appraisal of free anxiety level. The IPAT Anxiety Scale can be repeatedly applied at weekly or longer intervals without examinees' recalling any appreciable fraction of their earlier responses (p. 5).

Reliability. The IPAT Anxiety Scale Questionnaire Handbook states a test-retest (one-week interval) reliability of +.93 for the Total Scale score. This measure was based on a study using 87 male and female adults. A two-week interval test-retest reliability of +.87 was found using 277 Japanese university students. Another study considered the overt and covert parts of the scale separately. The test-retest (one week interval) reliability for the covert score was found to be +.89; for the overt score, the reliability was +.82. In both cases, 70 adult male and females were used in the studies.

Validity. The Handbook states a construct or concept validity of +.85 to +.90 for the total scale. There is a relatively low correlation (+.30 to +.40) between the IPAT Anxiety Scale and clinical consensus. According to the IPAT Handbook,

This may not seem high and one might indeed find one particular clinician whose estimates correlate higher with the Scale, but diagnostic disagreements between clinicians being what they are, the area of consensus is simply not large enough to permit values much larger than +.40 (p. 8).

Correlations between the IPAT Anxiety Scale and physiological tests of anxiety are substantial, the Handbook states. It further states that the Anxiety Scale Questionnaire loads +.90 on the objectively-measured anxiety factor U.I. 24. Included in the U.I. 24 battery are physiological indices of anxiety.

Survey of Study Habits and Attitudes

The Manual for the Survey of Study Habits and Attitudes (SSHA) states that

Sufficient research has . . . been completed on the SSHA to establish its reliability and validity on firm grounds. Because of its low correlation with measures of scholastic aptitude and its appreciable relationship to academic success, it is suitable for inclusion with other scales in research investigations of the educational or counseling process (p. 6).

Reliability. The Manual reports a test-retest reliability study undertaken using 237 grade nine students. The test-retest (four week interval) reliability was found to be .95, .93, .93 and .94, respectively, for the Delay Avoidance, Work Methods, Teacher Approval and Education Acceptance scales. The reliability for the total score was .95.

These studies indicate that the four subscale scores are sufficiently stable through time to justify their use . . . in assessing the degree of change in study habits and attitudes after counselling (Brown & Holtzman, 1967, p. 24).

Validity. Included in the Manual is a study (1965) correlating SSHA total score with grade point averages for grade eight students covering six states in the United States. Correlation between SSHA and grade point average was found to be +.52. A correlation of +.29 was obtained between SSHA and scholastic aptitude tests. The Manual states that data "clearly indicate the importance of the SSHA in providing measures of personal traits that are relevant to academic success but not covered by scholastic aptitude tests (p. 22)."

Self-esteem Inventory

The instrument used to measure self-esteem in the present research is Form A of Coopersmith's Self-esteem Inventory (1959). This

test consists of 50 statements covering four areas: general self, social self, home - parents and school - academic. The subject responds to each statement by checking one of two columns: "Like Me" or "Unlike Me."

Reliability. Coopersmith administered this test to two fifth and sixth grade classes of boys and girls. Five weeks later, he re-administered the Inventory to one of the grade five classes. A total of 30 students were involved. The test-retest reliability was found to be +.88.

Validity. Some of the items selected for the Self-esteem Inventory were taken (and re-worded) from Rogers' and Dymond's Scale; the rest were designed by Coopersmith. No data are available for the validity of this test. The only valuable information accessible to the present author that is pertinent here is that the placement of high and low self-esteem items in this test was agreed upon by five psychologists. No information was available concerning these psychologists.

Body Sway Test of Suggestibility

The body sway test of suggestibility has been discussed by Eysenck (1947) and Das (1968). It is a measure of Eysenck's "Primary Suggestibility":

The main feature in the tests which go to define this trait is the execution of a motor movement by the subject consequent upon the repeated suggestion by the

experimenter that such a movement will take place without conscious participation in the movement on the subject's part (p. 165).

The measuring device is a modified yardstick: the center point is marked "zero"; the ruler extends 18 inches in both directions. A piece of string, capable of sliding back and forth along the ruler, has one of its ends attached to the collar of the subject. Das (1968) discusses how the apparatus works:

The subject's forward sway . . . (displaces) one of . . . two small sliding plates of aluminum mounted on a ruler to the left, and his backward sway (displaces) . . . the other plate to the right. The plates (maintain) . . . their positions unless moved further by a consequently greater sway, thus enabling the experimenter to record a subject's maximum sway in either direction (p. 18).

Measurement is first made of the subject's backward and forward movement without the suggestion of swaying. For this measurement of "static ataxia," (Eysenck, 1947) the subject stands with his eyes closed for one minute. Then, for two minutes, the experimenter suggests that the subject is falling. Measurement is then taken of his backward and forward movement. The subject's sway in static ataxia is subtracted from his sway under suggestion to obtain a measure of his suggestibility.

Reliability. Eysenck (1947) discusses three research studies on the body sway test obtaining test-retest correlations of +.91, +.93 and +.91. Shor et al. (1966) obtained a test-retest reliability of +.84. In a good review of research on the body sway test, Evans (1967) cites several researchers who have found test-retest reliabilities in the area of +.90. He also states that "The Body Sway test is

the most widely used measure of suggestibility (p. 117)."

Validity. Clark Hull (1933) cites an experiment by White correlating body sway with hypnotizability. Using 22 young men and women, White obtained a correlation of +.75. Eysenck (1947), using a sample size of 100 subjects, found a correlation of +.73 between body sway and hypnosis.

Limitations of Present Study

Typically, research in a field setting is carried out under less than ideal conditions. Modification of procedures often are made depending upon (1) counsellors' available time, (2) cooperation of many school staff members, (3) facilities in school settings, etc. The present research design, developed with such restrictions in mind, has inevitable limitations. This section offers a discussion of these limitations.

First, although placement of students into groups was random within each school, a better procedure (statistically speaking) would have been to randomly place each of the 64 students into one of the four treatment groups regardless of the schools they were attending. The result of this would have been that students from the various schools would have to be brought together for the regular group sessions. This procedure was not adopted because of (1) its impracticality, (2) the unknown effect of "regular outings," (3) the problem of students missing more academic lessons because of increased travelling time, etc. The present author had the common difficulty of maintaining a satisfactory

research design while attempting to obtain results which would be applicable to a future counsellor in his own school setting.

Secondly, the need to obtain sufficient numbers of students to satisfy statistical criteria resulted in the need to include students who possibly could be considered unsuitable for the present techniques. The possibility exists, considering the error term of the teacher-made achievement tests, that students with the lowest discrepancy scores in the present experiment are not underachieving sufficiently to allow for significant improvement following treatment. Also, students with higher levels of anxiety may be more likely to benefit from the present techniques.

Thirdly, there are limitations resulting from the use of final report card grades as post-experimental criteria of achievement. These restrictions include (1) the subjective aspect of assessment and (2) the fact that there are differences among schools in the criteria for final report card grades. As limiting as these criteria for achievement may be, they are more appropriate (in the present research) than standardized achievement tests in that (1) standardized tests are not sensitive to academic gains over a short period of time (and hence treatment effects may not be accurately reflected in the test results) and (2) the fact remains that final report card grades are generally the criteria for students' progress and advancement in academic institutions. The effect of the present techniques on report card grades would be a major concern of future counsellors considering making use of these procedures.

A fourth limitation in the present research concerns the students' motivation. Although the counsellors were requested to consider this variable from their own knowledge of the students, the absence of an objective measure of motivation is acknowledged. Its effect may be equally distributed by the random selection procedures but the benefits of the present techniques for well-motivated students may be underestimated in the results of this experiment. (It is noted here that other factors such as undetected physical disabilities, drug abuse, etc., were not recorded. Again, the random selection procedures should equally distribute their effect.)

Another limitation of the present research may be the frequency of treatment. Ideally, counsellors should hold the group sessions daily in short term therapy. However, this was not only impractical during the course of the experiment but would be an unlikely possibility for future counsellors who may be considering the present techniques for their school setting. Assigning daily homework in the relaxation training was not carried out because of (1) the lack of control and (2) the resulting unequal amounts of exposure among treatment groups to the counselling experiences.

A further problem in the present experiment was the need to use a paper and pencil test for measuring anxiety while the discussion of the effects of anxiety on performance was done on a physiological model. Since obtaining physiological measures of anxiety was impractical, it was decided to make use of the IPAT Anxiety Scale Questionnaire (Cattell & Scheier, 1963) for which correlations with physiological factors have been found to be significant.

CHAPTER VI

RESULTS

The pre-experimental data from the subjects in the present study are presented in Table I. There were no significant differences among groups in any of the variables.

Two subjects were removed from the experiment. One girl in Group 3 felt "uncomfortable" with the approach and chose to withdraw. Another girl in Group 2 injured her arm while playing at school and was required to wear a cast. She was unable to carry out the relaxation techniques properly; as a result, she was removed from the study. The final number of subjects per group, therefore, became: Group 1 = 16, Group 2 = 15, Group 3 = 15 and Group 4 = 16. Total number included 32 girls and 30 boys.

The results of the analyses show that no one of the treatments was significantly better than the others in affecting the dependent variables (see Tables II and III). The same statistics were applied to boys separately and to girls separately. Again, no significant differences were obtained among the groups on any of the measures.

The data from Groups 1, 2 and 3 were combined for purposes of comparing treatment with no treatment (Group 4). The summary of the analyses of covariance can be found in Appendix C. It can be seen that no significant treatment effects were obtained.

Profiles were plotted for the groups' mean differences on the pre- and adjusted post-experimental measures for each of the five

TABLE I

Pre-Experimental Data

	MEAN	RANGE
IQ	112.44	95 - 129
Achievement Aggregate (A=5, B=4, etc.)	7.53	3.0 - 13.0
Discrepancy Score	12.93	7.0 - 24.6
Body sway (inches)	3.57	0.13 - 9.75
IPAT Anxiety Scale (maximum score = 80)	42.27	26 - 65
Study Habits (maximum score = 100)	33.52	8.0 - 76.0
Scholastic Attitudes (maximum score = 100)	40.00	12.0 - 82.0
Self-esteem (maximum score = 50)	27.68	10 - 42

TABLE II

Unadjusted and Adjusted Post-
Experimental Group Means

Variable	Group	N	Unadjusted Mean	Adjusted Mean
Achievement Aggregate	1)R+S*	16	8.8	9.0
	2)Relaxation	15	8.6	8.4
	3)Suggestion	15	7.9	8.5
	4)Control	16	9.4	8.9
Anxiety	1)R+S	16	43.50	39.77
	2)Relaxation	15	35.00	37.40
	3)Suggestion	15	40.33	39.40
	4)Control	16	38.25	40.61
Study Habits	1)R+S	16	33.31	36.15
	2)Relaxation	15	39.27	34.04
	3)Suggestion	15	34.07	35.94
	4)Control	16	30.69	31.00
Scholastic Attitudes	1)R+S	16	40.88	42.07
	2)Relaxation	15	47.40	40.76
	3)Suggestion	15	38.20	40.70
	4)Control	16	35.94	38.62
Self-esteem	1)R+S	16	27.69	30.29
	2)Relaxation	15	33.87	31.27
	3)Suggestion	15	28.13	29.22
	4)Control	16	29.44	28.25

*Relaxation plus Suggestion

TABLE III

Summary of Analyses of Covariance

Variable	Sources of Variation	Mean Squares	Degrees of Freedom	Adjusted F	P																																	
Achievement Aggregate	Between	1.08	3	0.91	0.442																																	
	Within	1.18	56			Anxiety	Between	37.69	3	0.27	0.844	Within	100.98	56	Study Habits	Between	86.70	3	1.03	0.388	Within	84.39	55	Scholastic Attitudes	Between	31.48	3	0.43	0.735	Within	73.93	55	Self- esteem	Between	23.50	3	0.61	0.611
Anxiety	Between	37.69	3	0.27	0.844																																	
	Within	100.98	56			Study Habits	Between	86.70	3	1.03	0.388	Within	84.39	55	Scholastic Attitudes	Between	31.48	3	0.43	0.735	Within	73.93	55	Self- esteem	Between	23.50	3	0.61	0.611	Within	38.43	54						
Study Habits	Between	86.70	3	1.03	0.388																																	
	Within	84.39	55			Scholastic Attitudes	Between	31.48	3	0.43	0.735	Within	73.93	55	Self- esteem	Between	23.50	3	0.61	0.611	Within	38.43	54															
Scholastic Attitudes	Between	31.48	3	0.43	0.735																																	
	Within	73.93	55			Self- esteem	Between	23.50	3	0.61	0.611	Within	38.43	54																								
Self- esteem	Between	23.50	3	0.61	0.611																																	
	Within	38.43	54																																			

dependent variables. Refer to Figures 1 to 5. Although these graphs do not represent significant differences, they will be discussed in the next chapter.

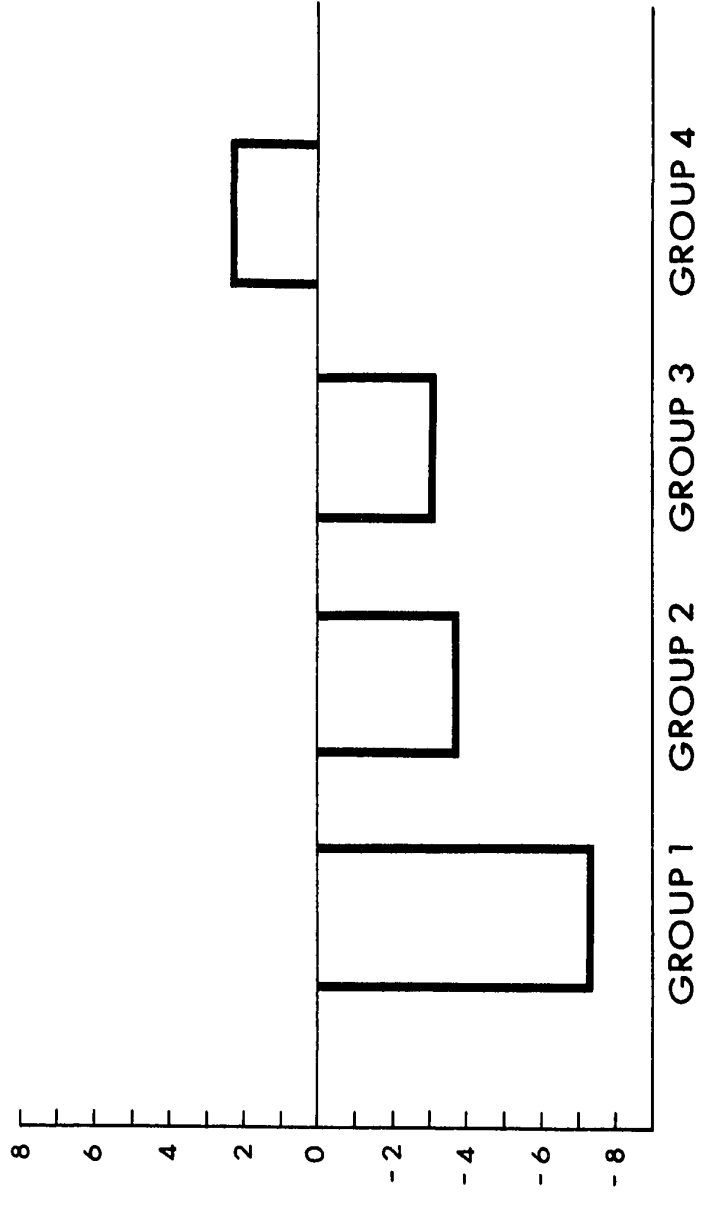


Figure 1
 Differences Between Pre- and Adjusted Post-Experimental Means For Anxiety

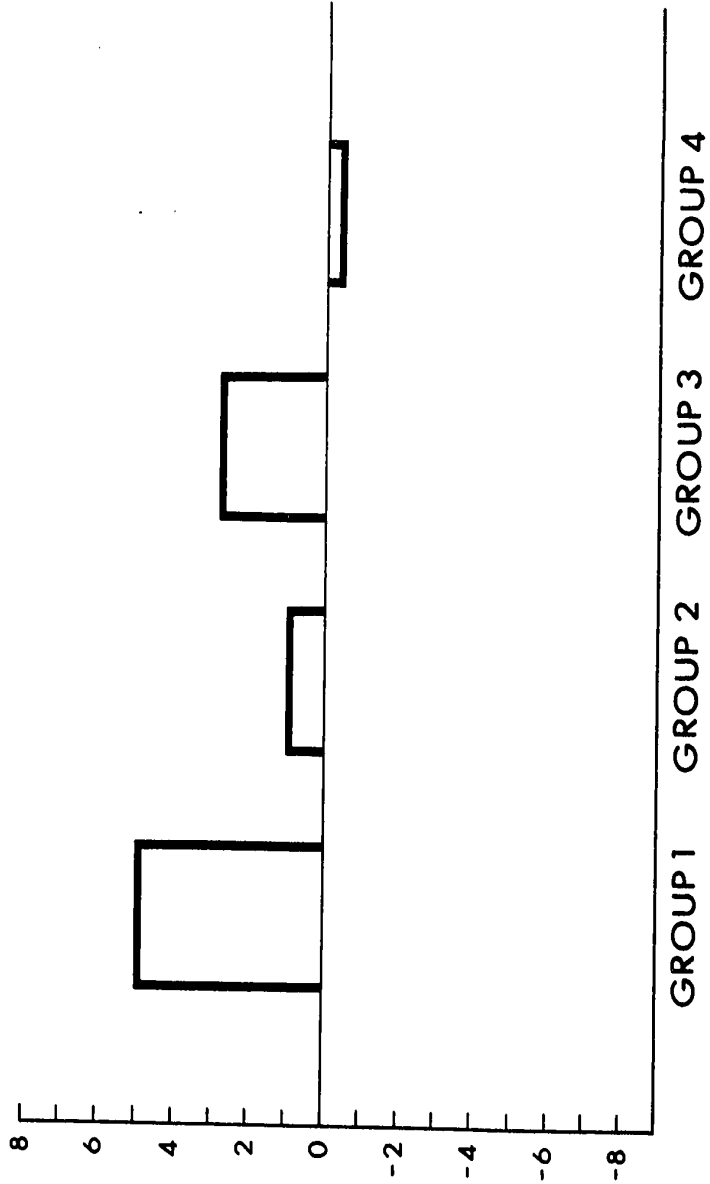


Figure 2
 Differences Between Pre- and Adjusted Post-Experimental
 Means For Self-Esteem

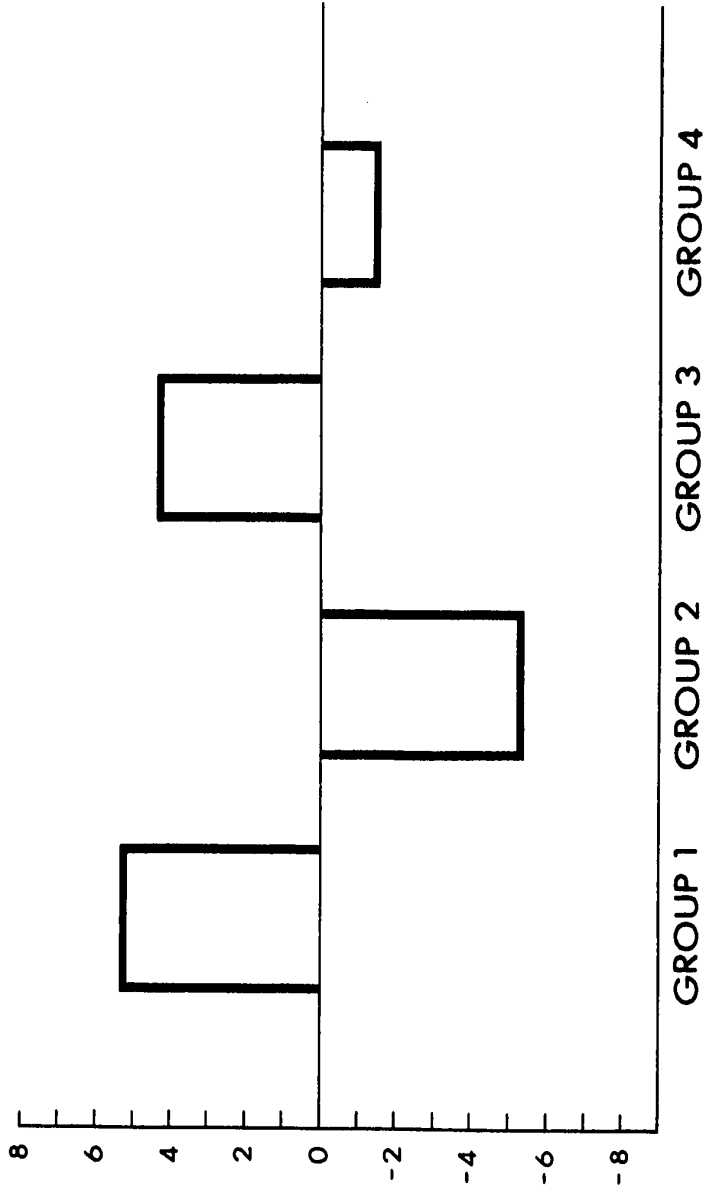


Figure 3
 Differences Between Pre- and Adjusted Post-Experimental
 Means For Study Habits

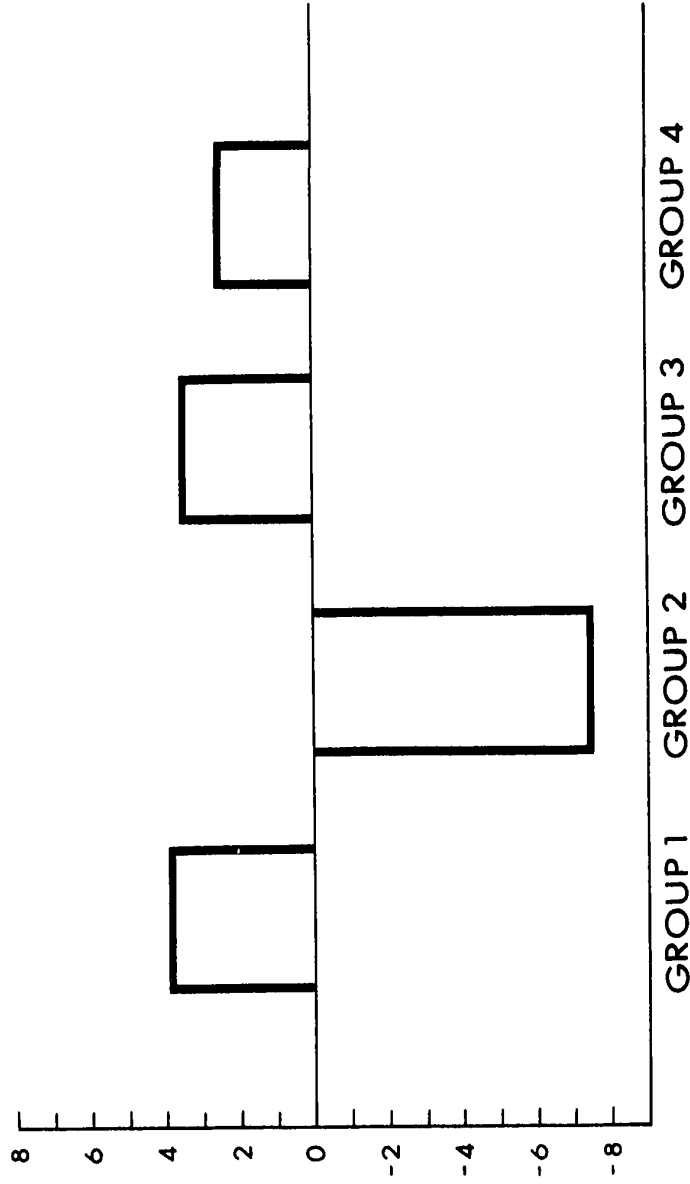


Figure 4

Differences Between Pre- and Adjusted Post-Experimental Means For Scholastic Attitudes

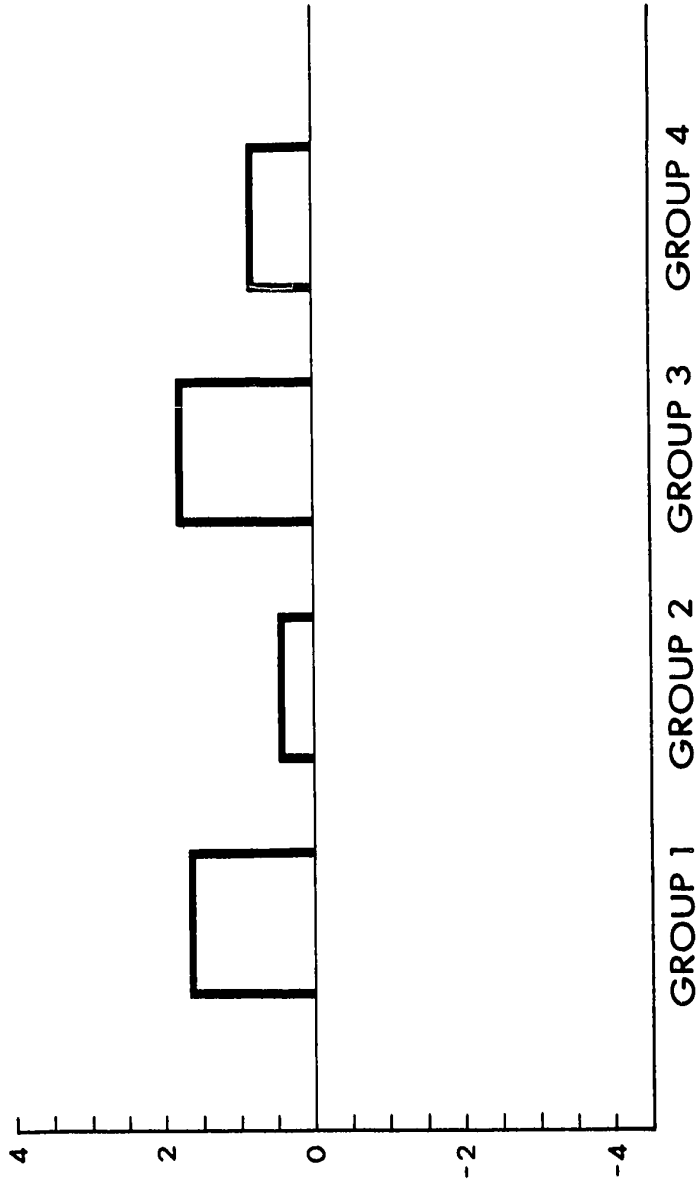


Figure 5
 Differences Between Pre- and Adjusted Post-Experimental
 Means For Achievement

CHAPTER VII

DISCUSSION

As carried out in this experiment, relaxation and suggestion separately or combined are not effective techniques in helping anxious underachieving grade eight students.

There are several points of procedural differences in this experiment, compared to others, which should be considered in an attempt to account for results inconsistent with theoretical expectations.

First, although Wolpean relaxation techniques are apparently popular with practising clinicians, there is very little experimental evidence supporting the effectiveness of such procedures on reducing general anxiety. Rachman (1968) seriously questioned the role of muscular relaxation in systematic desensitization while Laxer *et al.* (1969) and Laxer & Walker (1970) at least suggest support for the efficacy of such techniques.

Possibly the single most important factor contributing to the present results is the relatively limited amount of time the subjects spent in the relaxation training. Laxer (1969) had his subjects meet for 20 minutes daily for six weeks. Andrews' (1969) subjects underwent only 10 weekly sessions but "were instructed to practise relaxation twice a day between sessions (p. 106)."

In the present experiment, the subjects underwent eight weekly sessions and were not instructed to practise the relaxation techniques at home. The reason for this approach was to make comparable the

amount of time the subjects from each of the experimental groups spent in the counselling experience. However, possibly an important implication of this research is the need for daily experience in relaxation therapy for anxious underachieving students.

Several other procedural differences between this experiment and others should be mentioned. The vast majority of the experiments involving muscular relaxation (Johnson & Sechrest, 1968; Laxer et al., 1969; Andrews, 1969; Laxer & Walker, 1970, and Graff et al., 1971) include most of the major body muscles in the relaxation exercises.

In the present experiment, the tensing and relaxing of muscles was restricted to the head, neck, shoulder and arm regions. It was felt that once the subject experienced the feeling of relaxation in these parts of the body, the suggestion of this relaxed feeling spreading throughout the rest of the body would be heeded. Another reason for the abbreviated form of relaxation training was because of the need for each of the treatment groups to receive equal amounts of the counsellor's time. Group 1 subjects were presented a series of suggestions following the relaxation training; in order to carry out both the relaxation and the suggestion parts of the treatment in 30 minutes, the present author used an abbreviated form of the relaxation training.

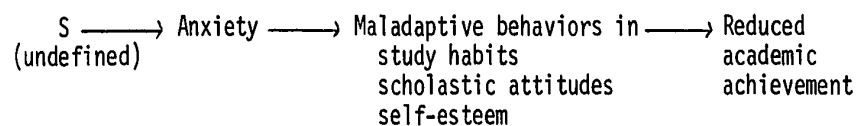
During the course of the experiment, one problem became quite clear to the counsellors. Although most subjects were extremely cooperative in this project, a few of the students would not refrain from giggling. Many people appear to label this age bracket (12 to 16 years) as the "giggly stage." The important point is that in the use of similar

techniques with groups of junior high school students, such students should be removed from the program because they may interfere with the treatment effects on the majority of subjects.

Several other factors such as the variability of the counsellor's personality, his knowledge and skill in the application of techniques, etc., should also be considered.

One explanation for the lack of improvement in study habits, scholastic attitudes and self-esteem may be as follows: the subjects in this experiment were characterized by relatively high levels of general anxiety. Failure to reduce their anxiety levels implies failure to bring the subject's state of arousal to the optimal level for suggestibility (according to Dasian theory). Therefore, given the fact that there were no significant treatment effects on anxiety, it would be consistent with theory to hypothesize that the presentation of suggestions towards improved study habits, scholastic attitudes and self-esteem would have little effect.

The following paradigm may help to explain the lack of significant improvement in study habits, scholastic attitudes, self-esteem and academic achievement:



It can be clearly seen that no significant decrease in anxiety would be followed by no significant changes in any of the other variables. The finding of no significant treatment effects on academic achievement is

therefore not inconsistent with the basic theory behind the present experiment.

In Figures 1 to 5, each variable is plotted for the groups' mean differences between the pre- and adjusted post-experimental scores. Although none of these graphs represents significant differences, they allow for speculation.

In Figure 1 (anxiety), it can be seen that the three experimental groups decreased their anxiety level by the end of the experiment. On the other hand, the control group increased its anxiety over the same time period. As shown in this graph, the greatest reduction in anxiety was made by Group 1 (relaxation plus suggestion). This might be significantly greater if modifications in procedures were implemented. Group 2 (relaxation alone) made a comparable decrease in anxiety with Group 3 (suggestion alone). It was hypothesized that Group 3 would not benefit from treatment with respect to anxiety. It is possible that the conditions which Group 3 was subjected to (i.e., sitting in comfortable, high-backed, padded chairs; spending regular sessions with the counselor, etc.) are sufficient conditions for some degree of anxiety reduction.

Figures 1 through 5 are interesting in two respects. One is that the suggestions presented to Group 3 appear to have been heeded to a certain extent. One explanation for this becomes clearer if Figure 1 is considered at the same time. According to Dasian theory, suggestibility increases (everything else being equal) as the anxious subject reduces his anxiety level in the direction of his optimal level of arousal for suggestibility. To the extent that Group 3 subjects

did lower their anxiety level (Figure 1), to that extent these subjects may have been more accepting of the suggestions of improved study habits, scholastic attitudes and self-esteem.

The other interesting point about these graphs is the relatively poor improvement in these measures made by Group 2. Although these subjects did lower their anxiety levels to some degree, they made negligible improvement in self-esteem and achievement and, contrary to expectations, they developed considerably worse study habits and scholastic attitudes than when they started the experiment. It appears as though relaxation training alone can actually be carried out at the expense of other important scholastic variables.

Recommendations for Further Research

- (1) Research involving training in muscular relaxation probably should be so designed that subjects experience the relaxation training daily.
- (2) Most of the major body muscles should probably be included in the relaxation exercises.
- (3) Subjects whose behavior is disruptive to the treatment process should be excluded from the group.
- (4) It would be advisable for the counsellors to undergo about a two-week training program in the theory and techniques to be used in the experiment. Their effectiveness would likely increase if they had considerable opportunity to practise and to become confident in the techniques.
- (5) It is recommended that future research in this area be carried out using as large a number of subjects as practically possible. This randomizes other uncontrolled variables as well as offers a safeguard against withdrawal of students.

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APPENDICES

Appendix A
Treatment Procedures
Group 1

Begin every Group 1 session with the Relaxation Techniques (approximate time is 12 minutes). Immediately following this, present the students with the Suggestions (session 1, use Form A; session 2, use Form B; session 3, use Form A, etc.). Every Group 1 session is then terminated with the following:

"I'm going to count to three now. On
the count of three, open your eyes. You
will feel wide awake and remember very well
all that I have said. One... two... three."

Group 2

Begin every Group 2 session with the Relaxation Techniques (approximate time is 12 minutes). Immediately after, present the following to the students:

"Now, I just want you to sit there comfortably... very relaxed... for a short while. I will tell you when to arise."

When the total session time is up, present the following to the students:

"I'm going to count to three now. On the count of three, open your eyes. You will feel wide awake and remember very well all that I have said. One... two... three."

For Group 2, the procedures are identical each session.

Group 3

Begin every Group 3 session with the following statement:

"Sit back comfortably in your chair and
close your eyes."

Then present the Suggestions to the students (session 1, use Form A; session 2, use Form B; session 3, use Form A, etc.). Following the Suggestions, the Counsellor says to the students:

"Now, just sit there comfortably and quietly
until I tell you to dismiss."

When the total session time is up, the students are dismissed.

Relaxation Techniques

"Make sure all your books are on the floor... Sit right back... Have your head lean against the back of the chair... Place your arms on the arm rests on the sides of the chair...

Close your eyes, listen carefully to me and do not be bothered by any other sounds or noises. Make sure you are sitting comfortably in your chair. Just let yourself "hang loose"... relax as much as you can...

Now, don't move your arms, but make a grip with your right hand the way you would if you were going to punch a punching bag... Good. Tighten your right hand. Now, for a few seconds I want you to squeeze your hand really hard, and as you do so, feel the tightness or tension in your hand. Alright now, squeeze... harder... feel the tightness in your hand... now relax. Just let your hand... your fingers... hang loose. Compared to when you were really squeezing your hand, you now have a very relaxed feeling in your hand... Now, let yourself go and try to become more relaxed all over... Once more, I want you to go through the exercise of squeezing your right hand. Squeeze tightly... harder... harder... feel the tightness... now relax. Again, notice how relaxed your hand feels now compared to before... so relaxed...

Now, do the same thing with your left hand. Just as you did with your right hand, tighten your fist on your left hand... harder... harder... feel the tightness... now relax. It feels so much more pleasant and relaxed now compared to before. Just keep your left hand

relaxed and notice how loose it feels... Good. We'll do the exercise one more time. Tighten your left hand... harder... harder... feel the tension... now relax. Your hand feels so relaxed now. Just sit there for a few more seconds and notice the pleasant feeling of relaxation...

I want you to tighten both your right and left fists at the same time. You will feel the tension in your hands. You can feel this tightness going right up your arms to your elbows. Squeeze tightly now... harder... harder... feel the tension right from your finger tips to your elbows... now relax... Straighten out your fingers and notice how relaxed you feel right from your elbows to your finger tips... Good.

Now bend both your arms upwards at the elbows... That's it. I want you to tighten your biceps, that is, the muscles that lie on the top of your arm between your shoulders and elbows... harder... harder... feel the tension that's there... now relax. Let your arms straighten out and notice the relaxing feeling in the muscles that just a few seconds ago felt so tight... Notice the difference in feelings between then and now... Alright, once more bend your arms up at the elbow and tighten the muscles again between your shoulders and elbows... tighten them harder... real hard... feel the tightness... now relax... Straighten out your arms and feel that wonderful feeling of relaxation... Good.

I want you to hold both your arms straight out in front of you. Don't let your arms bend at the elbows at all. See how straight you can make your arms. As you do this, you will feel tightness in

a group of muscles that lie on the underside of your arms between your shoulders and elbows. Alright, now make your arms as straight as you can... try harder... feel the tension on the underside of your arms between your shoulders and elbows... try harder... now relax... Those muscles that were so tight a few seconds ago now feel very relaxed... Good. One more time now, straighten your arms out in front of you. Make them as straight as you can... try harder... feel the tension... harder... relax... What a difference you feel when your arms are tight... and when they are relaxed... The relaxing feeling can be felt in your arms right from your shoulders... to your finger tips... Even let them relax further...

For the last few minutes, we've been relaxing your arms. Now we're going to do the same sort of thing with the muscles of your head, neck and shoulders. Keep your eyes closed and be sure you are sitting very comfortably in your chair.

I want you to wrinkle up your forehead, easily done by pushing up your eyebrows. As you do this, you will feel tension in your forehead. Now, wrinkle up your forehead tightly... harder... harder... feel the tightness in your forehead... relax... Notice the different feeling when your forehead is tightened up... and when it is relaxed... Again, wrinkle up your forehead tightly... tightly... feel the tension... now relax... Just sit there for a few seconds and feel the relaxation in your forehead...

Now, I'm going to get you to frown. You can easily frown by tightening the muscles of the eyebrows. Alright, frown really tightly...

harder... really tightly... feel the tension in the eyebrows... now relax... Your eyebrows feel very relaxed now... Good.

Although your eyes have been closed all the time, I now want you to close them very tightly. Alright, very tightly now, close your eyes... more tightly... feel the tension in your eyes...tightly... now relax your eyes, keep them closed but feel them relax... What a difference you feel in your eyes now that they are relaxed... That's good. It is very important to relax the muscles of the eyes so we are going to do the eye exercise once more. Alright, close your eyes very tightly now... very tightly... feel the tightness in your eyes... tightly... relax... You can really feel the relaxation in your eyes... Good.

Now, I want you to imagine you're holding something with your teeth. To do this, of course, you must push your teeth together very tightly. As you do this, you will notice tension in your jaws. Alright, push your teeth together very tightly... tightly... feel the tightness in your jaws... tightly... now relax... Open your lips just a little... Compared to a few seconds ago, your jaws feel so much more relaxed now... It's a good feeling...

Press your tongue hard against the roof of your mouth... as hard as you can... there's a real tight feeling in your tongue... really push your tongue hard... now relax... Your tongue is so much more relaxed now... That's good.

Now, press your lips together very tightly... as tightly as you can... feel the tension in your lips... press harder... now

relax... You can feel the relaxing feeling in your lips...

We have relaxed most parts of the face now. Feel the relaxation in the parts as I say them... your forehead... eyebrows... eyes... jaws... tongue... and your lips... The relaxation seems to get greater all the time...

We will now relax the neck. Push your head back against the back of the chair... push heavily against the chair... heavily... rotate your head slowly to the right... notice the tension in the neck... Now, slowly rotate your head to the left still pushing heavily against the back of the chair... Bring your head forward and press your chin against your chest... strongly... feel the tension in the neck... Now, once again rest your head against the back of the chair and relax... Your neck feels so relaxed now...

I want you to shrug your shoulders... Raise your shoulders up and tighten the muscles in the shoulder area... real tight... feel the tension... real tight... now relax... Your shoulders feel so much more relaxed now than they did a few seconds ago...

When you think about it, you feel so relaxed in the forehead... eyebrows... eyes... jaws... tongue... lips... neck... shoulders... upper arms... lower arms... hands... fingers... This feeling of relaxation can be spread all over you... to your chest... stomach... back... legs... feet... toes... Each time we meet, you will be able to reach even greater degrees of relaxation in even less time than we've taken today."

Suggestions

Form A

"I'm going to talk to you about a few things that you will find very interesting... things you will think about. If you pay very close attention, you will feel better by knowing these things...Also, you will find that you are able to work better in school activities.

One thing that may help you along in your schoolwork is a new attitude about school itself. Perhaps you have wondered how important it really is to get an education. Each time we meet, you will find out more and more that education is a good thing to have. You will find yourself wanting to learn as much as you can in school. As you begin to realize that school is a good place to be, you will find yourself doing much better work in school. Most people like to enjoy what they're doing... most people like to do a good job. These things can happen once your work becomes important to you. If you don't really understand the good of something, it's often difficult to become involved. Each time we meet, you will find out all the more that school gives you the chance to learn a great deal... It gives you a chance to do something... to do something that's going to help you. You don't have to look far into the future to understand how hard life would be without education... You've already learned quite a bit about language... how to talk to your friends... how to understand what they're saying... You've learned a lot about mathematics... almost every day most people make use of numbers one way or another... You will learn all the more how important school is to help you get along in life...

Perhaps one of the things that's been bothering you a little bit up 'til now is that you just can't seem to settle down and study ... Each time we meet, you will find that your studying habits are getting a little bit better. It's a good idea to set up a pretty regular studying pattern. If you had trouble concentrating before, you may find improvement now. You probably will notice that you are becoming less easily distracted now... I already mentioned that developing a good attitude towards school helps you in many ways... One way you will be helped is that you will find yourself much more involved with your schoolwork... as a result of this, of course, you will not be so easily distracted... Your ability to concentrate will be gradually increased... When you are doing your homework, work for 50 minutes and then take a 10 minute break... Do the hard homework first for as time goes by you get somewhat tired no matter what you're doing... Always keep a dictionary close by to help you out, or if one is not handy, ask for help from someone you feel comfortable with... A combination of a better attitude toward school and a better system of studying will help you to improve your marks in your school courses...

Another thing that will help you both in your personal life and in your school work is to develop the ability to remain relaxed ... Some people seem to think that unless you're really anxious, or up-tight, you're not the least bit concerned. This is not so. You are finding out more and more all the time that your school life is something that you are concerned with... for sure, it's an important part of your life... but instead of becoming really anxious about it,

use this energy to become more productive by organizing your work, reviewing or other things that will help you out... Clearly, being relaxed not only helps you feel better, but it helps you to work better... Don't let the many little things that bother people make you anxious; instead of getting up-tight, allow yourself to think clearly and productively, whether problems arise at school, with your friends or at home... Always remember, when something begins to bother you, just remind yourself to remain calm and save your energy for something that's going to help you... Stay relaxed...

You may soon begin to find out something very important about yourself... You may discover that you are able to do well in many activities. For one reason or another, people often don't give themselves enough credit... they don't seem to realize just how capable they are. You may begin to find out that you're able to do things you never knew you could do. Generally, you may discover that you're a more capable person than you ever realized. Just feeling that you're able to do a job well, will help you in your work... Little by little, day by day, you will become more sure of yourself... you will develop more self-confidence... When you start a task, you may say to yourself: "I know I can do this." Then get down to work and do it... Show yourself, and others, that you were right. As you find yourself getting your work done, and doing a good job of it, all the more you will realize what you can do... all the more you will develop confidence in yourself... and all the more you will find out how enjoyable it can be to do a job well... You may find yourself doing better in lots of things... not only in schoolwork... but in most of the things you start to work on...

whether it be at school... with your friends... or at home...

I've talked about a lot today. There are several things I want to stress... One was the importance of developing a good attitude about school... just realizing that school is a good place to be... that education is a good thing to have... helps you to become more involved and to do better work... You may find yourself thinking more and more this way...

Another thing I talked to you about was study habits. I stressed that good study habits help you to improve your schoolwork... Day by day, you may realize all the more that you are able to concentrate on your work... and that you really don't mind setting aside time each night to do your homework...

The importance of relaxation was stressed to you... Feeling relaxed not only makes you feel good... it also helps you to work better... You may soon begin to realize how important this is... Perhaps with each passing day you will find yourself more able to remain relaxed...

Finally, I told you how important it is for you to realize that you're an able person... that you have real capabilities... that you can do many things very well... Probably every day you will discover, if only just a little bit at first, that you're able to do many things well... and you will gradually develop more self-confidence."

Suggestions

Form B

"Since the last time we were together, you've had a little bit of a chance to become more aware of some of the things I said to you. These things take time, but little by little you may learn to understand and agree with what I tell you... As you do so, you will probably find yourself becoming a happier, more relaxed person... and a more successful student...

Maybe some of the things are already becoming a little bit clearer to you... Perhaps slowly but surely you may be noticing a change in your attitude about school... School is not a bad place to be... It doesn't matter what you do, some days will probably be better than others... Compared to before, you may find yourself enjoying more and more good days at school... the not-so-good days will happen less and less often... Part of the reason for this may be that you're getting more interested in your schoolwork... it's becoming a little more important to you... These sorts of attitudes help you to enjoy more good days at school... As you find yourself becoming more involved with your schoolwork, very likely you will show improvement in your course marks... The feeling of satisfaction you get from doing a good job helps you to develop a good attitude towards school... You can begin to see how much "good" can develop from this... To some degree, you may be noticing some of these things already... With time, you will become more aware of them, and as you do so, you will be all the more glad that you're attending school... all the more pleased that you're

starting to do better work in school... and all the more proud of what you are able to do...

Almost always, one thing that helps students to improve their schoolwork is to make use of good studying habits. Many students could do so much better work if they only developed good study habits. With so many hours in the day, it's not really difficult to set aside a little bit of time each night to do your homework... You may gradually be finding out that this is a good idea... As you find yourself getting to like school perhaps just a little more than before... as you become more aware of the satisfaction from doing a good job... you will become more willing to get to your homework each night... and, of course, getting your homework done properly helps you in turn to do better work in school... You may already be noticing, if just a little bit at first, that you're able to concentrate on your work more than you were able to some time ago...

This improves with time... You will become less easily distracted all the time... Be sure to be organized when you're doing your work... Review often... You will find yourself becoming better at these things... and all the more you may discover that schoolwork can be enjoyable... and that you are able to become a good student...

Very likely, many students are not doing as well as they could in school because they are too anxious... too up-tight... People are able to think and work much better when they feel relaxed... Sometimes it's pretty hard to be relaxed when many things are on your mind...

when there seems to be so much to do... but you can do it... Sometimes a person doesn't even know he's anxious, but at such times just thinking of the word "relax" can make you realize how up-tight you were... You are slowly developing the ability to remain relaxed... This will not only make you feel good... but it will also allow you to do much better work... Perhaps a combination of studying more often and working harder in school will help to keep you feeling relaxed... You may find that working hard not only keeps your mind off your worries... but by working hard you will improve your schoolwork... and this too will result in a happier... more relaxed... you... Little by little, day by day, you may find some of these things happening to you... Always remember... you are able to control your anxieties... you are able to lead a happy, relaxing life... you are slowly but surely finding these things to be true...

As you become more aware of these things happening... you will notice that you're able to do many more things than you ever realized ... You may find yourself more successful in things you do at school... with your friends... and at home... In other words, you may discover that you never did give yourself quite enough credit... Like everyone else, you will always have your strengths and weaknesses... but somehow you just gradually may be finding out that you can do so much more than you realized... You may slowly be growing a little more sure of yourself; that is, you may be increasing your self-confidence... This is very important. This feeling of confidence helps you to keep working at a job until you finish... it allows you to get to the point where

you can feel really good about doing a job well... Little by little, day by day, you will feel more confidence in yourself... you will feel yourself to be a very able person... you will realize that once you start a task, you are capable of doing a good job of it... Doing a good job of it will help you to increase your self-confidence in your next task... In this way, you will not only become aware of what you're able to do... but you will also become successful in working towards doing these things...

I've talked about a fair bit today. There are several things I wanted to stress... One was the importance of developing a good attitude about school... just realizing that school is a good place to be... that education is a good thing to have... helps you to become more involved and to do better work... You may find yourself thinking more and more this way...

Another thing I talked to you about was study habits... I stressed that good study habits help you to improve your schoolwork... Day by day, you may realize all the more that you are able to concentrate on your work... and that you really don't mind setting aside time each night to do your homework...

The importance of relaxation was stressed to you... Feeling relaxed not only makes you feel good... it also helps you to work better... You may soon begin to realize how important this is... Perhaps with each passing day you will find yourself more able to remain relaxed...

Finally, I told you how important it is for you to realize

that you're an able person... that you have real capabilities... that you can do many things very well... Probably every day you will discover, if only just a little bit at first, that you're able to do many things well... and you will gradually develop more self-confidence."

Appendix B
Inter-Correlations of Pre-Experimental Data

	a)	b)	c)	d)	e)	f)	g)	h)	i)	j)	k)
a) IQ		.50*	.66*	.43*	.72*	.34 ⁺	.32°	-.14	.19	.03	.14
b) Social Studies			.31°	.19	.67*	-.18	.18	-.11	.27°	.32°	.18
c) Mathematics				.45*	.80*	-.06	.18	-.13	.09	.11	.15
d) Science					.72*	-.22	-.05	-.15	.08	.01	.13
e) Achievement Aggregate						-.20	.15	-.17	.20	.20	.20
f) Discrepancy Score							.06	-.11	-.11	-.24	-.12
g) Body Sway								.10	.12	-.01	-.04
h) Anxiety									-.16	-.14	-.49*
i) Study Habits										.65*	.60*
j) Scholastic Attitudes											.39 ⁺
k) Self-Esteem											

* P < .001 ⁺ P < .01 ° P < .05

Appendix C

Summary of Analyses of Covariance

Treatment (Groups 1, 2 and 3 combined)vs No Treatment (Group 4)

Variable	Sources of Variation	Mean Squares	Degrees of Freedom	Adjusted F	P																																	
Achievement Aggregate	Between	0.59	1	0.49	0.485																																	
	Within	1.19	58			Anxiety	Between	36.98	1	0.38	0.542	Within	98.30	58	Study Habits	Between	223.07	1	2.72	0.105	Within	82.08	57	Scholastic Attitudes	Between	76.10	1	1.06	0.307	Within	71.66	57	Self-esteem	Between	41.61	1	1.11	0.297
Anxiety	Between	36.98	1	0.38	0.542																																	
	Within	98.30	58			Study Habits	Between	223.07	1	2.72	0.105	Within	82.08	57	Scholastic Attitudes	Between	76.10	1	1.06	0.307	Within	71.66	57	Self-esteem	Between	41.61	1	1.11	0.297	Within	37.58	56						
Study Habits	Between	223.07	1	2.72	0.105																																	
	Within	82.08	57			Scholastic Attitudes	Between	76.10	1	1.06	0.307	Within	71.66	57	Self-esteem	Between	41.61	1	1.11	0.297	Within	37.58	56															
Scholastic Attitudes	Between	76.10	1	1.06	0.307																																	
	Within	71.66	57			Self-esteem	Between	41.61	1	1.11	0.297	Within	37.58	56																								
Self-esteem	Between	41.61	1	1.11	0.297																																	
	Within	37.58	56																																			