# BEHAVIOURAL METHODS FOR THE CONTROL OF EXAMINATION ANXIETY: AN EXPERIMENTAL INVESTIGATION

Thesis

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By

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TO MY PARENTS & SISTER...

...SOMEDAY I MAY DESERVE THEM

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G.K. NORTON
JANUARY '83

# ABSTRACT

In 1982, it was reported that one in every three students who fail at South African universities, do not pass because of experiences of excessive anxiety resulting from university examinations.

A survey conducted amongst student counsellors and counselling services on all South African university campuses, revealed a deficiency of group- and individual- therapy for this phenomenon of examination anxiety. The cause of this deficiency, was found to be the already excessive demands made on the time of student counsellors.

Noting a similar situation at Rhodes University, the present investigation was initiated, with the aim of developing an economical group-counselling programme for test anxious students on Rhodes campus.

Sixty-four Rhodes students (who identified themselves as test anxious) volunteered for this investigation. These Subjects were randomly assigned to one of four treatment programmes (each divided into two groups, where Group A, N=6 and Group B, N=7) and a wait-list control group (N=12).

Three of the treatments featured multicomponent programmes, each offering a cluster of behavioural interventions centred around:

- Study Skills Training/Counselling;
- Systematic Desensitisation (Using individually-constructed anxiety hierarchies);

and
- Systematic Desensitisation (Using group-constructed anxiety hierarchies).

Included in addition, was a single-component treatment, featuring cognitive modification: a component much favoured by local test anxiety counsellors. Given adverse reports concerning the efficacy of single-component programmes, when contrasted with multicomponent treatments, the cognitive modification package was included as a placebo.

A battery of measures was used to assess test anxiety and progress made by Subjects to assuage its debilitative effects. The measures included: (a) Six Self-report measures (including a treatment evaluation schedule and the maintenance of a diary of experience by each Subject); (b) Two measures of physiological reactivity, viz. pulse rate and finger sweat

print; and (c) One 'observable' measure, that of academic performance.

Using these measures, an assessment of the performance gains or losses by each of the Subjects, was made on three occasions: at pre-treatment, post-treatment and 6-month follow-up.

In support of the a priori hypotheses, the systematic desensitisation and study skills multicomponent programmes, realised significant gains on all measures over both the placebo and control groups (with exception of the higher score achieved by placebo subjects over that of the study skills group, on the treatment evaluation schedule). This finding confirmed the superiority of multicomponent programmes over those with only a single component.

The systematic desensitisation programmes proved to be the most effective, as measured on self-report and physiological measures. The superiority of group-constructed anxiety hierarchies over those individually-constructed was established. Study skills training helped Subjects to realise and maintain gains on the academic performance measure, although it took many of these subjects six months, before they had fully incorporated the study techniques taught, in with their own study habits.

In discussion of the findings, the evident need to match test anxious students to programmes which "best suit" their characteristics, is presented, and solutions proposed.

Weaknesses evident in the measuring instruments and research design, are also highlighted for discussion.

As part of this experimental investigation, a discussion on the nature of test anxiety and its links with anxiety theory is introduced, together with a review of problems in measuring test anxiety; popular behavioural treatments used to relieve test anxiety; and a survey of test anxiety counselling on South African campuses.

Advice for the therapist/counsellor, the academic, and the researcher, are posited in conclusion.

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## Special Note to the Reader...

In both the literature reviewed on the present topic, and in this report of an experimental investigation, the concepts of "test anxiety" and "examination anxiety", have identical meaning.

For this reason, these terms have been used interchangeably throughout this report.

GKN '83

# PART ONE

Towards an Understanding of
Test Anxiety-
Background to the Present Investigation

CHAPTERS 1 TO 3

# CHAPTER ONE

## THE HISTORY & NATURE OF TEST ANXIETY

## 1.1 PERSPECTIVES ON ANXIETY

### 1.1.1 Introduction to the Concept of Anxiety

In the course of his meticulous synthesis of theories relating to anxiety, Rollo May (1950), proposed as his definition that:

> " Anxiety is the apprehension cued off by a threat to some value that the individual holds essential to his existence as a personality." (Pp 205)

May continued by noting that the "threat" may be to:

> " ● PHYSICAL LIFE (threat of death)
>
> ● PSYCHOLOGICAL EXISTENCE (loss of freedom, meaninglessness) OR
>
> ● TO SOME OTHER VALUE WHICH THE INDIVIDUAL IDENTIFIES WITH HIS/HER EXISTENCE (such as 'success')."
>
> (May,1950,Pp 206 - Emphasis by feature blobs mine)

May goes further to observe that contrary to fear, anxiety attacks the foundation of the personality; the individual cannot "stand outside" the threat and is unable to objectify it. Thus, he explains:

> " Anxiety is objectless because it strikes at the basis of the psychological structure on which the perception of oneself as distinct from the world of objects occurs."
>
> (May,1950,Pp 207)

Other perspectives concerning the nature of anxiety abound, but for the purpose of this discussion, I wish to refer to the work of I.G. Sarason, an American researcher specialising in theoretical and practical issues concerning anxiety.

In 1967, Sarason et al. noted that:

> " Anxiety may be viewed as an inferred class of internal responses, consisting of self-oriented thoughts and emotional reactions. The highly anxious individual is one who is especially prone to become preoccupied with himself, his inadequacies and the impression he makes on others. These preoccupations may be viewed as interfering with many ongoing activities." (Pp 493)

Later, in 1978, Sarason observed that one source of confusion about anxiety was the lack of agreement over whether the word anxiety should refer:

(a) To observable or recordable events
(such as accelerated heart and breathing rates,
and self-reports)

or (b) To an entirely hypothetical state.

This confusion is heightened, in the view of Sarason (1978), by the frequent, almost simultaneous use, of "anxiety" in both of these two senses.

Freud, for example, referred to certain observable symptoms as anxiety (notably personal tension and discomfort) at some points in his writings, while at other times, he sees anxiety as an inferred unconscious process that elicits defensive manoevres on the part of the Ego (Freud,1936).

For Sarason however, it is apparently essential that an analysis of anxiety begin with the objective properties of situations and the individual's interpretation of them. Regardless of the objective situation, it is this personal interpretation of the situation that leads to the behaviour.

Sarason's belief, is that we are all equipped with an "information processing system", of which cognitive appraisal is an important part (such appraisal including categorising and interpreting events).

In this framework, Sarason sees anxiety as a type of cognitive response marked by self-doubt, feelings of inadequacy and self-blame. Given this perspective, one might say that whereas stress often inheres in one's interpretation of a situation, anxiety is a response to perceived inability to handle a challenge or unfinished business in a satisfactory manner.

Sarason (supporting Klinger,1975) cites five characteristics of anxiety responses:

" (1) The situation is seen as difficult, challenging and threatening.

(2) The individual sees himself/herself as ineffective in handling the task at hand.

(3) The person focuses on undesirable consequences of personal inadequacy.

(4) Self-deprecatory preoccupations are strong and interfere or compete with task-relevant cognitive activity.

(5) The individual expects and anticipates failure and loss of regard by others."

(Sarason in Spielberger & Sarason,1978,Pp 196)

Sarason said these characteristics can be linked to situations through experience. Anxiety, he suggested, might be associated with any or all of the following:

(a) Anticipating a situation;
(b) Experiencing a situation; and
(c) "Recovering" from it.

Additionally, he notes there are varied, often quite idiosyncratic 'biophysical concomitants' of anxiety (for more details, the reader is directed to Sarason's article in Spielberger & Sarason,1978).

## 1.2 ANXIETY - A NECESSARY EVIL ?

While both May and Sarason explain anxiety as an apparently 'unfortunate' human trait, it must be stressed here that anxiety serves a definite purpose in human experience. Anthropologists, for example, remind us that anxiety once served to protect the existence of the caveman from "wild beasts and savage neighbours" (Ritter,1928).

Today however, "social prestige goals" (as May puts it), which are exemplified in competitive success, are dominant in Western culture, and have been so since the time of the Renaissance; hence anxiety results out of a concern that...

"...we are losing out in the competition, and may become unwanted, isolated and ostracized as a consequence (especially in view of the thesis that competitive success is also the dominant criterion of self-validation)."

(May,1950,Pp 232)

But clearly, from what May says, the purpose of anxiety today is still to protect us from the dangers that threaten the same things as the cavemen; our existence or values that we identify with our existence.

Quoting again from May, he stresses that:

> " Anxiety cannot be avoided, but it can be reduced. The problem of the management of anxiety is that of reducing the anxiety to normal levels, and then to use this normal anxiety as stimulation to increase one's awareness, vigilance, zest for living." (May,1950,Pp 363)

And later, he concludes:

> " A person is subjectively prepared to confront unavoidable anxiety constructively when he is convinced (consciously or unconsciously) that the values to be gained in moving ahead are greater than those to be gained by escape.... let us picture anxiety as resulting from a conflict between the threat on the one hand and values the person identifies with his existence on the other. Then we can see that neurosis and emotional morbidity mean that the struggle is won by the former (the threat), whereas the constructive approach to anxiety means that the struggle is won by the latter." (ibid. Pp 378)

Further supporting the importance of anxiety as an inherent part of the human experience, Dutch researcher, J. Bastiaans (1978) observed in his construct of a hierarchical "organismic" model of personality functioning, that anxiety has a "paramount life-preserving function". Although writing within the framework of the medical model, and thus with a physiological bias, Bastiaans message serves to underline the importance of anxiety as "a stimulating (or motivating) feature of the human condition" (Pps 220-221).

Many authors have also linked the concept of anxiety as a motivating force, with a broad concept of 'intelligence'. For example, Kierkegaard and Goldstein (1976) have confirmed that the more creative and productive the personality, the more anxiety-creating situations it confronts.

Thus, in the case of university students for example, those who do especially well in their studies and are, presumably, particularly gifted, have more anxiety; i.e. they respond to all types of stress with anxiety. In addition, Kjerulff & Wiggins,1976, have found that students who are less competitive, blame themselves or others for their poor performance, this relieving them of anxiety.

Furthermore, according to Simpowski (1973), anxiety can either inhibit or facilitate performance, depending on its strength and the individual's creative potential. Highly creative individuals perform cognitive tasks under stress better than those who are less-creative.

Thus, many psychologists believe that anxiety facilitates performance up to a point, then as the anxiety level rises and tends to become overwhelming, it is debilitating; this observation finds expression in the Yerkes-Dodson Law. One interpretation of this Law, is proposed by Collins (1973) who interprets it thus:

> " When anxiety is low, efficiency and satisfaction with life are low. Efficiency and satisfaction are also low when there is high anxiety. When a medium amount of anxiety is present, efficiency of behaviour and general satisfaction with life are both high."
> (Pp 17; also see Figure 1.F1)

J.P. Denny (1966) suggests that possibly the difficulty of the task itself causes anxiety in the less able. By this view, other people (presumably the "more intelligent or creative"), seek anxiety to arouse themselves to achieve higher quality performances.

Figure 1.F1

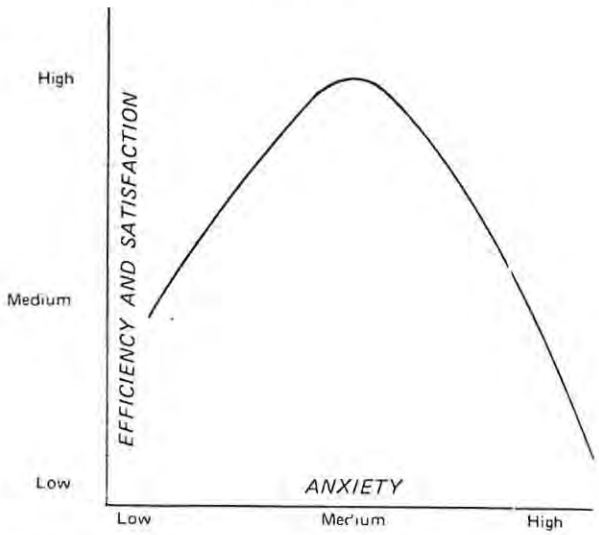


FIGURE 1.F1

A GRAPHICAL ILLUSTRATION OF 'THE EFFECTS OF ANXIETY' (SEE TEXT); EXTRACTED FROM COLLINS (1973) Pp 16.

Supporting Denny, May (1950) in fact suggests that there are lessons to be learned from the much-maligned studies of rats. In this regard, researchers at Cambridge University found that any general arousal, including pain and "anxiety", stimulates learning.

It was also found that rats in a crowded pen, which assumedly puts them under stress, warded off disease (Tuberculosis) better than those who were not crowded.

When the organism, in other words, is put on its mettle, aroused even by pain and inconvenience, it functions better. The carry-over to this work could be stated simply: a moderate amount of anxiety has a constructive effect on the organism.

## 1.3 INTRODUCTION TO TEST ANXIETY *1

### 1.3.1 Test Anxiety Defined

In 1967, Irwin Sarason defined a highly test anxious person operationally as:

> "...one who admits to tension, worry and feeling upset before, during and after taking tests (or exams). He has been hypothesised to be fearful of tests and of situations in which he feels he might be evaluated in some way. He has been viewed as being excessively fearful of failure. While virtually all people are challenged and made anxious by the possibility of being evaluated by others, highly anxious individuals seem not to have available responses which are adaptive in coping with testing situations.
>
> Rather, they often seem either to remain at a level of rumination and fear or to respond maladaptively in such a way as to interfere with ongoing performance." *2
>
> (Pp 493)

Moreover, Mitchell & Ingham (1970) emphasise that whether or not test anxiety is rational or irrational,

> "...it is experienced as a debilitating force which disrupts the capacity of the student to concentrate, think and remember, and is generally accompanied by states of extreme tension, restlessness and in some cases muscular contraction, headache and nausea." (Pp 69)

The onset of these disruptive states before and during examinations obviously causes difficulties for students since academic success is based substantially on performance in exams. Earlier, Spielberger (1962), reported that highly test anxious students received lower grades and had a higher academic failure rate than non-anxious students of equal intelligence.

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*1 / The terms "test anxiety" and "examination anxiety", have been used interchangeably throughout this report; see 'Special Note to the Reader' on Page xii.

*2 / The concept of high (debilitative) and low (facilitative) test anxious students was first introduced in 1952 by Mandler & Sarason and rests on the premise that a moderate amount of anxiety is required for optimal performance to be attained (see, for example, the Yerkes-Dodson Law in Section 1.2).

In other words, the highly test anxious individual is said to underachieve academically*1. Still supporting this view in 1966, Spielberger wrote of:

> "...many students (who) reported that, although they 'knew' the answers to test questions, they were often unable to reproduce them because they 'blocked' or 'choked up' in the test situation. As a result, the student's level of achievement was not commensurate with his intellectual aptitude and his confidence in his own abilities was seriously undermined." (Pps 361 & 362; parenthesis mine)

Before discussing the precise nature and some theories of test anxiety, a brief history of this phenomenon, that so plagues scholars and students alike, will be presented.

### 1.3.2 A History of Test Anxiety

Spielberger et al. (1978) have noted that since the turn of the century, the emotional reactions and physiological changes experienced by many students during examinations have received increasing attention from physiologists and psychologists.

However, in the early studies, there was little interest in individual differences in test anxiety and attention was focussed on physiological changes that accompanied emotional arousal in test situations. For example, Folin, Dennis and Smillie (1914) found that:

> "...approximately 18% of a group of medical students passed sugar in their urine immediately after an examination, whereas these same students showed no trace of sugar before the examination." (Cited in Spielberger & Sarason, 1978, Pp 169)

This finding was supported many years later by Walter Cannon (1929).

The first reported non-physiological approach to "underachievement" (as test anxiety was initially called) dates from 1927, when Lemon delivered a "how to study course" to a group of first-year American college students. A similar study was conducted the following year (1928) by Ferguson (see in Bednar & Weinberg, 1970, for further details).

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*1 / In the research literature, underachievement is usually defined in terms of a discrepancy between observed & expected academic performance

A few years later in Europe, "academic guidance" received much attention from investigators in the pre-war era. For example, Neumann (1933) published the first book dealing with the subject of test anxiety, while other German researchers published papers on its aetiology (Redl,1933; Stengel,1936) and treatment (Bergler,1933; Weber,1934). These researchers conceptualised test anxiety in psychoanalytic terms and attributed the cause to "traumatic childhood experiences".

In the United States, Charles H. Brown (in 1938) was the first to draw public attention to the seriousness of the problem of test anxiety, for American university students. Brown's public utterances on this phenomenon were prompted by two student suicides at the University of Chicago in 1938. Commenting on the cause of the suicides, Brown said:

> " One of these was definitely due to worry over an approaching examination and the other presumably was....these incidents show that students are taking their exams more and more seriously, and that the emotional reactions of students before examinations is an important problem."
>
> (1938,Pp 14)

He went on to observe:

> " Students who become excited before exams, tend, on the whole, to do a little poorer in the examination than those students who are calm before the examination."
>
> (ibid. Pp 15)

While Brown's statements may appear too simplistic a view of test anxiety, his findings can (according to Spielberger & Sarason, 1978) be said to have provided an excellent research platform for the later researchers, such as Sarason & Mandler (1952, see on for discussion of their work).

After the Second World War, American counsellors and psychologists generally spent much of their time and effort investigating test anxiety, while developing effective methods for its treatment.

By 1955, following a detailed survey, W.S. Blake reported that over 90% of colleges in the United States offered some kind of study skills course to selected groups of students, while 10% of the colleges prescribed such courses for all first-year college students (see in Entwisle,1960).

This is not surprising when researchers like Spielberger (1966) were reporting that as many as 1 in 4 failures occurred solely as a result of debilitative (or high) test anxiety.

This led Seymour Sarason (1959) to accurately observe:

> " We live in a test-conscious, test-giving culture in which the lives of people are in part determined by their test-performance." (Pp 26)

Indeed, this observation has also been claimed to be true of many other cultures. For example, the famous Russian psychologist, Alexander Luria also conducted research into examination stress in 1938. More recently, Polish psychologist and researcher, Hanna Eliasz (1977) has noted the proliferation of studies into test anxiety, both in Poland and other East European countries, where the emphasis was on test anxiety seen as an inherent personality trait.

In 1966, Katahn et al. observed:

> " While test anxiety seems to be fairly widespread among college students, the magnitude of the problem together with the lack of clearcut therapeutic procedures has discouraged the development the development of regular continuing programs for test anxious students on most college campuses." (in Calef & Sundstrom,1974,Pp 544)

Despite this discouragement however, countless researchers have been working on the development of sound theories to explain test anxiety and so to develop 'regular continuing programs' to control it; now follows a discussion of a few well-supported theories by researchers in this field.

## 1.4 THE NATURE OF TEST ANXIETY

### 1.4.1 Test Anxiety as Conditioned Emotional Reactivity (after Mandler & Sarason, 1952)

George Mandler & Seymour Sarason are generally credited with having conducted the seminal work on test anxiety.

In the words of George Allen (1980):

> " Their (Mandler & Sarason) major contribution was to embed in a theoretical framework what had previously been a research curiosity. In formulating a nomological net explaining how anxiety in exam situations influences performance, they transformed test anxiety into a construct which rapidly became the object of much systematic investigation."
> (Pp 83; parenthesis mine)

Mandler & Sarason (1952) found that decrements in the performance of test anxiety students were attributable to the arousal of task-irrelevant responses in test situations. More specifically, it was their contention that exam situations come to be associated with two types of learned drives:

(a) Task Drives
- Which are reduced by completion of the task.

and (b) Anxiety Drives
- Which evoke either task-facilitating or task-interfering responses.

Concerning anxiety drives, Wine (1971) observes that while the task-relevant responses are ones which are specific to the task and must be learned during task performance, self-oriented responses are a class of generalised responses which are readily evoked in a task situation, and interfere with the learning of specific task-relevant responses.

Mandler & Sarason (1952) developed a questionnaire (the Test Anxiety Questionnaire) to assess individual differences in the tendency to emit such responses when faced with intelligence tests and academic examinations. To these authors, evaluative situations are considered to evoke a high level of drive in people with both high and low levels of test anxiety. Those with high anxiety would experience physiological arousal as distressing, having been conditioned to emit task-irrelevant responses in such situations. The anxiety drive would serve to energise individuals low in test anxiety, leading to facilitation of task performance.

Allen (1980) sums this up well:

> " Stressful evaluative situations would cause performance decrements in individuals who were highly test anxious

while enhancing the performance of those with little anxiety. In the absence of drive activation, no performance differences would exist."
(Pp 83)

### 1.4.2 Reformulations of Test Anxiety emphasising Attentional Deficits

While the theory of Mandler & Sarason held centre-stage and widespread support from researchers in the field of test anxiety, throughout the 1950s and early 1960s, several researchers began to evolve theoretical constructs which de-emphasised the central function of emotional reactivity in an understanding of test anxiety.

In one of the first moves towards an "attentional" interpretation of test anxiety, Mandler & Watson (1966) (and later, Marlett & Watson, 1968) have found in their research, that high test anxious individuals in situations where their performance is being evaluated, spend more of their time:

" (a) Worrying about their performance and about how well others are doing;

(b) Ruminating over alternatives; and

(c) Being preoccupied with such things as feelings of inadequacy, anticipation of punishment, loss of status and esteem, and heightened somatic and autonomic reactions."
(Meichenbaum, 1972, Pp 370)

The Americans, Liebert & Morris (1967) developed their own attentional perspective of test anxiety, when they viewed this phenomenon as consisting of two major components: WORRY and EMOTIONALITY (the constituents of these two components are summarised in tabular form in BOX 1A).

It was also in 1967, that Liebert & Morris published the Worry-Emotionality questionnaire (WEQ), which sought to measure what they saw as this conceptually important distinction between worry and emotionality.

In their view, emotionality refers to the preception of unpleasant autonomic arousal in response to stressful testing situations (for example: "I feel my heart beating fast.").

Worry described more evaluative concerns; the harmful consequences of failure and the lack of confidence (for example: "I do not feel very confident about my performance on this test.").*1

**BOX 1A** — DEFINITIONS & EXAMPLES ILLUSTRATING THE TWO COMPONENTS OF LIEBERT & MORRIS (1967) WORRY -EMOTIONALITY INTERPRETATION OF TEST ANXIETY

TEST ANXIETY

| W O R R Y (COGNITIVE FACTORS) | E M O T I O N A L I T Y (INDICES OF AUTONOMIC AROUSAL) |
|---|---|
| ° DEFINED as being "A primarily cognitive concern about the consequences of failure, or expressing one's doubt to perform adequately."<br>° ALSO described as a "preoccupation with performance."<br>° EXAMPLE: "I do not feel very confident about my performance on this test." | ° DEFINED as consisting of: "Autonomic (affective and physiological) reactions evoked by evaluative stress."<br>° EXAMPLE: "I feel my heart beating fast." |

(DEFINITIONS & EXAMPLES EXTRACTED FROM LIEBERT & MORRIS (1967) Pp 975 AND FROM DOCTOR & ALTMAN (1969) - THE TABLE HAS BEEN DEVISED FOR THE PRESENT STUDY)

In 1969, Liebert & Morris, reported evidence that worry was associated with performance decrements on cognitive and intellectual tasks, whereas emotionality was unrelated to task performance, with the exception of students with low worry scores.

It was hypothesised that worry would be inversely related to performance expectancy. The reasoning behind this, according to Liebert & Morris (1969) is that because...

> "...worry is primarily a cognitive concern about the consequences of failing, in situations where persons expect success, considerations of worry should be minimised. In contrast, when poor performance is expected, they should be maximal." (Pp 975)

On the other hand,

> "...indices of anxiety which are primarily autonomic or emotional in nature, were hypothesised to reflect the immediate uncertainty of the test-taking situation.

*1 / According to Sassenrath (1964) & Gorsuch (1966), the distinction between worry & emotionality was based primarily upon prior factor analysis of the Test Anxiety Questionnaire (of Mandler & Sarason, 1952).

> Thus emotionality should be highest when one's own performance is least certain." (ibid. Pp 975)

This prediction accords well with the earlier work of Atkinson & Feather (1966), who developed a "risk-taking model", in which test anxiety is assumed to be an indication of the strength of the motive to avoid failure. This motive and the anxiety associated with it, is held to be highest at the point of maximum uncertainty (see Chapter Five in Atkinson & Feather, 1966 for details).

Elaborating on the work of Liebert & Morris, Irwin Sarason (1978) observed that worry is a cognitively demanding activity marked by self-preoccupation, self-depreciation and concern over the consequences of poor performance. He writes:

> " It (worry) would be expected to interfere with performance on complex tasks when the evaluation dimension is emphasised....It seems as though individuals for whom tests are noxious experiences...tend to overestimate to a greater degree than do others, both the time during which their performance is being evaluated and the period during which they are waiting for the evaluation to take place." (see Sarason in Spielberger & Sarason,1978, Pp 205)

In his review of test anxiety literature, Jeri Wine (1971) strongly supported the thesis of Liebert & Morris, and proceeded to propose his own attentional interpretation of the adverse effects of test anxiety on performance.

In an experiment designed to investigate just this, Wine arbitrarily failed Ss on a number of tasks; following the tasks, the Ss were required to rank-order:

- BLAME STATEMENTS (which included "self blame")

and

- OTHER THAN SELF-BLAME ITEMS

Highly anxious Ss blamed themselves for their failures significantly more than did low anxious Ss. In another study on the activation of self-focusing tendencies in testing situations, Wine cites an experiment where a post-task questionnaire included the question: 'How often during the

testing did you find yourself thinking how well, or how badly, you seem to be doing ?' On a 10-point rating scale, high test anxious Ss indicated markedly greater occurrence of such thoughts than did the low test anxious group. Studies by Neale & Katahn (1968), and Marlett & Watson (1968) support these findings.

The belief held here, is that during exams, highly test anxious students divide their attention between:

(a) TASK REQUIREMENTS
(such as timing efficiency)

and (b) TASK IRRELEVANT COGNITIVE ACTIVITIES
(such as worry and self-criticism)

Wine suggests these worry cognitions distract students from task requirements and interfere with the effective use of their time, thereby contributing to performance decrements.

As Wine (1971) says:

> " ...much like a river is often polluted by tributaries which join it on its passage to a large water destination, so too the distracting, task-irrelevant cognitions join the mainstream of task requirement thoughts, thereby reducing or inhibiting the latter's effectiveness."
>
> (Pp 99)

Thus, the highly test anxious person responds to evaluative testing conditions with ruminative, self-evaluative worry and thus cannot direct adequate attention to task-irrelevant variables.

Marlett & Watson (1968) have stated this proposition rather well:

> " The high test anxious person spends a part of his task time doing things which are not task-oriented. He worries about his performance, worries about how well others might do, ruminates over choices open to him, and is often repetitive in his attempts to solve the task. Any effort to overcome the self-defeating kind of behaviour which the high-anxious person exhibits, should concentrate on allowing him to perform without the constraints which maximise the negative effects of the avoidance behaviour."
>
> (Pp 201)

### 1.4.3 Other Interpretations of Test Anxiety

Irwin Sarason (1972) has investigated the combined influence of situational factors and personality characteristics on the performance of high and low test anxious individuals in evaluative situations.

On the basis of these investigations, Sarason concluded that high test anxious individuals are more self-centred and self-critical than individuals who are low in test anxiety and are furthermore likely to emit personalised, derogatory responses that interfere with task performance.

He describes the behaviour of test anxious people in evaluative situations, as follows:

> " Whereas the less test-anxious person plunges into a task when he thinks he is being evaluated, the high test-anxious person plunges inward. He either:
>
> (1) Neglects or misinterprets informational cues that may be readily available to him; or
>
> (2) Experiences attentional blocks."
>
> (Sarason,1972,Pp 393)

Furthermore, Sarason (1978) has noted that:

> " ...the range of reactions of the test anxious person extends from virtual immobilisation in the face of potential criticism to exhilaration at the prospect of receiving accolades. Viewed from an 'information-processing' perspective, it is important to identify the cognitive events that influence overt behaviour and the personal meaning that an effect has for the individual.
>
> The person who freezes on a final exam seems preoccupied with self-doubt and the consequences of failure, whereas the accolade-seeker seems confident and approaches the exam as an opportunity for receiving recognition. Research on test anxiety has focussed primarily on people for whom academic or intellective evaluations are worrisome events."
>
> (Sarason in Spielberger & Sarason,1978,Pp 194)

Finally, Allen (1980) describes two models of test anxiety, which (he says) have provided the theoretical foundation for the use of multifaceted therapeutic packages and highlight the complexity of the relationships between "...behaviour and situations that are encompassed within the construct of test anxiety." (Pp 85).

### 1.4.3.1 The Meichenbaum & Butler Model of Test Anxiety

In 1980, Meichenbaum & Butler presented a model, describing test anxiety as involving:

> " ...a series of self-perpetuating feedback loops between a person's core cognitive structures, internal dialogue, behavioral acts and interpretation of the consequences of such acts."
> (cited in Sarason,1981,Chap.4)

Under this model, the test anxious person possesses static, stereotypic beliefs which centre-in on helplessness and inadequacy.

The experience of even relatively low levels of emotional arousal is habitually interpreted as anxiety or distress, the effect of which is overgeneralised or magnified in ensuing internal dialogue. A typical behavioural act stemming from the dialogue involves avoidance, which usually has consequences that are interpreted as undesirable.

Meichenbaum & Butler (1980) suggest that this sequence is likely to increase emotional arousal and further validate the "central belief structure"*1.

### 1.4.3.2 Wine's Bidirectional Model of Test Anxiety

Wine (1980) has proposed a bidirectional model of cognitive attention that aims "...to integrate descriptions of the attributes of individuals with both low and high test anxiety." (cited in Sarason,1981,Chap.4)

Wine continues:

> " Those with low anxiety are characterized as possessing a strong belief in self-efficacy, as well as cognitions that are behaviorally focused, situationally specific, and problem oriented; they tend to interpret emotional arousal as energizing rather than distressing and also to be task-oriented actors as opposed to task-avoidant observers."
> (cited in Sarason,1981,Chap.4)

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*1 / Note that the interplay between these components need not be linear as here described. For example, an internal dialogue can just as easily create emotional arousal as augment it, while a negative interpretation of consequences can foster subsequent avoidance, and so on.

These theories then are a few of the most widely held perspectives on test anxiety to date; the complexities inherent in the more recent theories (notably that of Meichenbaum & Butler,1980, see previous page) further supports the claim (made by many current researchers, such as Allen 1980) that a comprehensive multicomponent test anxiety management package,is essential if attempts to help sufferers master their test anxiety and constructively control it for maximum performance benefits, are to be successful.◀

# CHAPTER TWO

THE

MEASUREMENT & MANAGEMENT

OF

TEST ANXIETY

## 2.1 MEASUREMENT ISSUES*1

### 2.1.1 Introduction to the Measurement of Test Anxiety

Sarason (1978,Pp 198) has observed that in order to use the concept of test anxiety empirically, an index of the variable is needed.

As early as 1938, Charles Brown of the University of Chicago, realised the need for the development of an instrument to identify test anxious students, out of the general population of students. In developing a questionnaire, Brown dealt with:

> "...subjective feelings of nervousness and being irritable and worried about exams." (Pp 30)

He found that these feelings were most highly correlated with scores on his scale.*2

Since Brown pioneered the first instrument to measure test anxiety, an entire gallery of devices has been developed (mostly in the United States); devices which have become increasingly complex over time.

In an attempt to categorise the many measuring instruments currently available to the researcher of test anxiety, Allen (1980) conducted a detailed review of such instruments; he noted (in his overview of 1980) that:

> "...because test anxiety is such a 'complex hypothetical construct', adequate assessment of therapeutic effects necessitates the employment of multiple methods of measurement." (Pp 85)

Allen (1980) grouped such methods into THREE broad domains:

(1) Self-Report of subjective experience;
(2) Indices of peripheral autonomic reactivity; and
(3) Direct observation of cognitive or motoric performance.

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*1 / NOTE: This Section is not intended to be a detailed review of measuring instruments, but rather to focus the attention of the reader on some of the more popular techniques, as well as some of the difficulties involved in measuring test anxiety.

*2 / Since the concept of high (debilitative) and low (facilitative) test anxiety, had not yet been formulated (see Section 1.3.1 in Chapter 1) Brown distinguished merely between "test anxious" & "non-test anxious" students, in his questionnaire.

## 2.1.2 Self-Report of Subjective Experience

Allen (1980) has suggested:

> " Test Anxiety questionnaires provide the most direct access to evaluating subjective interpretations engendered by evaluative academic situations." (Pp 86)

The first self-report questionnaire on test anxiety to be published and widely used, was the Test Anxiety Questionnaire (TAQ), constructed by Mandler & Sarason in 1952. The 37-items on this questionnaire revolve around three themes:

(1) Confidence before and during exams;
(2) Avoidance of intelligence testing situations; and
(3) Accelerated heart rate and increased perspiration when faced with an exam.

(For more details, see Gorsuch,1966, Pp 308 and Mandler & Sarason,1952, Pp 166ff.)

Six years after publication of the TAQ, I.G. Sarason (1958) developed the Test Anxiety Scale (TAS), a 21-item adaptation of the Test Anxiety Questionnaire; however, because of low internal consistency, the TAS was expanded by Sarason to 37-items in 1972.

A factor analysis of the 37-item TAS (see Richardson et al., 1977) yields factors reflecting:

> " (1) Cognitive concerns about test performance and the debilitating consequences of such worry; and
> (2) Unpleasant emotional experiences in testing situations." (cited in Allen,1980, Pp 86)

A questionnaire which is even more widely used than either the TAQ or TAS, is the Achievement Anxiety Test (AAT), developed by Alpert & Haber (1960).*1 Being the only questionnaire that assesses both the motivation (or facilitation and impairment of test performance as a result of exam stress, the AAT comprises two subscales:

(a) Facilitating anxiety subscale, which consists of 9 items, which tap the energising consequences of

*1 / A copy of the Achievement Anxiety Test (AAT) appears in a modified form as the Management of Exam Anxiety Schedule in Appendices F1 to F3.

exposure to exams (for example: "Nervousness while taking a test helps me do better").

and (b) A debilitative anxiety subscale, consisting of ten items, which assess the extent to which exam performance is inhibited by anxiety.

Numerous researchers have successfully employed the AAT in experimental investigations (including Desiderato & Koskinen (1969), Kostka & Galassi (1974), and Huck & Jacko (1974)).

More recently, Kirkland & Hollandsworth (1980) report successfully using the AAT as a screening device (to discriminate between high and low test anxiety Ss), scores on the questionnaire were used as follows:

> " A difference score (debilitative minus facilitative score) was computed for each Subject. From this population, Subjects scoring in the upper 28% of the distribution (high debilitative/low facilitative test anxiety) were contacted and invited to participate." (Pp 433)

Based on their theory which viewed test anxiety as consisting of two components, worry and emotionality, Liebert & Morris (1967 - see Section 1.4.3.1 for details) selected five content-valid items (for example: "I am worrying a great deal about this test") for the respective constructs from the Test Anxiety Questionnaire, and in this way developed the Worry-Emotionality Questionnaire (WEQ).

Scoring on the WEQ is along a 5-point Likert scale, and the questionnaire is typically administered with instructions designed to assess "State-like" perceptions rather than trait characteristics.*1

In 1969, the Suinn Test Anxiety Behavioural Scale (STABS) was developed. The STABS is a 50-item measure which contains descriptions of specific behaviours and situations that reflect stressful situations regarding academic evaluation (for example: "Having a test returned" and "Reviewing study materials the night before an exam").

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*1 / For information concerning State- and Trait- Anxiety, see Spielberger (1968).

One of the most recently constructed questionnaires to gain strong support is the Test Anxiety Inventory, devised by Spielberger et al. (1978), designed to enhance the distinction between worry and emotionality. The instrument consists of twenty items (selected by factor analyses), devided into 28-item subscales (plus four buffer items); one subscale for worry scores; the other to assess emotionality.

A measuring device based on items from many of the earlier test anxiety questionnaires (notably the STABS), is the Subjective Units of Disturbance (SUD) Scale, developed by Wolpe in 1969. Essentially, the scale serves as a numerical index of felt anxiety, based on a scale of 0-100. The scale was used by Wolpe to enable test anxious students to attribute specific scores to their feeling-state of anxiety, thereby determining the extent to which progress had been made in reducing feelings of stress. Currently however, the scale is widely employed in the form of a questionnaire which the Subject completes by him/herself (for example, see Kostka & Galassi, 1974).

### 2.1.2.1 Reliability, Strengths & Weaknesses of Self-Report Measures

For self-report measures, reliabilities range from $r$ = ,80 in the case of the TAS; $r$ = ,87 and ,76 respectively for the facilitating and debilitating subscales on the AAT, to $r$ = ,82 on the TAI (after Allen 1972b).

° Strengths

(a) As has been noted, self-report anxiety questionnaires provide the most direct access to subjective experiences;

(b) Since adequate normative data is provided for most self-report instruments, standardised comparisons across independent investigations of therapeutic outcomes is accommodated.

° Weaknesses

(a) Self-report questionnaires are too transparent; i.e. are subject to the influence of response biases. For example, Allen (1972a) reported:

> "In a direct experimental manipulation, Allen (1970) administered several measures during a regularly scheduled class, before a course examination, and with instructions asking students to complete them

> 'as if you were about to take an important examination and felt you were not going to do well on it' (p. 356). It was found that only state anxiety measures discriminate between the regular class and examination conditions and more importantly, that the role-playing manipulation produced the greatest amount of self-reported anxiety on both trait and state measures." (Pp 90)

It was also revealed that 72% of the Ss were able to describe accurately the purposes of the scales in terms related to anxiety.*1 In addition, Cook & Campbell (1976) have stressed the extent to which strong response biases can develop in a no-treatment control; this "resentful demoralisation" resulting in the communication of the resentment via extreme scores on self-report questionnaires.

(b) A number of researchers (Suinn,1969;Tasto & Suinn,1972) have reported substantial "anxiety reduction" in retesting untreated respondents. Yet, Allen et al. (1981) observes that untreated control Ss rarely show such improvement in therapeutic outcomes.

This discrepancy suggests that scoring on such measures "is influenced by a subtle pre-test sensitisation that operates in the context of testing" (in Sarason,1981,Chap.6).

### 2.1.3 Indices of Peripheral Autonomic Reactivity

Allen (1980) notes that despite the emphasis that traditional theory about test anxiety has placed on the role of autonomic arousal, it is both "surprising and distressing" to find such a paucity of data on physiological measurement in the literature on treatment methods. (Pp 91)

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*1 / With reference to the 'State-Trait Anxiety Hypothesis', Johnson & Spielberger (1968) demonstrated that two constructs exist under the loose term "anxiety". They differentiated:

- A-STATE ANXIETY:
  as "an organismic transitory state of apprehension and tension as a reaction to a form of stress."
- A-TRAIT ANXIETY:
  as "a personality trait, referring to the degree to which individuals are disposed to manifest A-State anxiety in response to various forms of stress."

They identified a link between A-State anxiety or Test Anxiety and A-Trait Anxiety, or General Anxiety.
(For more details concerning this hypothesis - see in Spielberger & Sarason,1978,Pps 171-172)

Two measures of physiological arousal which have been used fairly widely since the mid-1960s are: Finger Sweat Print and Pulse Rate.

### 2.1.3.1 Finger Sweat Print

According to the developers of this measure (Droppleman & McNair,1971):

> " Finger Sweat Print has been shown to be a simple, inexpensive, sensitive measure of emotional and motivational reaction as well as clinical anxiety." (Pp 91)

Finger Sweat Print works on the basis of anxiety-produced sweat interacting with a ferric chloride solution applied to the finger, producing a reaction with- and leaving a fingerprint on- filter paper (which has been soaked in a tannic acid solution); i.e. perspiration produced by anxiety interacts with the ferric chloride to yield a gray-black print, the darkness of which increases with the amount of moisture on the finger.

Scores are assigned by comparing prints against fifteen specimen photographs (see Appendix I for a presentation of the specimens).

### 2.1.3.2 Pulse Rate

Horne & Matson (1977) viewed pulse rate as a "rough measure of the trait of cardiac acceleration". In many studies, it is merely monitored by hand, using the wrist pulsations as an index of pulse rate.

### 2.1.3.3 Reliability, Validity, Strengths & Weaknesses of the Measures of Physiological Reactivity

According to Cornish & Dilley (1973), the finger sweat print measure has proven highly reliable, with correlations of at least ,90. Cooley & Spiegler have in fact determined an interrater reliability average of ,95.

Little information is available concerning pulse rate measures and there is presently no interrater reliability information for this measure.

° Strengths:

(a) Physiological measures are not very susceptible to response bias, and as such should reflect more accurately on reductions in levels of test anxiety, as a direct consequence of treatment effects experienced by students undergoing therapy for test anxiety.

° Weaknesses:

(a) According to Allen (1980), little attention has been paid to the validity of the construct in such measures. As such, it has never been demonstrated that individuals with high and low test anxiety differ in their level of emotional arousal when confronted with evaluative stress (after Holroyd et al., 1978).

(b) There is a lack of normative information against which to judge emotional arousal. Horne & Matson (1977) observe that lacking such information, researchers are "restricted to making comparisons among the treatments they conduct, thus seriously limiting the external validity as a whole" (Pp 3).

(c) All static measures of emotional arousal appear to represent "unstable criteria" against which to estimate treatment effects.

In this regard, Kirkland & Hollandsworth (1980) observe:

> " The failure to find significant treatment effects for the various physiological measures can be interpreted as further confirmation of the relative unimportance of somatic reactivity as a factor in ineffective test taking. In other words, a lack of change on the physiological variable did not obstruct significant gains in performance (say, for example) by subjects receiving a skills acquisition training." (Pp 438)

### 2.1.4 Observable Performance Measures

Probably one of the most widely-used dependent variables in the study of test anxiety is the examination score (which is also the most popular measure of observable performance).

Steven-Richards (1975) stresses that it is a good outcome measure, because of "its objectivity, unobtrusiveness and importance".

However, Allen (1980) cautions that improvement in course examinations could also come about because of many noncognitive factors, including simple retesting. He stresses:

> " Their use as an outcome measure requires that they be normalised against the entire population of examination scores, and this has not been done except in a few studies (Allen,1971,1973; Jaffe & Carlson,1972; McMillan & Osterhouse,1972)." (Pp 92)

### 2.1.5 Multiple Methods of Measurement

Many researchers (Paul,1966; Long,1968; & Allen,1980) advocate the "triangulation" of measures from the three domains just outlined; because the limitations which apply to the different domains are unique to each domain, more potent therapies can be distinguished from less influential ones through (as Allen puts it) "...the judicious use of multiple measurement methods." (1980,Pp 92).

Thus, for example, a treatment manipulation that lowers subjective distress but improves academic performance is likely to be viewed as more powerful than an intervention that produces change in only one area.

## 2.2 THE MANAGEMENT OF TEST ANXIETY*1

### 2.2.1 Introduction

In Chapter One, it was shown that until the Second World War, test anxiety was generally unrecognised in the United States and debated minimally in European academic circles (where a causal link was sought between so-called 'examination neurosis' with childhood disturbances, based on popular psycho-analytic models at the time - see Section 1.3.2).

During and after the war however, there was:

(a) A dramatic increase in the number of Americans attending colleges and universities, while

(b) American researchers began to investigate stress on a wide scale (especially initially stress under conditions of war).

*1 / It is not intended in this Section to provide the reader with a comprehensive review of ALL treatment programmes available for test anxiety, but rather to concentrate on a few popular treatment approaches with an emphasis on those intended for use in the experimental investigation (presented in PART TWO of this report).

Coinciding with the rise of behaviourism in American psychology, test anxiety was seen as a behavioural problem to which the solution must clearly be sought in behavioural therapy. For this reason, behavioural methods were (and still are) employed throughout American secondary and tertiary institutions, in programmes designed to assist test anxious students in managing their anxiety.

Some of the most popular behavioural techniques for the management of test anxiety will now be briefly introduced.

### 2.2.2 Systematic Desensitisation

The systematic desensitisation method was first published by Wolpe in 1952. The method falls essentially into the category of emotional conditioning; as such, it is designed to:

> " ...reduce the unpleasant emotional arousal that is presumably evoked by stressful exam situations." (Allen,1980,Pp 93)

Additionally, systematic desensitisation can be said to originate from the "theoretical specification of test anxieties as learned drives" (see Section 1.4.1). The idea here is that performance is impaired through the evocation of heightened emotional reactivity through exam stress.

In the words of De L. Horne (1980) then:

> " ...the aim (of systematic desensitisation) is to counter-condition against anxiety by reconditioning the person to have a stronger, new and more adaptive conditioned response that would inhibit the earlier maladaptive one." (De L. Horne, cited in Burrows & Davies,1980,Pp 240)

#### 2.2.2.1 Some Details of the Systematic Desensitisation Procedure

Paul (1969) has succinctly described the process of systematic desensitisation as follows:

> " Systematic Desensitisation is essentially characterised by a treatment package which includes relaxation training, construction of hierarchies of anxiety-eliciting stimuli, and the graduated pairing of anxiety-eliciting stimuli via imagery with relaxation." (Allen,1977,Pp 44)

The relaxation training to which Paul refers on the previous page, is based on a deep-muscle relaxation technique first described by Jacobson (1938) and later adopted by Wolpe as part of his 'psychotherapy by reciprocal inhibition' (1958 - see further for details). The technique uses progressive isometric muscle exercises throughout the muscle groups of the body (for an outline of this relaxation procedure - see Appendices C1 and C2).

Returning in more detail to the traditional systematic desensitisation (hereon: SD) procedure, it consists of verbally presenting carefully graded situations (which are increasingly anxiety-producing) to a deeply-relaxed client, until he or she is able to visualise the most stressful scenes on the list, without experiencing any anxiety (this graded scale of items is called an "anxiety hierarchy").

Through repeated pairings of imaginal representations of threatening situations on the one hand, with deep relaxation on the other, the bond between these situations and the anxiety response, is weakened (after Zenmore,1975).

The rationale (according to Cohen,1969) for beginning with a slightly anxiety-arousing situation and gradually introducing more intense items, is that the relaxation response must be stronger than the anxiety response in order to "reciprocally inhibit anxiety" (a concept first introduced by Wolpe,1969 - see earlier). If the anxiety elicited is too strong, relaxation cannot successfully inhibit the anxiety.

The SD procedure is commonly used in control of test anxiety on an individually-oriented basis, however administration in group settings is becoming increasingly popular (see on in Section 2.2.2.3).

### 2.2.2.2 The Efficacy of the SD Procedure

In 1973, Cornish & Dilley observed:

> " The research reported to date, comparing the effectiveness of test anxiety reduction methods, has shown SD to be more effective than other methods, and even more so when included in a combined therapeutic package." (Pp 502)

One year later, Kostka & Galassi (1974), having surveyed the results of various therapeutic interventions, found that the most successful of these approaches had been SD.

Importantly, on the efficacy of the SD procedure in clinical practice generally, E.B. Fisher (1977) has observed:

> " It is interesting to note the close agreement between the 85% improvement rate in the present data and the 89,5% claimed by Wolpe (1958) in his reports of outcome from his own individual practice with the available range of behavior therapy techniques. Strikingly, Paul (1966) (who only conducted SD with test anxious students) also categorised 86% of his SD Ss as much improved. It appears that, at least with fears of a simple nature, SD in common clinical conditions yield highly positive results, even when applied by beginning therapists uncommitted to it or to behaviour therapy." (Parenthesis mine, Pp 329)

Despite these and other positive statements concerning the efficacy of SD, a number of researchers have put forward strong criticisms of what is still the most widely used of all the single-component therapy programmes (see Allen,1980).

For example, Adams & Unikel (1973) have complained that "quite frequently" anxious Ss cannot relax (as required by the SD procedure). In their research experience, clients often held a fear of losing control of the situation; they observed:

> " Although this can be dealt with either by training or by drugs, a common complaint against traditional desensitisation methods, is that while there is muscular relaxation there is still cognitive distress." (Adams & Unikel, 1973, Pp 21)

Another complaint put forward by these authors, is that it is extremely difficult to get a vivid picture through imagination. This is presumably either because of a lack of information, or too high a level of anxiety.*1

Similarly, but more generally, Holroyd (1976) has written that:

> " ...it (SD) fails to modify crucial components of test anxiety...although the SD procedure does explicitly

*1 / It should be stressed that Adams & Unikel (1973) do however recommend the use of practical retraining to overcome this weakness.

> focus on reducing arousal elicited by exam situations, recent formulations suggest that the performance decrements of test anxious Ss are largely a function of maladaptive cognitive and attentional responses rather than heightened emotional arousal." (Pp 991)

Kirkland & Hollandsworth (1980) go further when they criticise SD together with other "relaxation-based procedures". Their criticism stems from two specific areas:

(1) The ability of SD and other anxiety-reduction techniques to improve test performance, the ultimate criterion, has only been weakly demonstrated. It has been noted that 67% of those studies involving SD have failed to find differences between treatment and control conditions on performance measures of test anxiety (after Denney,1978).

(2) Several investigators have questioned whether high levels of physiological arousal are in fact related to less effective test-taking behaviour (Deffenbacher,1978; Allen, 1980). Hollandsworth et al. (1979), for example, demonstrated that "high and low test anxious students were very similar in terms of their physiological arousal".

### 2.2.2.3 Problems in the Group Administration of SD

From the time Wolpe published his SD procedure in 1952, until 1960, therapy involving the use of the SD method with test anxious students was on a strictly individual basis.

In 1961, Lazarus (cited in Donner & Guerney,1969) became the first researcher in the field to use Wolpe's desensitisation procedure in a group setting. Lazarus reported:

> "...this method (desensitisation) can be effectively administered in groups, and this suggests greater availability with little loss in economy (if not a gain) or effectiveness for phobic sufferers." (Pp 1, parentheses mine)

In the field of test anxiety, Paul & Shannon (1966) supported these findings, by noting that SD can be efficiently administered in groups of test anxious students, without loss of effectiveness in treatment of test anxiety.

In fact, Paul (1966) suggests that group-applied SD for test anxiety, is even more effective than individually-applied SD.

The most obvious reason for doing desensitisation with groups rather than individuals, is economy (with savings in both staffing and time). Cohen (1969) however notes an additional benefit, such as hearing of the progress of others involved in the training programme (this of benefit obviously to participating students).

On the other hand, a number of authors (Donner & Guerney,1969; Cohen,1969; & Taylor,1971) have emphasised an important problem in group administration of SD, that of the construction of anxiety hierarchies. In their study (see previous page), Paul & Shannon (1966), administered the STABS to select Ss for participation. Based on the items on which Ss recorded the highest anxiety scores, Paul & Shannon themselves, constructed a 16-item hierarchy for use by their Ss. Items were then presented to the group of Ss as a whole, and only when all group members were considered to be desensitised to the scenario being visualised, was the next item introduced to the group.

While most researchers engaged in therapy using desensitisation followed this form of hierarchy construction and presentation, most expressed difficulties concerning the "laborious" nature of the procedure; especially the amount of time needed for its execution (see,for example, Donner & Guerney,1969). Disatisfaction is also reported by researchers like Cohen (1969), concerning the manner of hierarchy construction (i.e. extracting items from questionnaires administered).

In 1971, Davis Taylor introduced a modified form of SD to his Ss. Using fifteen record (or index) cards, with one item printed on each card, Taylor gave each Subject their own stack of cards (items were selected on the basis of high scores achieved by Ss on the STABS). With their own set of hierarchal items, Ss were permitted to repeat a scenario at any stage in their progression through the hierarchy, this enabled those who believed they were desensitised to a particular item, to move on to the next scene.

In the same year, Aponte & Aponte (1971), took up the growing debate concerning the manner of hierarchy construction; they found that two methods of construction rivaled one another - these were:

(a) The traditional method (just referred to), involving a selection made by the researcher from a test anxiety questionnaire, on the basis of Ss' scores on particular questions, where appropriate exam-related situations are cited (a questionnaire such as the STABS: the Suinn Test Anxiety Behavioral Scale - see Section 2.1.2).

& (b) Individual/personalised construction of hierarchies. By using Taylor's system of record cards, it became possible for each Subject to work through his/her own personalised hierarchy, at their own pace.

By 1974, the individualised construction was generally favoured over the standardised method. In 1980, the concept of a group-constructed hierarchy was introduced into desensitisation of test anxiety, by Robinson (1974). It was claimed to be as effective as individual construction; but this claim was later refuted by Calef et al. (1974).

Another deviation from conventional SD (as envisaged by Wolpe,1969), was the introduction of a recorded tone (in place of vocal instructions from the group facilitator), first employed by Calef et al. (1974). Also known as cue-controlled relaxation (see Lent & Russell,1978,Pp 217), researchers have generally reported that when a tone was used, "Ss achieved significantly more reduction in anxiety than desensitised Ss who did not receive the tone as a cue" (Calef et al.,1974,Pp 1286). One explanation given for this finding, is that the tone may have become a discriminative stimulus to relax, since "...during relaxation training, when the tone was on, Ss relaxed and this lead to positive reinforcement" (ibid.,Pp 1286).

### 2.2.3 Study Skills Training/Counselling

Programmes grouped under this heading are derived from the literature on study counselling (for example: Robinson,1970 & Beneke & Harris,1972) and involve coaching test anxious students on how to improve their study habits.

Osterhouse (1972) has observed that empirical evidence suggests that highly test anxious students have poorer techniques of study than do less anxious students (see also Desiderato & Koskinen,1969; and Sassenrath,1967).

Allen (1980) has observed:

> " The underlying rationale (behind study skills counselling) is that the disruptive emotional consequences of test anxiety are a product of inferior academic preparation. These training strategies are aimed at improving cognitive performance without focussing on the mediating influence of emotional arousal." (Pp 94, parenthesis mine)

H.D. Carter (1948,1958) has worked extensively with inventories designed to monitor study habits and his factor analyses, suggest that most study skills counselling gives primary importance to four main variables:

(1) Morale or self-confidence;
(2) Scholarly drive and values
(3) Study mechanics; and
(4) A tendency to plan for getting work done.

While Carter established (1) & (2) as being the most important variables, work done by him in 1958, and earlier by Chahbazi (1957), indicated that variable (3), study mechanics, were more important than originally believed (for more detailed information, see Carter (1958)).

These findings are supported by an observation that study mechanics form the basis of most study counselling in the United States, such as the widely used techniques promoted by Francis Robinson (1970) (see further in Part Two, for a description of Robinson's principle techniques).

Allen (1980) has noted that initial investigations (such as that of Paul & Shannon, 1966, see earlier) provided informal study counselling as an adjunct to emotional conditioning, rather than as a therapeutic intervention in its own right.

Allen writes:

> " Subsequent investigations employed more organised programs for the enhancement of study through group formats for direct counseling (Eg. Allen,1971; Mitchell & Ng,1972) or through automated bibliotherapeutic means (Allen,1973; Beneke & Harris,1972)." (Pp 94)

2.2.3.1 The Efficacy of Study Skills Training

Evaluative investigations of study skills courses by Entwisle (1960) lead to the statement of the following conclusions:

(1) A study skills course will usually be followed by improvement.

(2) A course will be most beneficial for students desiring to take it.

(3) Students wishing to take a study skills course but prevented from doing so (and therefore presumably of comparable motivation to those enrolled for the course), fail to show significant improvement.

(4) Any gains noted will not necessarily be related to either the content or the duration of the course.

Developing on this, Beneke & Harris (1972) note in their analyses of study habits that the major problem improving student's study habits is not the development of a set of well-defined principles for effective study, but rather transmitting this information to students and persuading them to use it.

Marston & Feldman (1971) have suggested that the success of a self-control programme in fact depends on two variables:

" (a) The strength of the commitment act (or covert decision to change one's behaviour) and

(b) The effectiveness of the self-controlling responses which are the particular techniques used by the individual to change his own behavior."

(cited in Beneke & Harris, 1972, Pp 35)

Beneke & Harris (1972) add that the major problem with implementation of such a study skills programme is that of inducing Ss to participate and keeping them motivated to do so. They report:

" The gravity of this problem is strongly reflected in the 'mortality' data of the present study (conducted in 1972), as only 17% of students volunteering for the study completed all of the lessons.

> Although the lessons provide information about reinforcement and stimulus control, knowledge of behavior modification techniques clearly did not provide sufficient incentive for most Ss to continue to participate." (Pp 40)

And later:

> " This program (study skills) is no panacea for unmotivated students who wish their grades to improve without effort. However, it does appear to be an effective and economical way of improving study habits for those who choose to use the procedures suggested in such training."
>
> (Ibid., Pp 41)

2.2.4 Cognitive Modification (also known as 'cognitive restructuring')

Towards the end of 1974, Dember & Mahoney, who had just completed an exhaustive review of test anxiety literature, concluded that the tendency observed was of behaviour therapy, as with psychology in general, "going cognitive".

By 1978, Goldfried et al. observed that:

> " The incorporation of cognitive variables within behavior therapy represents a clear and unmistakable trend. Much of the current work in this area has been based on the clinical observation of Ellis (1962), who has argued that modification of inappropriate expectations and beliefs could lead to behavioral change." (Pp 32)

Until recently however, Ellis' rational-emotive therapy had relatively little impact on the behavioral movement. The difficulty of fitting Ellis' approach into a behavioural orientation, has been due, in part, to the lack of clear therapeutic guidelines, as well as to the absence of an empirical data base for its clinical effectiveness (after Goldfried et al.,1978). This situation is however, clearly changing and steps are currently being taken to incorporate many of Ellis' concepts into the field of "cognitive behaviour therapy" (see Beck,1976).

An example of such an incorporation, can be seen in the following statement (see overleaf) made by Meichenbaum & Turk (1976), two leading researchers in the field of test anxiety):

> " What the client says to himself (i.e. his appraisals, attributions, self-evaluations), or the self-statements and images that he emits prior to, accompanying, and following his overt behavior are becoming an increasingly important area for therapeutic intervention."
>
> (cited in Davidson,1976, Pp 1)

Illustrative of this shift in emphasis, according to Meichenbaum (1972), is his research of the early 1970s, which was...

> " ... designed to demonstrate the clinical potential of modifying the client's internal dialogues (i.e. self-statements and images)....the idea was to treat the client's cognitions, as well as his covert behaviors."
>
> (Ibid. Pps 1 & 2)

In the case of the test anxious individual, the use of such cognitive modification strategies is based on the rationale that people who are highly test anxious have (in the words of Allen,1980) "unrealistically high expectations for their own performance" (Pp 95). These high expectations cause the student's attention to be diverted from task relevant cues and heightens their emotional arousal.

In other words, whereas most students read test questions and proceed to answer them, highly test-anxious individuals find themselves thinking about the consequences of failure and how much better prepared the other students are. According to I.G. Sarason (cited in Spielberger & Sarason,1978), efforts to reduce the potency of these intrusive self-preoccupations have yielded encouraging results.

It has been found (through research by Sarason,1973; and Wine,1971) that:

> " Highly test anxious students benefit from exposure to models who display adaptive task-relevant behavior and also from training exercises designed to strengthen attention to task-relevant activity and extinguish personalised preoccupying thoughts."
>
> (Sarason, cited in Spielberger & Sarason,1978,Pp 197)

Essentially, the origin of task-irrelevant cognitions, from the cognitive modification perspective, is seen as failure (Sarason,1960,1978). Failure is said to arouse self-preoccupying thoughts about the consequences of failure: self-deception and loss of status. According to Sarason, these cognitive activities interfere with task-relevant activities and serve to lower post-failure performance.

Sarason (1978) cites an experiment, the results of which show that performance on a complex task can be increased significantly when two variables are manipulated:

(1) The person's conceptualisation of a prior event (in this case, failure); and

(2) The availability to the person of principles useful in approaching a later task.

He notes that:

> " These manipulations lead to adaptive coping behavior, because they reduce the potency of self-preoccupying thoughts that interfere with ongoing activities and because they provide direction for the person in approaching a challenging situation." (cited in Spielberger & Sarason,1978,Pp 210-211)

Goldfried, Linehan & Smith (1978) have delineated three steps normally involved in the average cognitive modification therapeutic programme; these steps are:

> " (1) Convincing clients that maladaptive beliefs can indeed foster uncomfortable emotional arousal and disrupt cognitive abilities;
>
> (2) Teaching clients to identify the maladaptive self-statements they make in stressful situations;
>
> (3) Using guided rehearsal to facilitate verbalization of more adaptive self-statements." (Pp 33)

### 2.2.4.1 The Efficacy of Cognitive Modification

By 1980, cognitive therapy approaches for controlling test anxiety had established themselves as falling amongst the most effective, reliable and hence respected therapeutic approaches.

To this end, Cooley & Spiegler (1980) wrote:

> " Cognitive therapy approaches seem well suited to treating the wide variety of cognitive of cognitive factors identified as components of test anxiety. These factors include self-blame, negative self-evaluative and self-deprecatory statements and task-irrelevant responses." (Pp 160)

However, in a major research study involving cognitive modification strategies, D'Alelio & Murray (1981), in commenting on their findings observed:

> " ...the present results are consistent with the literature in demonstrating that cognitive therapy is effective in reducing self-reported test anxiety but has little effect on performance." (Pp 306)

### 2.2.5 The Case for Multicomponent (or Combinative) Programmes

In 1980, Allen noted:

> " Given the multifaceted aspects of test anxiety, it was only natural that investigations would seek to combine specific interventions into potentially more efficacious therapeutic packages." (Pp 96)

Three popular treatment combinations are featured in this Section. It must be emphasised here however, that the discussion on these programmes which follows, refers only to the 'core' concepts employed in each combination. Most such programmes reported in the past few years (for example: Denney & Rupert, 1977), involved the setting aside of a small amount of session time to an aspect of test anxiety reduction techniques not specifically included in the particular multicomponent package described.

Extremely positive reports of the efficacy of multicomponent programmes (or treatment clusters, as they are also known) have been reported (see Sarason,1975; and Richardson, 1976).

In his 1971 review of test anxiety literature, Wine demonstrated that treatment clusters proved more efficacious than behavioural manipulations in isolation. In fact, only treatment clusters (according to Allen,1980) have been found to yield significant improvement in performance, as measured by self-report, physiological and academic performance measures.

Researchers are cautioned however (by Sarason,1975 and others), against 'overloading' test anxiety treatment programmes with too many components. Moreover, Richardson (1976) warns against researchers running a programme over too long a period (see on in Section 5.2.3, for a review of some popular treatment durations used in recent research).

### 2.2.5.1 Systematic Desensitisation (SD) and Study Skills Training Combined Programme

One of the earliest and most enduring combinative treatments is that of SD with study skills counselling. In a 1971 investigation of this combination, Allen found that a combination of desensitisation and study counselling was more effective in reducing physiological activation due to exam stress and in improving academic performance, than either type of treatment used by itself. Moreover, this was consistent with earlier findings (Doctor et al.,1970; Katahn et al.,1966; and Paul,1968).

McMillan & Osterhouse (1972) concluded in their research that combined treatment between study skills training and SD, is more effective than SD alone, as measured both by self-reported anxiety and academic improvement. These findings were later supported by Lent & Russell (1978).

Commenting in general on multicomponent versus single-component programmes, Lent & Russell (1978) concluded:

> " Where subjective test anxiety is coexistant with maladaptive study patterns, a combined anxiety-management (through SD)/study skills training approach most prove most efficacious. However, if test anxiety alone can be isolated as the primary determinant of client distress, then desensitisation per se would appear to be the most parsimonious route. In any event, careful assessment of the relevant problem dimensions (Example: test anxiety, study habits, and disruptive cognitions or grades) is highly recommended."
>
> (Pp 222, first parenthesis mine)

### 2.2.5.2 Systematic Desensitisation (SD) and Cognitive Modification Combined Programme

According to Holroyd (1976), this combination of procedures derives from a two-component model of test anxiety (after Liebert & Morris,1967), which postulates that:

> "...the performance decrements of test anxious Ss a dual function of maladaptive cognitive and attentional responses and heightened autonomic arousal." (Pp 994)

This combined treatment therefore focussed on both eliminating the test anxious client's task-irrelevant ruminations and attentional focus and reducing their autonomic arousal.

Holroyd observes in addition, that the "success" of this combinative therapy over these approaches used on their own, is in doubt. He quotes Meichenbaum (1971) as suggesting that combined cognitive modification and SD, may be less effective than cognitive modification alone.

Holroyd (1976) notes however, that it is probable:

> "...the results obtained with combined treatments will be influenced by procedural variables such as the order in which treatment techniques are administered and the length of treatment, as well as by the specific treatment techniques that are combined." (Pp 1000)

2.2.5.3 Study Skills Training and Cognitive Modification Combined Programme

On this, the most recent of all popular combined test anxiety therapies, Kirkland & Hollandsworth (1980) have noted that because training in skills acquisition defined test anxiety as a specific skills deficit training (in their programme) focussed on restoring deficits in three areas:

(1) Effective test-taking strategies;
(2) Adaptive self-instructional statements; and
(3) Attentional-control skills.

In addition:

> " No emphasis was placed on arousal or anxiety reduction. Rather, it was stressed that the acquisition of the above skills would allow the person to use his or her arousal effectively to increase performance."
>
> (Kirkland & Hollandsworth, 1980, Pp 434)

Kirkland & Hollandsworth based their strategies for effective test-taking on the work of Robinson (1946,1970), while cognitive modification/self-instructional training was adapted from the work of Hollandsworth et al. (1979), that identified two basic kinds of self-instructions for the effective test-taker: (see over page)

- On-task statements
  (Example: "I have plenty of time")

and

- Positive self-evaluations
  (Example: "I will perform well on this test, because I am well prepared.")

Attentional-control training was based on the appropriate use of self-instructions in relation to the task as suggested by Wine (1971) and Meichenbaum (1972,1977).

Thus, the direction of attention was mediated in training by the appropriate use of self-instructions such as "I will think about that later; now back to the test."

According to Allen (1980), such combinative therapy has proven more efficacious than either method (cognitive modification or study skills) on its own.

# CHAPTER THREE

## TEST ANXIETY IN SOUTH AFRICAN UNIVERSITIES

## 3.1 TEST ANXIETY & SOUTH AFRICAN UNIVERSITIES

### 3.1.1 An Introduction

With a determination to review the situation on South African university campuses, concerning the availability of- and perceived need for- group & individual counselling for students experiencing debilitative levels of test anxiety, three approaches were adopted:

(1) A mail survey of all university counselling services was undertaken (the survey letter, seeking information about counselling available for test anxious students on local campuses, appears in BOX 3A).

(2) A brief survey of test anxiety relief programmes available to the South African student was undertaken.

and (3) A number of practising therapists (both registered & interns) associated with student counselling, were interviewed at random, concerning their approach to helping students to cope with the problem of test anxiety. Their opinions on the adequacy of both the quality and quantity of counselling services for this phenomenon, were also sought.

### 3.1.2 The Mail Survey

The circular (illustrated in BOX 3A overleaf) was sent to all residential universities in Southern Africa. It should be noted here that the emphasis in the despatch was on the availability and efficacy of group counselling programmes, specifically designed to combat debilitative levels of test anxiety.

#### 3.1.2.1 Some of the Survey Findings

Formal student counselling services[*1] are not available in any form what-

*1 / The term counselling is used here excludes career guidance.

BOX 3A

AN EXTRACT OF THE LETTER SENT TO ALL SOUTHERN AFRICAN UNIVERSITIES TO PROBE THE AVAILABILITY OF GROUP COUNSELLING PROGRAMMES FOR TEST ANXIETY SUFFERERS ON LOCAL CAMPUSES

PSYCHOLOGY DEPARTMENT

RHODES UNIVERSITY • GRAHAMSTOWN

P.O.Box 94, Grahamstown, 6140 South Africa

Telegrams 'Rhodescol' Telex 74 7227 Telephone (0461) 2219

I am presently engaged on an investigation into the prospects of developing a large-scale counselling programme for Rhodes students who experience debilitative levels of test anxiety (as a consequence primarily of university examinations). Counselling for test anxious students at Rhodes, is presently only available on an individual basis through the Rhodes University clinic.

Of crucial importance in this study, is information relating to the state of affairs at other Southern African Universities concerning any therapeutic programme specifically designed to assist students in managing test anxiety; hence this letter to you. Would you please furnish me (obviously in general terms) with information relating to the availability (or otherwise) of any such counselling programme offered by your counselling service. I would moreover, be grateful if you would indicate the measure of success you believe your service achieves in this regard.

ever on the following campuses:

- University of the North
  (Pietersburg, Transvaal)
- University of Zululand
  (Kwadlangezwa, Kwa-Kwa)
- University of Lesotho
  (Roma, Lesotho)
- University of Durban-Westville
  (Durban, Natal)

Together with these institutions, neither individual nor group counselling for test anxious students is available on the following campuses:

- University of Fort Hare
  (Alice, Ciskei)
- University of the Orange Free State
  (Bloemfontein)
- Potchefstroom University for Christian Higher Education
  (Potchefstroom)
- University of the Western Cape
  (Bellville, Cape)

A review of other responses received to the circular (extracts of some of which appear as Appendices A1 to A5 at the back of this report) reveals :

(1) The Counselling and Careers Unit (CCU) of the University of the Witwatersrand, is the only South African campus counselling service to offer (albeit on an experimental, introductory basis) group counselling to test anxious students. Moreover, Dr. Andrew Swart, head of of the CCU at the University of the Witwatersrand, reports limited success with their 1982 group counselling programme, which included a loose form of cognitive modification/"restructuring" linked with progressive relaxation exercises (4x 1,5-hour sessions on four successive days in one week; in 1983, one session will be held per week over four or five weeks).

(2) Individual counselling on campuses, specifically designed for the test anxious student is presently only available at the universities of the Witwatersrand (through the CCU), Cape Town (through the Students' Health Service and informally through members of the Academic Support Staff), and Natal (in Durban, through the Student Advisory Service[*1]).

(3) The remaining universities...

- University of Natal (Pietersburg, Natal)
- University of Port Elizabeth
- University of Pretoria
- Rand Afrikaans University (Johannesburg)
- Rhodes University (Grahamstown)
- University of Stellenbosch

...deal with test anxiety within the rubric of more general counselling (i.e. often viewing test anxiety as a symptom of a wider and more complex disturbance for the student).

For example, Senior Counsellor in the University of Pretoria's "Studentediensburo", Mrs. G. du Plessis, observed that in the view of the

*1 / The Student Advisory Service of Natal University (Durban), is presently conducting an investigation into test anxiety (under Cheetham); details of findings are not yet available.

Bureau, test anxiety is rooted in a combination of "personality problems", as well as inefficient study habits, and is treated accordingly by counsellors in the Bureau (see the extract of this letter in Appendix A3).

(4) Few of the respondents dealt with the demand for specific test anxiety counselling services, although John Griffiths (of the U.C.T. Student Health Service) suggested that while demand on the U.C.T. campus appeared small (just twenty students over a period of a few months)...

> " ...the provision of a specific programme would most certainly realise a more significant demand."
> (see the extract from this letter in Appendix A2).

Supporting this view is the Director of the Student Advisory Service (at Natal University - Durban campus), I.B. Gibson, who proposes the holding of a conference or workshop on test anxiety:

> " ...since the problem is possibly larger than we imagine and the means of reducing it not entirely effective at present." (see the extract from this letter in Appendix A4).

(5) A number of the respondents to the mail survey referred to the lack of interest and sympathy displayed by university administrations towards students experiencing disabling examination tension (see, for example, the reply from Dr. van Heerden at the University of Stellenbosch, an extract of which appears in Appendix A5).

(6) It must be stressed in addition that the following universities have general remedial programmes (concentrating on remedial reading and language proficiency):

- ☐ University of Cape Town
- ☐ University of Durban-Westville
- ☐ University of Natal (both campuses)
- ☐ University of Pretoria
- ☐ Rand Afrikaans University
- ☐ Rhodes University
- ☐ Stellenbosch University
- ☐ University of the Witwatersrand

- University of the Western Cape

and

- University of Zimbabwe
  (Harare, Zimbabwe)

Such remedial programmes are however, thought to be of only very indirect value in assuaging the debilitative effects of test anxiety (Allen,1980).

### 3.1.3 Brief Review of Imported Test Anxiety Management Programmes Available to the South African Student

A number of automated instruction test anxiety programmes, perfected in the United States, are commercially available to university students in South Africa. In BOX 3B is an advertisement of one of the most popular American programmes purchased locally: "Study Secrets", based heavily on study skills counselling.

BOX 3B ADVERTISEMENT FOR ONE OF THE MOST POPULAR AUTOMATED INSTRUCTION PROGRAMMES AVAILABLE IN SOUTH AFRICA

**It's easier to pass your exams the proven American way**

*Ideal for all students in senior school and university*

ONLY
**R14,95**

This unique cassette tape and study book is guaranteed to make a dramatic improvement in any student's performance. It's packed with proven methods for successful studying. Best of all, it teaches the student how to "study smarter, not harder".

Amazing as it may sound, most students study **too much!** They waste time and effort because they don't know how to study efficiently. This programme will show you **how to cut your study time in half — and get better results.**

Here are some of the topics covered: Previewing — the key to efficient studying • How to spot the most likely test question in advance • How to balance your study time • How to take notes in class • How to review • How to save hours of time on book reports.

Exams: 11 rules for success. (This last section alone could raise your average marks without any additional study effort or study time!)

**Study Secrets** will help you improve your marks, learn more, and spend less time studying. **Study Secrets** was created by Vernon K. Jacobs, an instructor of accounting and finance in the U.S.A.

**Here's our unconditional money-back guarantee: If Study Secrets is not everything we've promised, it may be returned within 14 days of receipt for a full refund.**

You've spent thousands of rands in order to get the best possible education. Now spend another R14,95 to ensure that your investment pays off.

**AN AUDIO FORUM U.S.A. PROGRAMME**

TO ORDER, JUST CLIP THIS COUPON and mail it with your name and address and a cheque or money order for R14,95. Price includes Sales Tax.

To: **AUDIO WORD (PTY)LTD.**
P.O. Box 17530, Hillbrow 2038

Please send me **STUDY SECRETS**
Find enclosed my money order for R14,95

Name .....

Address .....

.....

Signature ..... WS

(EXTRACTED FROM WITS STUDENT NEWSPAPER 2/6/82)

The Education Councillor of the Student Representative Council of the University of the Witwatersrand, was able to supply this researcher with titles of six other such programmes, all based on study counselling techniques, while the retailers of "Study Secrets" reveal sales figures in excess of 400 units a year (mostly to Wits students). No verifiable information concerning the efficacy of any of these programmes is available.

### 3.1.4 Review of Locally-developed Test Anxiety Management Programmes Available to the South African Student

The first locally developed and implemented programme for test anxious students, was the PATS©(Preventing Accumulated Test Stress) programme, created by David Beaty for the CCU at the University of the Witwatersrand, in 1980. This programme formed the basis of the first locally produced workbook for test anxious students, which David Beaty and Julian Barling jointly produced (their book, "Positive Exam Results - Without Stress", is reviewed together with publication/distribution details, in Appendices C1 to C2).

The only other locally produced programme (which has been published) is one which is designed specifically for scholars in secondary school. Entitled "How to Study and Win" by Terry Lloyd-Roberts, this workbook is penned in a chatty style and includes supervisory tests to enable the scholar to monitor his/her progress on the programme*1 (since this work has only just been released, no information is yet available on its ability to relieve debilitative experiences of test anxiety).

### 3.1.5 Report on Interviews conducted with Counsellors of Test Anxiety

With the aid of a colleague in Johannesburg, survey-type interviews were conducted with clinical/counselling therapists (both registered and interns) in various centres in South Africa, between March and June 1981. Those interviewed all had some experience in counselling test anxious students and the purpose of the interview was to assess the most popular therapeutic techniques employed by these professionals in helping test anxious students manage their anxiety.

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*1 / Publication by College Press, Cape Town, 1982.

Eight registered and ten intern psychologists were interviewed (7 in Johannesburg; 5 in Durban-Pietermaritzburg; 4 in Grahamstown and 2 in Cape Town).

Of those interviewed:

(1) Fourteen used behavioural methods in counselling test anxious students; without exception, all of these therapists used some cognitive modification with either study skills advice and/or brief relaxation exercises (these latter modelled either on the deep-muscle relaxation training of Jacobson (1938 - see in Section 2.2.2 for details of this procedure), or on American pre-recorded programmes). Interestingly, a number of these 14 therapists were reluctant to identify their approach as a 'behavioural' one; there thus appears to be a lingering stigma associated with the employment of behavioural methods by some South African therapists.

The remaining four therapists interviewed, used psychoanalytic procedures, which focused chiefly on the origins (or onset) of experiences of burdensome anxiety, resulting from university examinations.

(2) All 18 conducted individual therapy sessions with test anxious students, with the exception of the limited group counselling conducted in the Counselling & Careers Unit at the University of the Witwatersrand (see earlier for details).

(3) Eight of the 18 therapists identified the use of cognitive modification in isolation to other methods, as "more than adequate" in providing a total management skill to students experiencing disabling levels of test anxiety.

(4) None had received specific training in test anxiety management techniques.

Of particular concern to this researcher, was the general attitude of the therapists interviewed, that test anxiety did not presently constitute a major problem on university campuses in South Africa.

While the number of students seeking therapeutic help for test anxiety (specifically) may well be small (see comments by Griffiths, cited earlier), it is here suggested that the de-emphasis given to the problem of test anxiety by the therapists, has resulted in test anxious students viewing their stress as particularly "abnormal" - even more reason why they "should try to manage on their own" (as one student in the present investigation reported). Support for this contention, can be seen in the relatively large number of students (N=75[*1]) who came forward to participate in the experimental investigation conducted by this researcher on Rhodes campus (after a fairly modest recruitment campaign); see in PART TWO for a full description of this investigation.◀

*1 / Eight of these Ss formed the panel of student judges and therefore did not participate in the experiment. A further three volunteers withdrew before the start of treatment programmes (see Section 5.1).

# PART TWO

Experimental Investigation of
Test Anxiety
at
Rhodes University

## CHAPTERS 4 TO 9

# CHAPTER FOUR

## INTRODUCTION

## 4.1 INTRODUCTION TO THE PRESENT STUDY

A thorough reading of PART ONE of this thesis, should bring the reader to some awareness of the complexities involved in the phenomenon of test anxiety; complexities which circumscribe relationships between subjective distress, cognitive disruptions, behavioural avoidance and physiological activation (see Section 1.4.3). It is this constellation of behaviours that has, for at least the past four decades, been found to have a debilitating effect on academic performance.

What should be equally clear is the relative lack (and in many instances, total absence) of progress made in South African educational institutions towards the evolution of group counselling programmes, designed to teach anxiety management techniques to scholars and students who underachieve in evaluative situations, owing to experiences of disabling anxiety.

In part, this study was a product of the finding (in 1978) that at least one-third of all Rhodes students who are awarded aegrotats by the various university faculty boards, commit acts of self-injury to achieve this postponement of sitting either one specific examination or a number of examinations.*1

The present researcher was disturbed to discover that students (even though a relatively small number) were prepared to go to such extreme lengths to postpone the writing of an examination (such lengths as breaking an arm; catching fingers in windows and doors; and even severely burning a hand *2).

Further emphasising the need for large-scale examination anxiety counselling on university campuses locally, is the research finding by George Allen (1972) that about one-third of all American university (college) students underachieve in their examinations because of excessive levels of test anxiety, while as many as half the number of failures would pass "...if it were not for their experience of inhibiting test anxiety."

---

*1 / Sourced to an unpublished investigative media report by Miles, Still & Norton (1978); copies are held by the Department of Journalism & Media Studies at Rhodes University.

*2 / Instances of self-injury reliably related to this researcher by students, wardens and residential housekeeping staff.

While similar numerical claims of the influence of test anxiety cannot necessarily be made for South African university students, researchers in this field locally (such as Julian Barling at the University of the Witwatersrand) have identified themselves with comparable ratios for South Africa.

As was noted in Chapter Three, only a few attempts have been made thus far within the framework of South African universities, to implement group counselling programmes for test anxious students. The most successful of these programmes has undoubtedly been the course offered by the Counselling and Careers Unit at the University of the Witwatersrand; even this programme however, has met with limited success (according to Dr Andrew Swart, Head of the Unit - see earlier discussion in Chapter 3).

It is the contention of this investigation that such limited progress has resulted from a lack of experimental research of test anxiety specifically in the South African context, taken together with a conservative approach towards implementing new (but generally tried and proven) behavioural treatment procedures in widespread use abroad, notably in the United States.

Apart from these observations, the present investigation was prompted by the finding that:

(A) The Rhodes University Clinic (Rhodes' only student counselling service) is unable at this stage, to engage in therapy with groups of test anxious students, and further, that even specific individual therapy for test anxiety is restricted in the clinic, because (i) of a lack of detailed relevant training in methods for teaching control of test anxiety, and (ii) the excessive pressure placed on clinic staff for counselling services in general.

(B) In discussion with test anxious Rhodes' students, it was revealed that they are generally reluctant to approach professional therapists for counselling of a problem they believe they should be able "to deal with themselves". They were moreover not in favour of individual counselling for the learning of anxiety coping strategems.

(C) While a part-solution to the problem of test anxiety is to markedly re-structure the system of evaluating academic performance in South African schools and universities, discussions held with Educationalists at Rhodes University, clearly indicated no likely progress towards such a restructuring in academic institutions in the forseeable future.

Thus, this experimental investigation sought to develop a group counselling programme, specifically tailored to meet the needs of Rhodes students. For the purpose of such an development, specific criteria were prescribed (by this researcher) which any suitable programme would have to meet; these criteria included:

- A treatment programme requiring no (or at least very few) special abilities or skills on the part of participating students, for a positive outcome to result;
- A programme demanding the minimum of professional supervision;
- A package that is economical in its prescription of material costs and especially time
- A treatment method which does not require a highly specialised/ sophisticated setting (in respect chiefly of furnishings and equipment);
- A therapeutic package which, while assisting highly test anxious students to manage their anxiety, does not reduce the experienced anxiety to below a facilitative level (a cautionary note adopted from Jeri Wine, 1971, see Pps. 96).

In quest of such a therapeutic programme, this researcher reviewed a host of application-oriented techniques, most of which have been reported in Chapter Two of this report, together with a detailed commentary on their relative effectiveness in controlling test anxiety.

Some evident features of this review worth reiterating, include:

(i) The finding by Allen (1980) that: "Just about any intervention will reduce self-reported anxiety, as assessed through fairly transparent questionnaires, so long as the treatment is credible..." (Pps 114 & 115)

(ii) The finding (first noted by Wine (1971) and restated by Allen (1980)) that treatment clusters (or multicomponent packages, as they are often synonymously known) proved more efficacious than specific behavioural methods in isolation (Wine,1971; and Allen, 1980). In fact, implications from the review show that the only type of treatment package to yield substantial and significant superiority over both no-treatment control and placebo groups (on both self-report and physiological measures), are combinative therapeutic packages.

For these reasons, it was decided to use only multicomponent therapeutic programmes in this experimental investigation. However, a limiting factor eminates from a warning given by numerous researchers (since the popularisation of multicomponent therapy programmes in the mid-1970s) against overloading treatment packages with too many components (Sarason,1975; Meichenbaum & Butler,1980; and Allen,1980). A further note of caution is given against running a programme over too long a period (Richardson,1976; and Allen,1980).

Thus, components selected for inclusion in the programmes for the present study, were carefully welded into a number of comprehensive packages (which took these aforementioned warnings into account). With the aid of a panel of eight student judges (see further under section 5.1.2 in Chapter Five), each programme was adapted to the most popular duration selected by participating Subjects (this being 7x 1-and-a-quarter hour-long weekly meetings - see 'Duration of Treatment Programmes' on Page 70 in Chapter Five).

Three "core" components were chosen, these being:

(1) Cognitive Modification
(2) Study Skills Training and
(3) Systematic Desensitisation

Each formed the basis of a multicomponent treatment programme. Although a comprehensive synopsis of each programme is presented in Chapter Five (see Section 5.2.4), a brief overview is offered here, as a preamble to an informal statement of the a priori hypotheses.

More specifically then:

(1) COGNITIVE MODIFICATION involved Subjects in learning: (a) adaptive self-instructional statements ("on-task" and positive self-evaluation statements; after Hollandsworth,1979), and (b) Attentional-control skills (after Meichenbaum,1972).

Because of the importance placed on cognitive restructuring by most researchers in this field in recent times, each treatment programme incorporated some form of cognitive modification.

In addition, in the light of the contention held in the present study, to the effect that no therapeutic technique employed in isolation to other methods is as effective as multicomponent programmes, the decision was taken to include cognitive modification in a placebo "package" (supported with bogus 'meditation exercises').

This perspective of cognitive modification as a placebo treatment (if used alone) is contrary to the belief held by most of the interns and registered clinical psychologists consulted for the purposes of this investigation (see Chapter Three). Stated simply, many of these professionals held that test anxiety was "all in the mind" and that re-structuring of an individual's cognitions was an adequate remedy for debilitative test anxiety experiences.

However, while studies where cognitive modification has been employed in isolation to other techniques do show some improvement in self-reported experiences of anxiety, study habits and overall academic performance show no improvement whatsoever (see Chapter Two).

(2) STUDY SKILLS TRAINING included study counselling, based on the popular techniques employed by Francis Robinson (1970) and centred around effective study and test-taking strategies, using Robinson's SQ3R teaching method.

Apart from the cognitive modification component, the Study Skills Training programme included short relaxation exercises, based on the deep-muscle relaxation principle of Jacobson (1938), as modified by Wolpe (1958).

(3) SYSTEMATIC DESENSITISATION TRAINING

The main debate in the implementation of systematic desensitisation programmes in a group setting, revolves around the manner in which the anxiety hierarchy should be constructed for maximum benefit. Apart from the ineffective option of the Experimenter himself selecting items from an instrument used to measure test anxiety (as is done on occasion, using the Suinn Test Anxiety Behaviour Scale*1), two other methods exist for the construction of an anxiety hierarchy in a group setting, these being:

(i) Individually-constructed hierarchies; and
(ii) Group-constructed hierarchies

Given the debate raging over the effectiveness of these two options, each construction method was employed in this study in a separate systematic desensitisation programme - labelled Method A and Method B respectively.

SYSTEMATIC DESENSITISATION - METHOD A

Here, Subjects constructed personalised anxiety hierarchies, limited to sixteen items per hierarchy. These items were then transferred (for each Subject) to record cards (one item per record card), with each Subject retaining his/her own stack of cards from session to session.

Conventional group desensitisation then took place, in accordance with the procedure outlined in Chapter Five (q.v.). The programme included intensive deep-muscle relaxation training (based on that of Jacobson,1938,as modified by Wolpe,1958) and cognitive modification exercises. A few test-taking strategies were also discussed.

SYSTEMATIC DESENSITISATION - METHOD B

Here, Subjects were instructed to construct a group hierarchy using the psychological technique of brainstorming, and an item-delineation procedure, based on the principles of the phenomenological research praxis described by Stones (1979).

*1 / The Suinn Test Anxiety Behaviour Scale (STABS) is a 50-item scale featuring situational items related to the exam context. Some researchers have extracted items from this scale (following its administration to Subjects), ranked them, and used them as the basis of a group hierarchy (see Taylor & Epstein,1971).

These items were then transferred to record cards, each Subject having the identical set of items, but being permitted to change the hierarchal arrangement of items. Training in deep-muscle relaxation was once more included, together with cognitive modification exercises and discussion of a few test-taking strategies.

In addition to the treatment groups, a no-treatment (wait-list) control group was established and employed as a reference group, whose scores on the measuring instruments were used to relativise increments and decrements in the performance of Subjects in the various treatment programmes.

The control Ss were told that they were to be placed on a "wait-list" to undergo therapy in the Third Quarter of 1982; it was explained that their progress would be monitored until the time came to implement such a programme in August,1982.

It was also stressed that while they would have to wait for a year-long period, they would benefit from the researcher's experience with the treatment programmes run in 1981.

## 4.2 INFORMAL STATEMENT OF THE RESEARCH HYPOTHESES

(For ease of expression, the following abbreviations will be used in this informal statement of the research hypotheses:

CG = Control Groups
PG = Placebo Groups
SST = Study Skills Training Programme
SDA = Systematic Desensitisation - Method A
SDB = Systematic Desensitisation - Method B).

It is clear that each of the three multicomponent treatment programmes feature behavioural components which are potentially highly effective. Moreover, each of these programmes meet the prescribed research criteria for the "ideal" therapeutic package (see Section 4.1).

The question thus arises: 'Which treatment programme will prove to be the most effective in reducing experiences of debilitative test anxiety ?'

To investigate the relative efficacy of the programmes, an assessment battery was developed, which (in concert with most test anxiety research - see Section 2.1) included:

° SELF-REPORT MEASURES (5 Separate Measures)

- Involving the subjective interpretation of the nature and intensity of anxiety related to the exam situation.

° MEASURES OF PHYSIOLOGICAL ACTIVATION (2 Measures)

- Involving monitoring of changes in physiological functioning (here: pulse rate and finger sweat print) resulting from test anxiety.

° MEASURE OF ACADEMIC PERFORMANCE

- Involving the objective monitoring of the Ss academic grades (in relation to class grades).

Expectations of the difference between pre-treatment and post-treatment scores are that:

(i) The SST, SDA and SDB Ss will all achieve similar improvements on the self-report measures, while because of the emphasis given in the SDA and SDB groups to controlling physiological arousal, Ss in these two programmes should show a greater ability to reduce their scores on the physiological measures than the SST Ss. On the other hand, SST Ss (who were intensively instructed in effective study and exam methods) will make the greatest gains in academic grades, followed by the SDA and SDB groups.

(ii) On self-report measures, the PG Ss will achieve weaker performance gains than any of the other experimental group, while CG Ss will make the smallest improvement of all. On physiological measures, PG Ss will make a small improvement; not as great as SDA and SDB, but similar to the SST and better than CG Ss (who are not expected to show any gain whatsoever on physiological measures). With the evaluation of academic performance, PG Ss will achieve a modest improvement; better than CG Ss (who are not expected to improve at all), but not as good as SDA and SDB (which in turn will realise weaker improvements on this measure than SST Ss).

Considering the difference in pre-treatment to follow-up assessment scores, CG Ss are expected to experience a deterioration in performance on all measures; this expectation arising because Ss in these groups acquired no skills to employ during the 6-month post-treatment period.

Gains are however expected from the other groups on all measures.

On self-report measures, SDA, SDB and SST Ss are expected to achieve the greatest gains, followed by PG Ss. With physiological measures, SDA and SDB Ss will realise the greatest gains, followed by SST Ss, with PG Ss realising no improvement in scores at all. Finally, on academic evaluation, SST Ss will score the best, followed by SDA and SDB Ss; no improvement is likely with PG Ss.

PART TWO

# CHAPTER FIVE

## SUBJECTS & METHOD

## 5.1 SUBJECTS

### 5.1.1 Recruitment Procedure

Subjects were recruited by an extensive advertising campaign on the campus of Rhodes University; a campaign using the media of departmental noticeboards, the student press and Rhodes Music Radio, the campus radio station.

Students were invited to attend a detailed briefing session (repeated at various times); this briefing was based on the "orientation session" used by Marianne McManus (1971) in her test anxiety research. As such, it entailed a brief description of the nature of test anxiety to the students and a focus on some of the "symptomatology" displayed by a 'classically' test anxious individual (for an indication of just how test anxious participants in the present research were, see Sec. 5.1.6).

No formal questionnaire or device was employed to discriminate between students who were or were not debilitatively test anxious. Instead, as with Kostka & Galassi (1974) and Steven-Richards (1975), recruitment was dependent on the sincere concern displayed by the interested student in improving his/her examination and overall academic performance; i.e. if the student believed he/she fulfilled the description of a test anxious student, this belief was completely accepted by the researcher.

### 5.1.2 Specific Criteria for Participation

(1) Subjects had to be full-time registered students at Rhodes University, regardless of age, sex, race or ethnic group.

(2) Students from all academic levels and in all departments were eligible for participation as Ss.

(3) Students who were in therapy at the time of recruitment, or for a period of three calendar months prior to the recruitment period, were disqualified from participation. This was done to reduce the possible influence of extraneous variables on treatment outcome in this investigation.

---

*1 / While attempts were made to focus the campaign of recruitment on Second-year (and up) students, it was not realistic to exclude First-years from participation; a move advocated by Allen (1972), who observed that "...such students (freshmen) may view the non-specific stresses inherent in their new environment as indicative of test anxiety." (Pp 191). However, in mitigation, it must be stressed that recruitment only took place at the end of the Second academic quarter - by which time most first-year students should have adjusted to the university environment.

(4) As with most recent research in the field (see Anton,1976,Pp 218), students who were on final academic warning ("on probation") were also disqualified from participation.

### 5.1.3 The Panel of Student Judges

Initially, eight students (a number selected arbitrarily by the researcher, but based on popular group sizes in test anxiety group counselling) who met the aforementioned criteria and regarded themselves as test anxious, were randomly selected (from the initial intake = 3 Males and 5 Females) and were appointed to a "panel of student judges" - an advisory panel with the mandate to assist the researcher in:

(A) The construction/adaptation of self-report inventories/ schedules (apart from the initial descriptive schedules, such as the Personal Data Synopsis);

(B) The establishment of a viable routine to monitor S's physiological activity;

(C) The procedure (content and administration) used in implementation of the treatment programmes; and

(D) The optimal size of treatment groups (which they determined to be SIX).

Each member of this advisory panel was paid for their services, and none were permitted to participate in any one of the treatment programmes offered. Furthermore, the hypotheses underscoring the research were not divulged to them.

### 5.1.4 Details Concerning other Subjects Recruited

In addition to the eight student judges, 67 students ultimately volunteered for participation in this research programme. Following the orientation briefing, three volunteers withdrew of their own accord. The remaining 64 volunteers (28 males, 36 females) were randomly assigned to one of ten research groups (involving two control groups and four treatment programmes, each also represented by two groups).

The only variable which was controlled (as far as this was possible) was the sex ratio (the proportion of males to females in each group); this is in keeping with most research in this field, as exemplified by Denny & Rupert (1977,Pp 274). Subject and sex breakdown across the various groups was as follows:

° NO-TREATMENT CONTROL

GROUP A (N=6) - Females, N=3 Males, N=3
GROUP B (N=6) - Females, N=4 Males, N=2

° PLACEBO PROGRAMME/PACKAGE

GROUP A (N=6) - Females, N=4 Males, N=2
GROUP B (N=7) - Females, N=4 Males, N=3

° STUDY SKILLS TRAINING PROGRAMME/PACKAGE

GROUP A (N=6) - Females, N=3 Males, N=3
GROUP B (N=7) - Females, N=4 Males, N=3

° SYSTEMATIC DESENSITISATION TRAINING - METHOD A

GROUP A (N=6) - Females, N=4 Males, N=2
GROUP B (N=7) - Females, N=3 Males, N=4

° SYSTEMATIC DESENSITISATION TRAINING - METHOD B

GROUP A (N=6) - Females, N=4 Males, N=2
GROUP B (N=7) - Females, N=3 Males, N=4

Although not entirely intentional, the number of Ss assigned to each treatment programme (N = 12 or N = 13) is consistant with the work of Kirkland & Hollandsworth (1980), although they did not divide Ss on each treatment into smaller groups, as in the present study.

### 5.1.5 Personal Data Gathered from Subjects

Following the administration of the Personal Data Synopsis questionnaire, the following additional information pertaining to Ss was gathered:

(1) The mean ages of participating Subjects were:
Males - 20,4 years and Females - 19,6 years.

(2) Breakdown across the five pre-university education systems through which Subjects had achieved university entrance, yielded:

| | | | |
|---|---|---|---|
| TRANSVAAL EDUCATION DEPARTMENT | = | 15 | (23%) |
| JOINT MATRICULATION BOARD | = | 17 | (27%) |
| NATAL SENIOR CERTIFICATE | = | 9 | (14%) |
| RHODESIA-ZIMBABWE SYSTEMS | = | 17 | (27%) |
| NATIONAL SENIOR CERTIFICATE | = | 6 | ( 9%) |

(3) The pre-university occupation of Ss was determined to be as follows:

| | | | |
|---|---|---|---|
| SCHOOL | = | 41 | (64%) |
| DEFENCE FORCE (ONE YEAR) | = | 2 | ( 3%) |
| DEFENCE FORCE (TWO YEARS) | = | 12 | (19%) |
| WORK | = | 8 | (13%) |
| UNSPECIFIED | = | 1 | ( 1%) |

(4) Student Level breakdown : indicating the academic level of participating students -

| | | | |
|---|---|---|---|
| FIRST-YEAR LEVEL | = | 25 | (39%) |
| SECOND-YEAR LEVEL | = | 26 | (40%) |
| THIRD-YEAR LEVEL | = | 11 | (17%) |
| FOURTH-YEAR LEVEL | = | 1 | ( 2%) |
| POST-GRADUATE LEVEL | = | 1 | ( 2%) |

(5) Breakdown of degrees for which participating students are registered (classified according to Faculty):

| | | | |
|---|---|---|---|
| ARTS & SOCIAL SCIENCES | = | 32 | (50%) |
| SCIENCE | = | 7 | (11%) |
| COMMERCE & SECRETARIAL | = | 6 | ( 9%) |
| PHARMACY | = | 14 | (22%) |
| EDUCATION | = | 5 | ( 8%) |

### 5.1.6 A Synopsis of some Test Anxious Responses Reported by Subjects

To assess just how anxious participating students were, a descriptive schedule was administered to Ss during the initial orientation briefing. Labelled as the "exam experience survey", this schedule seeks information concerning test- and general- anxiety experiences; specifically: the first noticed onset of disabling exam tension; the extent of motivation to evade sitting for an exam by committing self-injury; physiological reactions experienced during/prior to an exam; and anxiety reduction strategies used by Ss.

Information obtained from this questionnaire, included:

(1) Fifty-four Ss (84%) reported experiencing "mental blocks" during examinations; more than 70% of these citing the experience as "paralysing" or "distracting" within the exam context.

(2) Just over 64% of all Ss considered themselves to be "naturally tense" (i.e. anxious about something most of the time).

(3) Twenty-four (38%) of the Ss noted high school as their first encounter with disabling levels of test anxiety; 20 (31%) cited university as their first experience of such tension; with 8 (12%) choosing primary school; 5 (8%) cited their Matriculation year specifically, with 7 (11%) uncertain of the time of onset of their disabling exam anxiety.

(4) Exactly half (N=32) the participating students had considered committing self-injury to avoid sitting an exam. Specifically, 11 (17%) had "often" considered it, while 21 (33%) had thought about it "sometimes"; 32 (50%) had "never" considered self-injurous acts in order to evade (albeit temporarily) sitting university exams.

(5) Physiological experiences encountered, encompassed for many, most of the options cited on the questionnaire, notably (with the percentage of Ss who selected the particular option):

- "SHAKES" 42%
  (Mostly on the hands. One Subject reported: "...my writing goes up the wall.)
- DRY MOUTH 67%
- BREATHING DIFFICULTIES 52%
- "RACING" HEARTBEAT 63%
- HEADACHES 66%
  (40% of these identified migraines specifically)
- FEELINGS OF NAUSEA 44%
- INSOMNIA 30%
  (Quote from one Subject: "I'm kept awake by all the facts in my head.").
- OTHERS experiences "coldness", "dizziness" and Subject noted: "My leg often feels heavy, as if there's no blood getting through".

(6) "Strategems" to otherwise cope with disabling anxiety, varied quite markedly from Subject to Subject, with high responses to "increasing alcohol intake and smoking rate".

Five students alluded to using 'narcotic preparations', while more than 14 employed some or other relaxation technique (mostly yoga); concerning this latter however, one Subject noted: " I'm often too tense to do yoga exercises properly".

Other strategies included tidying one's room; going on walks with friends (esp. through the botanical gardens off Rhodes campus); playing musical instruments and engaging in exhaustive exercise.

EIGHT Ss were on mild sedative preparations, such as "CALMETTES" and "LERT".

### 5.1.7 Subjects who withdrew during the Present Study

No Ss withdrew during or immediately after the running of the treatment programmes. However, by the time of the 6-month follow-up, 14 Ss had withdrawn.

Details of the withdrawls are as follows:

° NO-TREATMENT CONTROL GROUPS (N=12)

- FOUR Ss withdrew: 3 graduated; 2 with a Class III pass & 1 with a Class II/1 pass.
  1 was asked to leave Rhodes by the administration, following his poor performance in the first term in 1982.
  In addition, one subject was obliged to repeat a year in 1982.

° PLACEBO GROUPS (N=13)

- THREE Ss withdrew: 1 graduated with a Class II/1 pass,
  2 left university with their degrees incomplete; they are now both working in a commercial enterprise.

° STUDY SKILLS TRAINING GROUPS (N=13)

- TWO Ss withdrew: 1 graduated and registered for B.Sc.(Hons) degree at University of the Witwatersrand.
  1 left Rhodes to persue a technical course at the Wits Technikon.

° SYSTEMATIC DESENSITISATION - METHOD A GROUPS (N=13)

- TWO Ss withdrew: BOTH graduated with Class II/2 passes.

° SYSTEMATIC DESENSITISATION - METHOD B GROUPS (N=13)

- THREE Ss withdrew: ALL GRADUATED -
  1 with a Class I pass,
  1 with a Class II/1 pass, and
  1 proceeded onto BA(Hons) in English at the University of Cape Town.

## 5.2 GENERAL PROCEDURE

### 5.2.1 Introduction

Four multicomponent treatment programmes (or levels) plus a no-treatment control were employed in this investigation. While each treatment level shared components with other levels, they all featured a distinctly different therapeutic emphasis (or 'core'). Each treatment programme and the no-treatment control was represented by two groups of Ss (see Section 5.1.4 for a numerical breakdown).

### 5.2.2 Setting

In support of the mandate to keep the research venues uncomplicated, as regards furnishings and equipment (point noted in the introduction to PART TWO - see Section 4.1), it was decided (by the researcher in liason with the panel of student judges) that all treatment groups would meet in the "therapy room" in the Psychology Department of Rhodes University.

Certain advantages were evident in the choice of this room as a venue for experimental sessions:

(1) The room houses a number of mattresses on a carpeted floor;

(2) The room is extremely well sound-proofed (with double-glassed windows, a double-door and sound-proofing panels on the walls); this reducing the impact of extraneous noises from within the department itself and from the roadway outside. Light background music was however also used (at appropriate intervals) to further disguise environmental noises. *1

(3) The room was often in demand (with an apparently active-roster on the door). This enabled the researcher to reduce interaction between participating Ss, by indicating that the room was booked immediately after the session, and it was necessary to vacate the venue immediately at the sessions end. This procedure was followed on the advice of a number of researchers in this field, concerning the possible influence of social interaction between Ss on the research findings.

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*1 / After a number of 'sound sessions' by members of the student panel of judges, light electronic and classical music was selected for use as background music (where appropriate). Permission for the use of music in research was given by NORM, the National Organisation of Record Manufacturers. Musical works used included pieces by Pachelbel, Vangelis, Tomita and Jarre.

During certain sessions, when Ss were required to write down instructions concerning techniques being taught in the treatment programme, clipboards and writing implements were supplied.*1

It is difficult to contrast the setting selected for this research with venues used in other studies, for the simple reason that little or no reference is made in the literature to the settings employed. However, in the few reports where the setting is detailed, venues appear to be similar to that used in the present study.

For example, Anton (1976) let his Ss lay on a soft, carpeted floor with pillows under their heads. Of course, more exotic furnishings are reported, such as the study by Mitchell & Ingham, 1970, where Ss reclined with their eyes closed on aluminium folding "banana" beds, but evidence suggests little additional benefit was achieved with the use of such select furnishings.

### 5.2.3 Duration of Treatment Programmes

As part of the orientation session (the briefing following the initial recruitment campaign), Ss were required to complete the Personal Data Synopsis schedule (see Appendix A1, and the earlier references to this schedule). One constituent of this instrument was an item which sought the prospective Ss preference for the planned duration of a full-treatment programme. In BOX 5A is an extract of the Personal Data Synopsis schedule, showing the responses indicated by the participating Ss.

The duration alternatives presented for selection were chosen on the basis of a review (conducted by this researcher) of the most popular durations employed in earlier experimental work involved in controlling test anxiety; see BOX 5B for a survey of this review.

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*1 / Clipboards and writing implements were supplied by kind courtesy of Barclays National Bank Limited on the campus of Rhodes University.

| BOX 5A | CHART SHOWING PREFERRED TREATMENT DURATIONS (SELECTED BY Ss) AS WELL AS AN INDICATION OF MAXIMUM DURATIONS WHICH Ss WERE WILLING TO UNDERTAKE FOR IMPLEMENTATION OF THE TREATMENTS. |
|---|---|

| PREFERENCE OF DURATION OF TRAINING SESSIONS | CHOICE OF MAXIMUM DURATION | TREATMENT DURATION OPTIONS |
|---|---|---|
| 4 | 0 | A One-hour long weekly meeting over FIVE weeks |
| 30 | 4 | A One-hour long weekly meeting over SIX weeks |
| 21 | 39 | A One-hour long weekly meeting over SEVEN weeks |
| 7 | 18 | A One-hour long weekly meeting over EIGHT weeks |
| 1 | 1 | A Two-hour long weekly meeting over FIVE weeks |
| 0 | 1 | A Two-hour long weekly meeting over SIX weeks |
| 0 | 0 | A Two-hour long weekly meeting over SEVEN weeks |
| 0 | 0 | A Two-hour long weekly meeting over EIGHT weeks |
| 1 | 1 | A One-hour long meeting TWICE a week for FOUR weeks |
| 0 | 0 | A One-hour long meeting TWICE a week for FIVE weeks |
| 0 | 0 | A One-hour long meeting TWICE a week for SIX weeks |

All Ss eventually agreed to a one hour-long weekly meeting over seven weeks; this was however immediately increased to 1-and-a-quarter hours in length, at the request of the Ss during the first session of each treatment group (this totalling 525-minutes or 8-and-three-quarters of an hour for the whole programme).

Popular times for sessions were evenings between 19h00 and 21h00, and over weekends. A summary of the contents of the four experimental treatment programmes, is now presented.

## 5.3 PROCEDURE IN THE PLACEBO GROUPS

The "placebo" or "pseudo-therapeutic" procedure (as Holroyd,1976, has termed it) was selected, bearing the ethical concerns delineated by O'Leary & Borkovec (1978) in mind; these concerns being that any placebo 'treatment' should be certain to minimise potential harm to the Subject, while clients should not be offered theoretically totally inert treatments.

| BOX 5B | TABULATED REVIEW OF SOME TREATMENT DURATIONS EMPLOYED IN TEST ANXIETY RESEARCH |
|---|---|

| YEAR | RESEARCHER/S | TREATMENT DURATION | TOT (HRS) |
|---|---|---|---|
| 1966 | KATAHN, M. et al. | 8x 1-hour sessions (1 SESSION PER WEEK) | 8 |
| 1967 | EMERY & KRUMBOLTZ | 8x 1-hour sessions (1 SESSION PER WEEK) | 8 |
| 1968 | SUINN, R.M. | 7x 1-hour sessions (1 SESSION PER WEEK) | 7 |
| 1971 | TAYLOR, D.W. | 8x 40-minute sessions (2 SESSIONS PER WEEK) | 5,3 |
| 1971 | McMANUS, M. | 7x 1-hour sessions (1 SESSION PER WEEK) | 7 |
| 1972 | MEICHENBAUM, D.H. | 8x 1-hour sessions (1 SESSION PER WEEK) | 8 |
| 1974 | BEDNAR & WEINBERG | Suggest 10-hours | 10 |
| 1974 | CALEF, R.A. et al. | 8x 1-hour sessions (2 SESSIONS PER WEEK) | 8 |
| 1975 | STEVEN-RICHARDS, C | 4x 1-hour sessions (SPACED OVER 5 WEEKS) | 4 |
| 1976 | RICHARDSON, F.C. | 6x 2-hour sessions (1 SESSION PER WEEK) | 12 |
| 1976 | ANTON, W.D. | 6x 45-minutes (2 SESSIONS PER WEEK) | 4,5 |
| 1977 | HORNE & MATSON | 10x 1-hour sessions (2 SESSIONS PER WEEK) | 10 |
| 1980 | KIRKLAND & HOLLANDSWORTH | 5x 90-minute sessions (1 SESSION PER WEEK) | 7,5 |

### 5.3.1 Placebo 'Programme' Constituents

The focus of the placebo treatment was based on Yalom's (1970) universality principle; in turn, based on earlier observations by Katahn (1966), who noted:

> " ... students 'invariably' felt that the most important aspects of the programme were just being able to talk about their problems with other students, finding out that there were others having similar experiences."
>
> (Pp 548)

Irwin Sarason et al. (1967) also observed that the behaviour of others may serve as an extremely powerful behaviour-influencing cue. Thus, it should be stressed that this programme was unlikely to be "totally useless" and certainly not "damaging" to the Ss involved, as further evidenced by research of D'Alelio & Murray (1981), who noted that group interaction of the type used in this procedure, acted as an "...extension of the therapist in teaching the cognitive techniques" (Pp 306).

### 5.3.2 Placebo 'Programme' Roster

#### SESSION ONE

During the first meeting of the placebo groups, the following rationale/ instructions were delivered by the facilitator:

> " We all have to cope almost daily with a number of stressful situations and events related to studying and exams that may and often do produce some anxiety. These situations may be difficult and irritating involving decisions with uncertain outcome, or in some other way constitute a 'problem'.
>
> You are asked to now brainstorm over- and briefly discuss (for about fifteen minutes) as many of these situations as you can ..."

Further details on how to brainstorm were then provided to Ss.

They were also instructed to write down statements which typified their thoughts both while studying and sitting for exams. They then had to discuss:

(a) The nature of statements made (i.e. positive or negative); if negative, they were required to write down the positive version of the same statement; and

(b) The content of statements made; i.e. were they appropriate to the task on hand ? If not, Ss were instructed to write down statements which focussed their cognitions more forcibly on the task to hand.

As the emphasis of this programme was placed on the modification of cognitions, these evaluations of self-talk (where applicable) and thoughts was continued throughout all seven sessions in this 'package'

#### SESSION TWO

Apart from investigating self-instructional statements and attentional-control skills, so-called "meditation exercises" were introduced to Ss at the second meeting; these exercises were introduced to focus the Ss attention more forcibly on the role of mental events in test anxiety and to lend added substance to the "programme".

The meditation exercises were based on the rationale that they would allow group members to achieve a mental state that could not be disturbed by test anxiety. Based on the work of McReynolds et al. (cited in Holroyd, 1976, Pp 994), the exercises required Subjects to:

(a) Concentrate on various sensations of the hands, arms, and body to "increase body awareness";

(b) Imagine commonplace situations such as "sewing a button on a pair of pants" to develop "mental control"; and

(c) Engage in simultaneous mental control and body awareness exercises for "meditation proper".

## SESSIONS THREE TO SIX

Most of the remaining sessions comprised short discussion sessions involving the sharing of study and anxiety experiences and a brief trace through the meditation and earlier cognitive modification exercises.

## SESSION SEVEN

The final session was used to complete a questionnaire and to discuss the structure of examination papers and the role of the examination as an evaluative technique.

Because of the emphasis placed in this "programme" on cognition, Ss were expected to achieve improvements in their scores on the self-report research measures, but not on the measures of physiological activation, with only slight improvement on the academic performance measure.

# 5.4 PROCEDURE IN THE STUDY SKILLS TRAINING PROGRAMME

### 5.4.1 Core Study Skills Training Programme Constituents

(A) Aspects of study skills training: (after Robinson,1970)

- Study Habits
- Examination Management

### 5.4.2 Secondary Programme Features

(a) Cognitive Restructuring and

(b) A discussion and short demonstration of deep-muscle relaxation.

The selection of Francis Robinson's (1970) study counselling methods (notably the SQ3R METHOD - see BOX 5C for summary) was made from an array of different study skills programmes (mostly of American origin), principally because the student judges (who considered the different programmes together with the researcher) regarded the SQ3R METHOD as:

° A very practical and useful method; easy to acquire;

**BOX 5C** | **STEPS IN THE SQ3R STUDY METHOD**

**Survey** **1.** Glance over the headings in the chapter to see the few big points that will be developed. Also read the final summary paragraph if the chapter has one. This survey should not take more than a minute and will show the three to six core ideas around which the discussion will cluster. This orientation will help you organize the ideas as you read them later.

**Question** **2.** Now begin to work. Turn the first heading into a question. This will arouse your curiosity and thereby increase comprehension. It will bring to mind information already known, thus helping you to understand that section more quickly. The question also will make important points stand out at the same time that explanatory detail is recognized as such. Turning a heading into a question can be done at the instant of reading the heading, but it demands a conscious effort on your part.

**Read** **3.** Read to answer that question, *i.e.*, to the end of the first headed section. This is not a passive plodding along each line, but an active search for the answer.

**Recite** **4.** Having read the first section, look away from the book and try briefly to recite the answer to your question. Use your own words and cite an example. If you can do this you know what is in the book; if you cannot, glance over the section again. An excellent way to do this reciting from memory is to jot down brief cue phrases in outline form on a sheet of paper.

Now repeat steps 2, 3, and 4 with each successive headed section: that is, turn the next heading into a question, read to answer that question, and recite the answer by jotting down cue phrases in your outline. Read in this way until the entire lesson is completed.

**Review** **5.** When the lesson has been read through in this way, look over your notes to get a bird's-eye view of the points and their relationship and check your memory as to the content by reciting the major subpoints under each heading. This checking of memory can be done by covering up the notes and trying to recall the main points. Then expose each major point and try to recall the subpoints listed under it.

These five steps of the SQ3R method—survey, question, read, recite, and review—when polished into a smooth and efficient method should result in faster reading, picking out the important points, and fixing them in memory.

(EXTRACTED FROM ROBINSON,1970,Pps 32-33)

- All-embracing, in that the student judges regarded it as "best meeting their needs" in relation to their different study skills;
- Offering flexibility for using the SQ3R principles without having to surrender often "safe" idiosyncratic study habits.
- Probably the most enduring and certainly one of the most widely used study skills methods available for large-scale counselling. (Robinson,1970,Pps 32-33).

### 5.4.3 Study Skills Programme Roster

#### SESSIONS ONE TO THREE

At the first session, Ss were told that many researchers investigating test anxiety, have given their support to study skills counselling over all other forms of therapy, because in such training, the student is taught to go on the offensive against academic work, rather than to be defensive.

Before starting work on the study skills, Ss were instructed on the importance of positive self-talk and thought in contributing to the development of a more motivating attitude towards exams (and thus improved performance). They were instructed to list down statements which reflected their cognitions before and during exams; they were then told to list the positive equivilant (if the statements cited were negative). The positive statements were then internalised. Because of time restraints, no discussion took place over self-statements.

Subjects were then told about deep-muscle relaxation and how to blend such relaxation in with their regular study curricula. Ss did not receive intensive training in this technique however.

The SQ3R METHOD was also introduced during these first three sessions, in accordance with Robinson's presentation of her method (see BOX 5C on the previous page). This method was then discussed in relation to the personalised study habits of each Subject, focussing specifically on:

- The use of underlining in textbooks & Lecture Notes;
- Studying graphs, tables, diagrams & maps.

Ss were also introduced to the concept of "critical exciting study factors" (after Finger & Galassi,1977; also see in Beaty & Barling,1982), an operant conditioning procedure, whereby the Subject rewards him/herself with a pleasrable activity for a specific number of efficient timed units engaged on a "disliked" task, such as studying; for example: "...for every hour of efficient study, I will reward myself with 10 minutes at the Vic or the Mot"; two Grahamstown student public houses (in a hotel and motel, respectively: The Victoria Hotel and The Settlers Motel).

## SESSIONS FOUR TO SIX

During these sessions, Ss were introduced to the following techniques:

° SKILLS IN ATTACK & CONCENTRATION

- Self Evaluation of time & activities:

Because of the individualistic circumstances of each Subject, they were instructed to plot-out their use of time in accordance with a self-constructed table of activities; the guide item-table and time-chart provided to Ss appear in BOX 5D.

Ss were moreover instructed how to evolve a time-tied daily roster in advance of a set of up-coming exams (a roster incorporating both academic & recreational activities). A Check-list of work behaviour was also given regularly to Ss (see APPENDIX D ).

- Examination of Study Conditions:

Considering:

(a) MINIMISING DISTRACTIONS DURING STUDY, SUCH AS...

- Interpersonal Interruptions
  (For Example, Conversations; people walking past location of study; etc.)
- The Setting (Physical Surroundings)
  (For Example, Having an orderly layout of materials on the desk; presence of few distracting posters, etc.)

(SEE FIGURE 5.F1 AND IN APPENDIX D1, WHERE A STUDY CONDITIONS EVALUATION FORM IS PRESENTED).

- Restricting background music during study. Since many students desire music to accompany their study, Ss were introduced to findings and discussion on the influence of different types of music on study performance. *1
- Having good lighting (Eg. no glare; an adequate and well-distributed illumination.)

**BOX 5D** — EXAMPLE OF THE GUIDE-ITEM TABLE & TIME-CHART PROVIDED TO THE SUBJECTS

(EXTRACTED FROM ROBINSON,1970,Pps 74-75)

A GUIDE-ITEM TABLE

**Week-Day Distribution of Time in Hours and Minutes of Freshmen Women; Data Given for Median, First Quartile, and Third Quartile.[a]**

| | Median | Q1 | Q3 |
|---|---|---|---|
| Sleep | 8 hr 0 min | 7 hr 30 min | 8 hr 30 min |
| Meals | 1 hr 13 min | 1 hr 0 min | 1 hr 26 min |
| Class | 3 hr 07 min | 2 hr 39 min | 3 hr 35 min |
| Study | 3 hr 05 min | 2 hr 18 min | 3 hr 52 min |
| Recreation | 3 hr 26 min | 2 hr 34 min | 4 hr 18 min |
| Work | 1 hr 39 min | 57 min | 2 hr 21 min |
| Personal | 1 hr 50 min | 1 hr 26 min | 2 hr 14 min |
| Travel | 52 min | 33 min | 1 hr 11 min |
| Miscellaneous | 2 hr 08 min | 1 hr 15 min | 3 hr 03 min |

**Present Use of Time** — A TIME-CHART

**(Keep careful record each hour of what was done in the preceding time.)**

**Day or days summarized?** _____

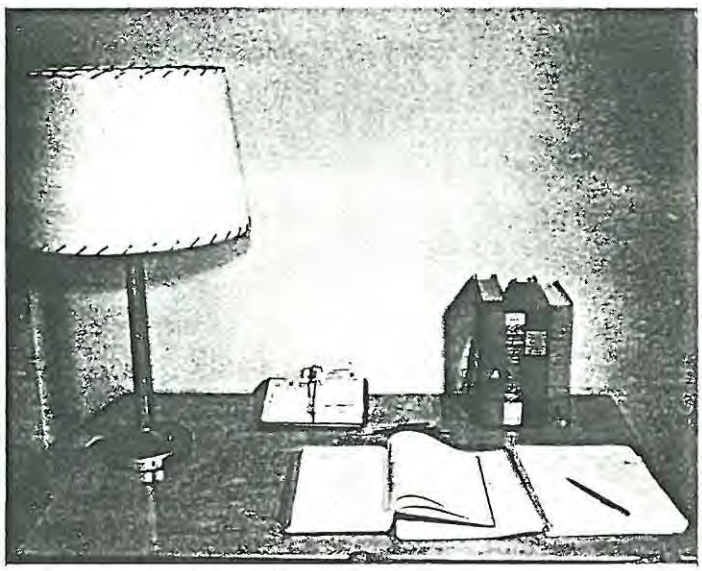
| | | |
|---|---|---|
| 7:00 | 12:30 | 6:00 |
| 7:15 | 12:45 | 6:15 |
| 7:30 | 1:00 | 6:30 |
| 7:45 | 1:15 | 6:45 |
| 8:00 | 1:30 | 7:00 |
| 8:15 | 1:45 | 7:15 |
| 8:30 | 2:00 | 7:30 |
| 8:45 | 2:15 | 7:45 |
| 9:00 | 2:30 | 8:00 |
| 9:15 | 2:45 | 8:15 |
| 9:30 | 3:00 | 8:30 |
| 9:45 | 3:15 | 8:45 |
| 10:00 | 3:30 | 9:00 |
| 10:15 | 3:45 | 9:15 |
| 10:30 | 4:00 | 9:30 |
| 10:45 | 4:15 | 9:45 |
| 11:00 | 4:30 | 10:00 |
| 11:15 | 4:45 | 10:15 |
| 11:30 | 5:00 | 10:30 |
| 11:45 | 5:15 | 10:45 |
| 12:00 | 5:30 | 11:00 |
| 12:15 | 5:45 | 11:15 |

*1 / In an experiment to determine the effects of music on students' efficiency in study, it was found that these students differed in their reactions to the use of music. On a comprehension task, a control group learned the task without any music; Group A read while popular vocal music was played; Group B read while classical music was played. Group B & the control achieved equal levels of comprehension, while Group A comprehended the material only half as well.

(EXTRACTED FROM ROBINSON,1970,Pp 85)

FIGURE 5.F1

DISTRACTING AND NONDISTRACTING STUDY CONDITIONS

(extracted from Robinson,1970,Pp 84)

(b) PHYSIOLOGICAL FACTORS AFFECTING CONCENTRATION, SUCH AS...
- Temperature
- Ventilation
- Physical fitness

- Motivation Behind Studying:

A general discussion was persued on the whys and wherefores of the methods used to evaluate academic achievement (i.e. precisely what Ss themselves understood exams were trying to measure).

° HOW TO DEAL WITH MATERIAL ULTIMATELY INTENDED FOR EVALUATION

- Cues in Couse Material

Including a look at textbook cues (For example, typographical devices used to highlight important sub-aspects of a topic); cues in the lecture theatre (using the so-called LISAN METHOD - see BOX 5E for a synopsis of this method) and cues from previous exams.

- Ways to Retard Forgetting

It was explained to Ss that the problem of studying is TWO-FOLD:

° Firstly, learning what should be known, and

° Secondly, to fix it in one's memory so that it is available when required.

FOUR primary methods of tackling the process of forgetting were introduced and discussed:

(1) Interest and intention to remember;
(2) Selection of major points and key phrases;
(3) Self-recitation (to aid in fixing material in the memory and to reduce reactive inhibition in learning); and
(4) Distributed learning (Notably a caution against "cramming", where there is reasonably good immediate recall, but rapid subsequent forgetting).

- Reading Rate Practice:

Covering tips on improving reading speed, while retaining comprehension (as per the exercise presented in APPENDICES D2 TO D4).

| BOX 5E | OUTLINE OF THE LISAN METHOD<br>DESIGNED TO ASSIST SUBJECTS IN BECOMING BETTER LISTENERS IN LECTURES. |
|---|---|

| | | |
|---|---|---|
| L | : | LEAD, don't follow; anticipate what's going to be said. |
| I | : | IDEAS, find them. |
| S | : | SIGNALS, watch for them. |
| A | : | ACTIVE, not passive involvement. |
| N | : | NOTES, take them & organise your material. (this included a look at the use of "concept trees") |

(EXTRACTED FROM CARMEN & ROYCE ADAMS, 1972, Pp 30)

° EFFECTIVE EXAMINATION SKILLS

The following aspects of exam preparation and execution were presented and discussed:

- Preparation:

METHODS OF REVIEW -
- Predicting likely exam questions (Focus here on emphasising certain aspects of the material, rather than engaging in highly risky spotting of specific areas.
- Use of Mnemonics (A popular device (often a verse) to aid memory recall; esp. a list of items - such as the SQ3R & LISAN abbreviations already introduced.

PREPARATION FOR DIFFERENT TYPES OF EXAMS -
- Objective/Multiple-choice type and
- Essay-type exams (Looking at key-word instructions in questions)

USE OF DIAGRAMS -
- A discussion of the cautious and meaningful use of diagrams and flow-charts in exams.

INTRODUCTION TO THE SCORER SYSTEM FOR TACKLING EXAMS
- see BOX 5F for an outline.

| BOX 5F | OUTLINE OF THE SCORER SYSTEM OF TACKLING EXAMS |
|---|---|

S : SCHEDULE your time and your work

C : CLUE words (repeat of key word instructions)

O : OMIT difficult questions initially (depending on the mark distribution, advice involved telling Ss to tackle the questions they knew first).

R : READ questions carefully (be certain you know what's expected).

E : ESTIMATE your answers - don't "pad" responses; always relate questions to important core ideas delivered in the course.

R : REVIEW your work if time permits; always use all the time available.

(EXTRACTED FROM CARMEN & ROYCE ADAMS, 1972, Pp 225)

SESSION SEVEN

This encompassed a detailed review and discussion of all components introduced in this programme. Ss also completed a self-report questionnaire.

Because of the emphasis placed on improving study/exam skills in this programme, Ss were expected to achieve substantial improvements on the measure of academic evaluation and on self-report measures; however, only small score gains were expected on physiological measures.

## 5.5 PROCEDURE IN THE SYSTEMATIC DESENSITISATION PROGRAMME - METHOD A

### 5.5.1 Core Programme Components

(A) The construction of individualised anxiety hierarchies;

(B) The record card method of working through hierarchal scenarios;

(C) Deep-muscle relaxation training (after Jacobson,1938 & Wolpe,1958).

### 5.5.2 Secondary Programme Features

(a) Cognitive restructuring; and

(b) A discussion of examination technique.

### 5.5.3 Systematic Desensitisation - Method A Programme Roster

SESSION ONE

At the outset, Ss were briefed on the rationale behind the systematic desensitisation technique; the concept of desensitisation as a counterconditioning procedure - involving the conditioning of relaxation to anxiety-arousing cues.

Ss were told:

> "...an important part of the method involves teaching you to relax as completely as possible. You may think you don't have to be taught how to relax, but the fact is that most people are frequently unaware of their tensions." (after Garlington & Cotler,1968,Pp249)

Initially then, Ss were introduced to the deep-muscle (or progressive) relaxation training procedure developed by Jacobson (1938), modified by Wolpe (1958).

To a taped monologue (with musical accompaniment) Ss worked through a series of relaxation exercises. The researcher introduced an assistant who aided in directing participants to perform the exercises efficiently. To demonstrate the feelings of tension, both the session supervisor and assistant held each Ss wrist in turn, while requesting him/her to push and pull as hard as they could against the stabilising pressure exerted by the group leader and co-leader; keeping the tension for about 5 seconds each time (after Katahn et al.,1966,Pp 545).

To reinforce the exercise programme, Ss were then presented with an illustrated synopsis of the exercises in handout format (- this handout is presented in APPENDICES C1 & C2).

Each Subject was then coached on how to construct an individualised anxiety hierarchy; they were told what such a hierarchy was intended to represent*1

---

*1 / Hierarchies were intended to feature ranked lists of exam-related scenarios/situations with which the individual identified feelings of anxiety - the most anxious scenario ranked as number one, with the least anxious at the bottom of the hierarchy.

and they were advised to use essays which had been formally scripted for use during the physiological assessment as a means of guiding them in the evolution of their unique hierarchy. Ss were instructed to limit their hierarchies to 16 items (no minimum was stated) while phrasing each scenario thus included in their own vernacular (or in such a manner as would make visualisation of the scenario most easy). Ss were given 15 minutes to work on their hierarchies, whereafter they were instructed to complete them at home and submit them in advance of the following session*1.

They were then introduced to the importance of restructuring their cognitions, to ensure that such cognitions were at all times of a positive, motivating nature. By way of illustration, Ss were each told to list a number of thoughts/self-talk statements that they encountered during study or while sitting for an exam; they then had to decide if any of the statements were negative or positive - if the former, they were instructed to write down the opposite to the statement (or thought) and to say this positive version aloud to themselves in the confines of their home.

For the inter-session period, Ss were instructed to spend between 15-20 minutes twice a day practising relaxation exercises; for this purpose, Ss were given a ditto-list of muscle-groups to aid them (after McManus,1971, see esp. Pp 53).

They were further encouraged to practice relaxation exercises during quiescent, anxiety-free times when the exercises could produce the deep relaxation needed (after Denney & Rupert,1977,Pp 274).

The personalised anxiety hierarchies were collected by the researcher and by employing the desensitisation group procedure (developed by D.S. Taylor 1971), each hierarchal item was typed on a record card (one scenario/item per card) and stacked in accordance with each Ss rank-order of the scenarios, from the least to the most anxiety-inducing experiences.

## SESSION TWO

The session began with a reiteration of the importance of positive self-statements in attempts to reinforce motivating cognitions related to exams.

---

*1 / It was explained to Ss that their hierarchal items would be listed on record cards, one item per card; this enabling each Subject to maintain his/her personalised hierarchy and permitting each Subject to move through the items at his/her own pace.

Ss were questioned as to difficulties encountered with the relaxation exercises. Thereafter, all Ss practised the relaxation programme again. Ss then received their individual anxiety hierarchies prepared in between session one and two on record cards.

Having checked the ranking order, to see that the hierarchy was accurately compiled, Ss were introduced to the desensitisation procedure:

FIRSTLY SUBJECTS WERE TOLD:

- They would now systematically move through their scenarios, visualising one at a time, while employing their heightened awareness of muscle tension (being achieved through the deep-muscle relaxation exercises) to locate and relieve areas of tension.
- Apart from the primary trial, they could add to-, take away from-, or change the order of their hierarchal presentation *1. As hierarchies between different members varied in length, Ss who completed movement through their hierarchy prior to other group members, should practise relaxation exercises until all members had finished.
- Once the entire hierarchy had been explored, they were to place a blue cue card on top of their pile of cards (this would serve as an indication to the facilitator that the Subject had completed his/her hierarchal progression.

Before beginning on initial trial run of densensitisation, Ss were re-introduced to the earlier-devised Subjective Units of Disturbance (SUD) scale (or a range: 0-100). Ss were told to gradually learn to apply a label (or score) to a "level of tension experienced" during desensitisation; even vague labels such as "fairly tense" and "quite relaxed" were permitted. This attribution of numerical and/or verbal labels was necessary (Ss were informed) in order to afford the Subject a fairly clear and relatively unambiguous indication of the level of tension experienced, and a guide as to whether the Subject should proceed to the next scenario, or repeat the present one. Ss were advised to only progress to the next scenario when their level of felt anxiety was "appreciably low".

Using just the first four 'least-anxiety-inducing' scenarios, Ss were directed (once they were comfortably positioned - see notes on 'Setting' - Section 5.2.2) to visualise the scene listed on the first record card (the weakest anxiety experience) following the specific instruction: "IMAGINE THE SCENE".

After 20 seconds, on a pre-determined cue-word "CALM", Ss were instructed to "LOCATE ANY TENSION IN THE BODY".

---

*1 / Additions to the hierarchy were limited; the hierarchy could not exceed 16 items.

They then concentrated on the areas of tension detected, while employing their deep-muscle relaxation skills to relax areas of tension. TEN seconds later, Ss were told to imagine the SAME scene again (on the cue word "SCENE"), until, after 20 seconds, the cue "CALM" was again declared, while Ss attended to points of tension experienced for a further 15 seconds.

This staggered presentation was used to assist Ss unable to initially pinpoint tension-areas in having a further opportunity to do so.

The next scenario in the hierarchy was cued by "NEXT CARD"; Ss could either progress onto the next item in their hierarchy or repeat that just visualised (albeit for a second or third time).

The next cycle was then initiated (after 5 seconds) with the cue "IMAGINE THE SCENE"; this followed after 20 seconds by "CALM", and so on. For the purposes of this primary trial, only the first four least anxiety-provoking scenarios were worked through.

The session ended with a brief resumé of the session contents and programme progression; Ss were instructed to continue to practice the relaxation exercises for at least 15 minutes a day.

## SESSION THREE

Following a brief feedback session, Ss practised a few relaxation exercises.

Desensitisation was then initiated, each Subject using their full hierachy. Ss were reminded of the importance of developing an SUD-scale to determine their felt anxiety level during the desensitisation procedure. This took up the remainder of the session.

## SESSION FOUR

At the beginning of the session, Ss were given elementary tips on how to improve their exam technique (such pointers as tackling "known" questions first).

Ss were told that in order for them to continue the full desensitisation programme in between sessions, the verbal cues were to be paired with

audio cues (or tones[*1]) - eventually, the audio cues would take the place entirely of the verbal cues.

Audio cues were then to be transferred onto cassette tapes[*2] which Ss could then use at home/in residence in their own time between sessions. For the purpose of pairing the verbal and audio cues, Ss were instructed to use the four least anxiety-provoking scenarios in their hierarchy. Each verbal cue was then followed directly by an electronic tone (the audio cue), keyed as follows:

- "IMAGINE THE SCENE" = One 1,5-second E-major 'pip' sound
- "CALM" = Paired with a resonant G-minor 'gong' sound
- "NEXT CARD" = A series of four 0,5-second 'pip' sounds (on Middle-C).

After this conditioning exercise, the session was terminated.

## SESSION FIVE

The session started with a brief recapitulation of the importance of positive motivating cognitions in the pre-examination and intra-exam context.

Ss then started the desensitisation cycle; for the first 5 items, both verbal and audio cues were delivered - from the 6th scenario onwards however, only the electronic tone was presented.

Ss expressed highly positive feelings about the use of the tone and indicated a preference for tone-cueing over verbal-cueing.

## SESSION SIX

The entire session was absorbed with the desensitisation procedure, working with complete hierarchies.

## SESSION SEVEN

All components introduced in this package were reviewed during this session. In addition, the four MOST anxiety-provoking scenarios were used for a desensitisation exercise. Ss also completed a self-report schedule during the sessions.

---

*1 / The first reported use of a tape-recorded tone as a cue in the treatment of test anxiety by Desensitisation methods came in 1974, when Calef found (in a study involving 2 groups: A- using a recorded tone; B- using no tone/conventional desensitisation) that desensitised Ss hearing a tone, achieved significantly more reduction in anxiety than desensitised Ss who did not (Calef & Sundstrom,1974,Pp 1285).

*2 / 12-minute tapes supplied by the TEDELEX COMPANY (Johannesburg)

## 5.6 PROCEDURE IN THE SYSTEMATIC DESENSITISATION PROGRAMME - METHOD B

### 5.6.1 Core Programme Constituents & Secondary Programme Features

Identical to the core constituents used in METHOD A, with the exception of the manner of constructing the anxiety hierarchy; in METHOD B, hierarchies were group-constructed.

### 5.6.2 Systematic Desensitisation (Method B) Programme Roster

#### SESSION ONE

As in METHOD A, Ss were initially briefed on the rationale behind the systematic desensitisation technique (q.v. description in Section 5.5).

Ss were then divided within their groups into two small work cells (for both SD-METHOD B groups, Cell A, N=3; Cell B, N=4). Using their pre-assessment essays on exam experiences (which they were instructed to bring to the session) as protocols, Ss were instructed in the basic tenets of the phenomenological research praxis (adapted from Stones,1979, cited in Kruger - see Chapter Four in this text).

In conjunction with an elementary form of brainstorming, each cell constructed an anxiety hierarchy (with a maximum of 16 items). The two cells then came together again as a group and evolved a 'universal' hierarchy, which represented the "essence" (in phenomenological terms) of the exam experience for the participating Ss.

The whole of Session 1 was used on these deliberations; final hierarchies were submitted at the end of the session for transfer onto record cards.

#### SESSION TWO

The Ss were introduced to the relaxation training procedure (outlined in description of METHOD A - q.v.). Much emphasis was given as well to the importance of the structuring of positive cognitions related to the exam situations.

Each Subject then received a copy of the group hierarchy, all on record cards - one item per card. Ss were instructed that they could (if so desired) change the ranked order of the scenarios.

They were reintroduced to the concept of the SUD-scale, as well as on how to apply it while imagining anxiety-provoking scenarios. A primary trial run was then conducted, using the four least-anxiety-provoking items (as in METHOD A).

## SESSIONS THREE TO SEVEN

The content of these sessions differed only marginally with those of the METHOD A programme; for example, more time was devoted to the relaxation exercises in METHOD B SESSION THREE, than in the same session in METHOD A.

Because both systematic desensitisation programmes emphasised the emotional (or physiological) aspects of test anxiety, Ss in these programmes were expected to make the greatest gains on physiological measures; with notable improvements on the self-report schedules, and a modest gain in academic performance.

PART TWO

# CHAPTER SIX

MEASURES

&

STATISTICAL PROCEDURE

## 6.1 THE MEASURING INSTRUMENTS

### 6.1.1 Introduction

A number of descriptive/informational schedules were initially administered to Ss to obtain information relating to characteristics of the test anxious individual.

In addition, in concert with most current research conducted in the field of test anxiety (see Chapter 2, Section 2.1), a battery of measuring instruments were employed in this experimental investigation; these devices covered three broad assessment areas:

- Self-Report Measures
- Measures of Physiological Activation

and

- A Measure of Academic Performance (The 'Observable measure')

The student panel of judges (previously described - see Section 5.1.3) were responsible for assisting the investigator in ensuring rigorous construction and administration of the assessment instruments.

### 6.1.2 Descriptive/Informational Questionnaires

(Questionnaires administered for the purpose of obtaining information about Ss and their attitudes towards test anxiety. Copies of these questionnaires appear as Appendices E1 to E4).

#### 6.1.2.1 Personal Data Synopsis Schedule

This questionnaire sought biographical information concerning participating Ss (such as age, address, first registration at Rhodes University, year of study, and the degree persued). A summary of findings on this document are presented in Section 5.1.5.

#### 6.1.2.2 Management of Exam Anxiety Descriptive Schedule

This schedule seeks information from the Ss concerning details of test- & general- anxiety experiences - specifically, the first noticed onset of

disabling exam tension; the extent of motivation to evade sitting for an exam by committing self-injury; physiological reactions experienced during/ prior to an exam; and anxiety reduction strategies used by Ss. Findings recorded on this schedule are presented in Section 5.1.6.

### 6.1.3 Self-Report Measures

After a detailed review of a number of formal psychometric instruments (mostly of American origin) purporting to measure levels of test anxiety, only one such instrument was selected for inclusion in this assessment battery: that of the ACHIEVEMENT ANXIETY TEST (AAT).

The AAT was first published by Alpert & Haber in 1960 (and is briefly described in the next Section, 6.1.3.1).

One reason for not including additional formal test anxiety schedules, is that most of them are designed solely to discriminate between high & low test anxious students (and as such, are used to recruit Ss for test anxiety research). It has already been noted that recruitment of Ss in the present study was based on the decision of volunteering Ss themselves, that they were in fact test anxious.

Although the AAT is also used to distinguish between high and low test anxious students, it has in addition, been widely used in test anxiety research as a monitoring device to monitor progress made by Ss in specific research treatment programmes.

Moreover, since 1980, Dr Dave Beaty (of the Counselling & Careers Unit, University of the Witwatersrand) has successfully used the AAT as a monitoring device in his research with test anxious Wits students (in Johannesburg)

#### 6.1.3.1 Management of Examination Anxiety (Debilitative/Facilitative) Schedule

(*SEE APPENDICES F1 TO F3 FOR A COPY OF THIS SCHEDULE)

This schedule featured a modified version of the Achievement Anxiety Test (AAT) of Alpert & Haber (1960). The AAT consists of two independent scales:

(A) A FACILITATING SCALE of 9 items, based on a prototype of the item: " Anxiety helps me to do better during examinations and tests".

and (B) A DEBILITATING SCALE of 10 items, based on a prototype of the item: " Anxiety interferes with my performance during examinations and tests".

(Alpert & Haber,1960,Pp 214)

Modifications to the AAT for the present research, involved collapsing the 19 items into one continuous list of items, while excluding buffer entries; these modifications were consistant with those of Desiderato & Koskinen (1969), Kostka & Galassi (1974) & Beaty (1982)

Employed as a device to monitor changes in the nature of self-reported anxiety, this device was administered on three occasions: pre-treatment, post-treatment and at the 6-month follow-up.

A five-point rating scale was used for scoring responses on the schedule (see BOX 6A for an illustration of this scale); score ranges for the two subscales are therefore:

(a) 9 - 45 (9 items) in the case of the facilitative score; and
(b) 10 - 50 (10 items) in the case of the debilitative score.

Specific hypotheses are associated with each of these score scales; Beaty and Barling (1982) have described these in terms of a stress thermometer:

- In the case of the facilitative anxiety score (or motivating stress index), a score of 30 or more indicates that the Ss stress-level is not a barrier to positive exam results since the stress felt is labelled by the Subject in a positive manner.
- With debilitative anxiety, a score of 25 or above indicates possibility that the Ss stress-level will negatively influence his/her exam results.

BOX 6A

THE FIVE-POINT RATING SCALE USED TO SCORE RESPONSES ON THE MANAGEMENT OF EXAM ANXIETY SCHEDULE

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

WHERE 0 means "no"; "never"; "not at all"; etc.
1 means "sometimes"; "seldom"; "a little"; etc.
2 means "about as often as not"; "an average amount"; etc.
3 means "quite often"; "usually"; "a good deal"; etc.
4 means "pratically always"; "entirely"; etc.

Because of the high negative correlation (of over -0.9) between the facilitative and debilitative scores, an overall difference score was computed for each assessment interval (i.e. pre-treatment, post-treatment & 6-month follow-up). This manner of scoring is in fact consistant with that followed by researchers using this scale (see Kirkland & Hollandsworth,1980 - 48), based on the formula: (debilitative score minus facilitative score) or (-AAT)-(+AAT).

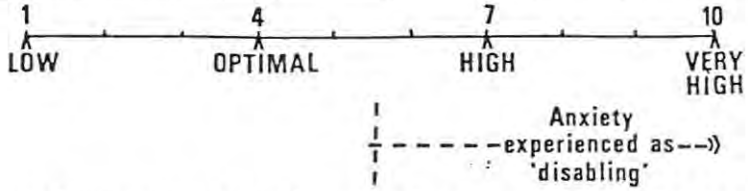
° Validity & Reliability of this Schedule

Desiderato & Koskinen (1969) reported substantial coefficients of temporal stability for the modified AAT (r = ,83 and ,75 respectively for ten-week and eight-month intervals; for both the facilitative and debilitative subscales (r = ,87 and ,76). The AAT is moreover said to have good construct validity (see in Desiderato & Koskinen,1969,Pps 166 ff.).

6.1.3.2 The Anticipated Anxiety Rating Scale

(*SEE APPENDICES F4 to F5 FOR A COPY OF THIS SCHEDULE)

| BOX 6B | THE ANTICIPATED ANXIETY RATING SCALE TOGETHER WITH A DESCRIPTION OF THE VALUE LABLES |
|---|---|




"LOW ANXIETY" refers to a totally carefree attitude; entirely devoid of any conscious feelings of anxiety.

"OPTIMAL ANXIETY" indicates that the individual experiences a moderate amount of anxiety consciously, but far from being 'disabling', the feeling is found to be stimulating; almost exciting.

"HIGH ANXIETY" indicates that the anxiety experienced is somehow discomforting, to the extent that it becomes disabling.

"VERY HIGH ANXIETY" indicates that the anxiety is experienced as totally uncontrollable and is extremely upsetting to the Subject; fundamental physiological side-effects come to the fore at this level of intensity.

Incorporating exam-related items used by Paul & Eriksen (1964), Collins (1973) and Scissons & Njaa (1973), the eight items in this schedule were scored along a 10-point continuum (see BOX 6B for illustration); a score beyond 48 (on a range 8 - 80) was said to be idicative of 'debilitative-tending' anxiety (after Collins,1973).

Test-retest reliability for this scale is between ,68 and ,72 (after Collins,1973). This instrument was administered at the pre-treatment, post-treatment and 6-month follow-up intervals.

6.1.3.3 The Subjective Units of Disturbance (SUD) Scale

(*SEE APPENDICES F5 to F6 FOR A COPY OF THIS SCHEDULE)

This scale features 16 exam-related events as itemised entries; items were extracted from similar situational exam menus, such as those of Suinn (1969) and Allen (1980), but based primarily on the SUD-scale developed by Wolpe in 1969 (see in Kostka & Galassi,1974,Pps 464 ff.).

The scale serves as a numerical index of felt anxiety, based on a range 0 - 100; see BOX 6C for an illustration of this scale.

| BOX 6C | THE SUD-SCALE TOGETHER WITH A DESCRIPTION OF VALUE LABLES |
|---|---|
| 0 ↓ | TOTALLY DEVOID OF ANXIETY |
| 25 | SLIGHTLY TENSE, BUT THIS TENSION IS NOT EVIDENT, UNLESS SPECIFICALLY REFLECTED UPON |
| 50 | STRONG FEELINGS OF ANXIETY, BUT NOT TO THE EXTENT OF EXPERIENCING ANY PHYSIOLOGICAL SIDE-EFFECTS |
| 75 | EXTREMELY ANXIOUS WITH EVIDENCE OF MILD PHYSIOLOGICAL SIDE-EFFECTS (Nausea; tension headaches...) |
| 100 | UNCONTROLLABLY ANXIOUS, WITH EXTREME PHYSIOLOGICAL SIDE-EFFECTS (Vomiting; Migraine; Shakes...) |
| For example, while completing this document, you may be feeling just a little anxious, but may acknowledge the presence of minial anxiety only upon reflection; hence you may indicate your anxiety-level presently to be about 32. | |

After training, Ss were able to attribute a specific score to his/her anticipated feeling state of anxiety, thereby determining the extent to which progress had been made in relieving feelings of stress.

The Ss mean score was determined on this schedule on three occasions: pre-treatment (completed between the orientation meeting and the first treatment session); post-treatment (completed during the final session) and during the 6-month follow-up session.

Since both the anticipated anxiety rating scale (AARS-Scale) and the SUD-Scale sought to monitor levels of anticipated anxiety, Pearson correlation coefficients were computed; results yielded:

| | | |
|---|---|---|
| AARS WITH SUD AT PRE-TREATMENT | = | 0,72 |
| AARS WITH SUD AT POST-TREATMENT | = | 0,79 |
| AARS WITH SUD AT FOLLOW-UP | = | 0,85 |

For the purposes of the present study, the correlation between these two scales was considered sufficiently high to justify the selection of only one scale in determining the level of anticipated anxiety.

Because of the more widespread use of the SUD-scale and claims of better reliability and validity over the AARS-scale (these claims made by Kostka & Galassi,1974 and others), only data from the SUD-scale (in determining a information concerning this self-report measure) were analysed *1.

6.1.3.4 The In Vivo Anxiety Schedule

(*SEE APPENDICES F6 to F7 FOR A COPY OF THIS SCHEDULE)

Similar to the SUD-scale of anticipated anxiety, this schedule sought information about anxiety experienced directly by Ss, as they encountered situations similar to those cited in this schedule. A mean score was calculated for each Subject, while the schedule was completed during- and immediately after each of three sets of examinations*2:

- JUNE 1981 (pre-treatment)
- NOVEMBER 1981 (post-treatment)
- JUNE 1982 (6-month follow-up)

To observe the relationship between anticipated and experienced anxiety (on these self-report measures), Pearson correlations were obtained on data gathered from both the SUD-Scale (anticipated anxiety) and the In Vivo-Scale.

*1 / Tasto & Suinn (1972) have reported test-retest reliability coefficients of between .77 and .80 for the SUD-scale; these figures based on the proviso that Ss are adequately trained in understanding the meaning of the "felt anxiety" index.

*2 / ITEM P on this schedule: "Waiting for the results in the mail", prescribed that Ss keep the schedule until after the completion of their exams.

This analysis revealed the following correlations:

SUD WITH IN VIVO SCORES AT PRE-TREATMENT = 0,86
SUD WITH IN VIVO SCORES AT POST-TREATMENT = 0,87
SUD WITH IN VIVO SCORES AT FOLLOW-UP = 0,87

Because of this highly significant correlation, only scores on the SUD-scale of anticipated anxiety were chosen for analysis.

6.1.3.5 The Treatment Evaluation Questionnaire

(*SEE APPENDICES F8 to F9 FOR A COPY OF THIS QUESTIONNAIRE)

This schedule featured six items scored along a 7-point continuum, with unfavourable or negative features coded as 1, while 7 represented the most favourable description of the programme.

Used as an index of the Ss confidence in the treatment programme encountered, a high score (determined by the researcher as 24 or over, or a mean of 4 on each individual item, on a range of 6-42) suggested that the Subject:

- Found the treatment skills easy to acquire;
- Felt the programme was run competently by the supervisor;
- Enjoyed the treatment sessions;
- Felt that his/her time was being employed usefully;
- Experienced a generalisation effect - their ability to control their exam anxiety, resulting in diminished feelings of irritability concerning interpersonal relationships around exam time;
- Found the research programme highly valuable in terms of its potential durability as a training procedure.

Since the control groups did not undergo any form of treatment, they were not instructed to complete this schedule. Every possible effort was made to ensure the anonymity of Ss completing this schedule.

6.1.3.6 The Diaries of Experience

Apart from the psychometric instruments (just outlined), Ss were also instructed to maintain a diary of their experiences (thoughts and feelings) during the research (starting from the initial orientation briefing).

Furthermore, they were instructed to include notes on any interpersonal conflicts or tensions they encountered with other members in the research groups, rather than "bottling up" such feelings, or releasing them during sessions.

No length was prescribed for the diary, although all Ss were asked to restrict such documentation to A4-size pages. The diaries were submitted by the Ss after the November 1981 examination period (at post-treatment). A brief discussion of the contents of entries in S's diaries appears in Section of the DISCUSSION AND INTERPRETATION.

### 6.1.4 Measures of Physiological activation

(*COPIES OF FORMS DESIGNED TO GATHER THIS DATA FOR THE PRESENT STUDY APPEAR AS APPENDICES F10 to F11 AT THE BACK OF THIS REPORT)

According to Allen (1980), the most widely used measures of physiological activation in the field of test anxiety research are Pulse Rate and Finger Sweat Print . Since both measures have been very well researched by investigators in the field of test anxiety, it was decided to employ both of them in the present study.

#### 6.1.4.1 Pulse Rate Measure

By means of a special pulse watch (on loan from the manufacturers - reading pulsations per minute; see Appendix F7 for an illustration of the watch), wrist pulsations were recorded by the following procedure:

(A) During the orientation session, Ss were instructed to write an essay on "the experience of an examination"; an essay of at least four sides of A4 paper in length (but not longer than six sides).

(B) During a 20-minute individual meeting, Ss recorded their essay onto a cassette tape.

(C) At a later half-hour long session, the Subject was initially seated and encouraged to "feel at ease" by an assistant researcher for a period of ten minutes; an initial pulse rate measure was then taken (this serving as a BASELINE measure).

(D) The Ss tape recording was then played back to him/her while further pulse rate readings were taken:

- After one minute;
- After three minutes; and
- After five minutes.

6.1.4.2 Finger Sweat Prints

Leo Droppleman pioneered the use of this measure in the 1960s. In this measurement, the S's fingertip is cleaned with alcohol or acetone; a ferric chloride solution is then applied. The finger is then pressed onto a paper strip, treated with tannic acid (Droppleman & McNair,1968).

Perspiration produced by anxiety interacts with the ferric chloride to yield a gray-black print, the darkness of which increases with the amount of moisture on the finger.

Scores were assigned by a panel of two judges*1, who compared the prints against fifteen specimen photographs/print impressions (see Appendix I for a copy of the specimens). The finger sweat prints were taken in accordance with the same procedure (and time intervals) used for recording pulsations.

6.1.4.3 Deriving a Score for Pulse Rate and Finger Sweat Print

The physiological measures were recorded on three occasions (pre-treatment, post-treatment and follow-up). On each of these occasions, four scores were obtained on each measure (pulse rate and finger sweat print) as follows: A baseline measure; a measure after one-minute; after three minutes and after five minutes.

To determine whether the four scores differed significantly from one another, a dependent t-test was applied to the group means. Since no significant differences were detected on either pulse rate or finger sweat prints between the three assessment intervals, a single score was computed for each physiological measure at each interval.

*1 / These two judges were not directly involved with the research project; both were colleagues of the researcher and were trained in the analysis of finger sweat prints.

### 6.1.4.4 Reliability and Correlation Between the Physiological Measures

The manufacturers of the pulse watch claim a test-retest reliability of 0,78 for their product, while correlations of at least 0,8 have been reported by Cornish & Dilley (1973) for the finger sweat print measure.

The Pearson correlation statistic was then used to determine the strength of the relationship between pulse rate (PR) and finger sweat print (FSP) scores. The outcome of this analysis revealed that:

- PR WITH FSP SCORES AT PRE-TREATMENT = 0,78
- PR WITH FSP SCORES AT POST-TREATMENT = 0,81
- PR WITH FSP SCORES AT 6-MONTH FOLLOW-UP = 0,86

Because of these high correlations, the decision was made to analyse only one of the physiological measures. Selection of finger sweat print over pulse rate was justified by the higher reliability figures claimed for finger sweat prints (see earlier). Moreover, according to Tomkins (1976), finger sweat print measures are less sensitive to extraneous situational influences than pulse rate measures

### 6.1.5 The Observable Performance Measure

The only observable performance measure monitored in the present study, was that of academic performance.

All Ss were instructed to provide the researcher with a detailed record of their June 1981, November 1981 and June 1982 examination results; precise percentages were required and from these a performance mean was computed.

In order to use scores on the course exam as an outcome measure, it was deemed essential to normalise the Ss scores against the entire population of examination scores (as in studies by Allen,1971,1973; Joffe and Carlson,1972; and McMillan & Osterhouse,1972).

Assisted by the researcher and colleagues, Ss obtained class averages from the different departments under which they wrote their examinations; these individual and group aggregates being submitted for analysis and comparison (for this latter purpose, a difference score was computed: Subject-aggregate minus Class-aggregate - see BOX 6D for a case example).

BOX 6D

CASE EXAMPLE OF THE SCORING PROCEDURE USED ON THE MEASURE OF ACADEMIC PERFORMANCE

SUBJECT X, A THIRD YEAR ACHIEVED THE FOLLOWING NOVEMBER EXAMINATION RESULTS:

- PSYCHOLOGY III = 54%
- IND.SOCIOLOGY III = 62%

CLASS AVERAGES:

- PSYCHOLOGY III = 64%
- IND.SOCIOLOGY III = 60%

SCORE THUS DERIVED:

- PSYCHOLOGY III = 54% - 64% = -10%
- IND.SOCIOLOGY III = 62% - 60% = + 2%

TOTAL = - 8% = SCORE AT POST-TREATMENT

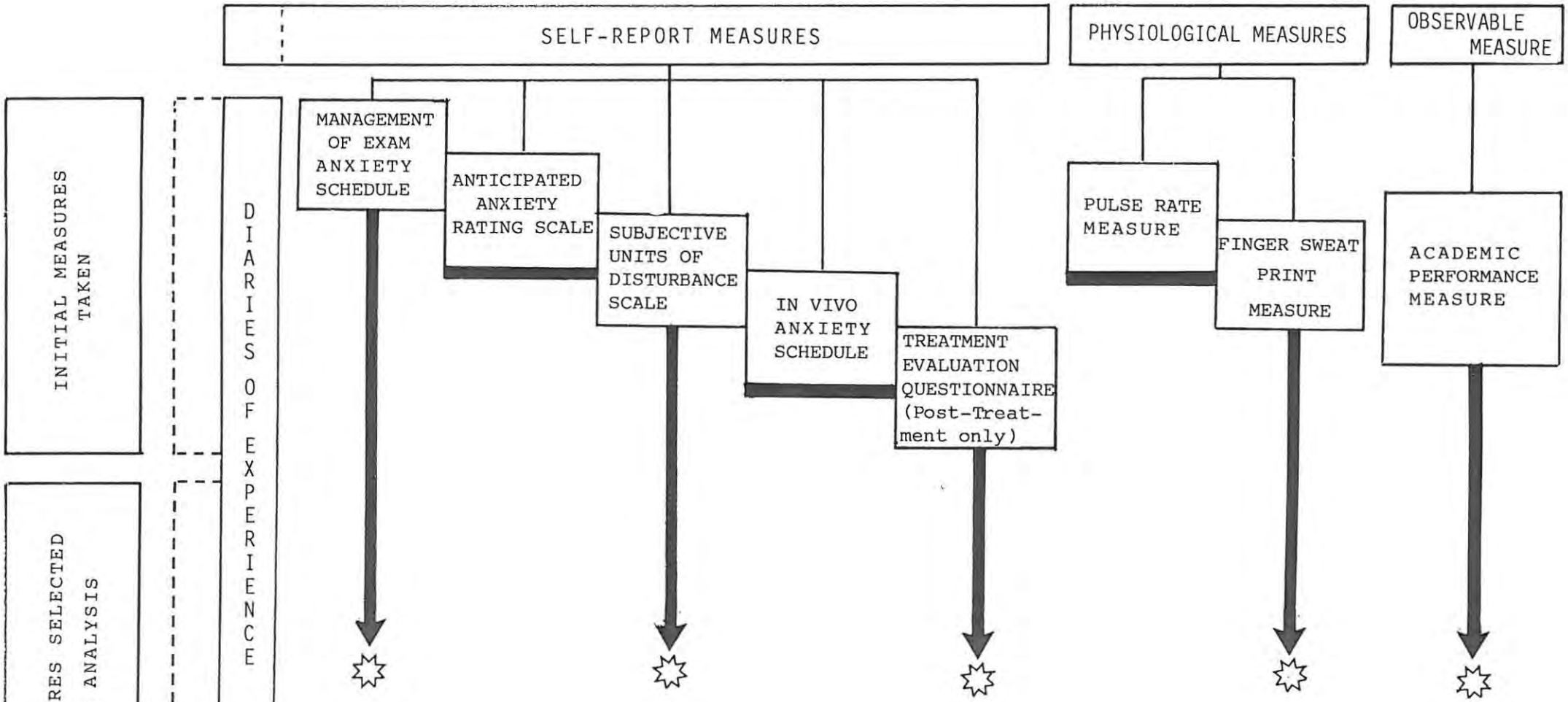
## 6.2 SUMMARY OF MEASURES FOR ANALYSIS

Apart from the diaries of experience, a total of five self-report measures, two physiological measures and a measure of academic performance have been described above (Sections 6.1.3 to 6.1.5). It was decided to conduct a full statistical analysis on five of the eight measures (a diagram summarising this selection of measures for analysis, appears in BOX 6E):

- THREE SELF-REPORT MEASURES
  - The Management of Exam Anxiety Schedule (see Section 6.1.3.1)
  - The Subjective Units of Disturbance (SUD) Scale (see Section 6.1.3.2)
  - The Treatment Evaluation Questionnaire (Confidence Index) (see section 6.1.3.4)

BOX 6E

A TREE DIAGRAM ILLUSTRATING THE SELECTION OF MEASURES FOR STATISTICAL ANALYSIS




JUSTIFICATION FOR THE SELECTION OF SPECIFIC MEASURES OVER OTHERS, IS GIVEN IN SECTIONS 6.1.3.2, 6.1.3.3 & 6.1.4.4

° ONE MEASURE OF PHYSIOLOGICAL ACTIVATION

- Finger Sweat Prints
  (see Section 6.1.4.2)

AND ° THE ASSESSMENT OF ACADEMIC PERFORMANCE

(see Section 6.1.5)

## 6.3 THE A PRIORI RESEARCH HYPOTHESES

### 6.3.1 Statement of the Null Hypothesis

The Null Hypothesis for the present investigation, states that:

> NO DIFFERENCES WILL BE FOUND BETWEEN PERFORMANCE GAINS MADE BY ANY OF THE EXPERIMENTAL GROUPS (INCLUDING THE CONTROLS).

Or in other words, SD-A = SD-B = SST = PG = CG on all measures*1.

### 6.3.2 General Expectations

In both the SD-A and SD-B programmes, the primary therapeutic emphasis revolved around developing the S's ability to control the emotional (in the words of Liebert & Morris,1967) or physiological components of test anxiety. This emphasis is illustrated by the intensive deep-muscle relaxation training which the SD Ss had to undergo.

Because of this emphasis, the SD-A and SD-B groups are expected to realise the greatest gains on the physiological measure of finger sweat print, while the study skills group (who were introduced to the relaxation concept, but received no training in it), re expected to make the next best gains, followed by PG Ss and the Controls (who are not expected to make any gains at all on this measure).

The core therapeutic emphasis in the study skills groups, is on counselling involving the learning of improved study and exam techniques; the expectation here is therefore that these Ss will make the greatest gains on the measure of academic performance at both post-treatment and 6-month follow-up. The SD-A and SD-B programmes are expected to realise the next best improvement, since lowered physiological stress levels should relieve

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*1 / As in Section 4.2, abbreviations have been used here in reference to the treatment programmes, keying as follows:

CG : CONTROL GROUPS
PG : PLACEBO GROUPS/"PROGRAMME"
SST : STUDY SKILLS TRAINING PROGRAMME
SD-A : SYSTEMATIC DESENSITISATION - METHOD A
SD-B : SYSTEMATIC DESENSITISATION - METHOD B

the student and help him feel more comfortable during exams. Moreover, SD Ss were introduced to a few elementary exam tips.

Neither the placebo, nor the control groups are expected to achieve any gains on the academic performance measure. In particular, the CG Ss are expected to witness a deterioration in their academic grade, since they were taught no management skills whatsoever (being a wait-list group). Moreover, the placebo effect with PG Ss, is expected to weaken considerably by the time of the 6-month follow-up assessment; thus a decrement in academic scores is anticipated.

The contention in the present study, is that while the placebo "programme" is likely to make some effect on Ss (since it has been designed in such a way that it is not inert), such effects are expected to be marginal and (as indicated in the previous paragraph) is not likely to be long-lasting.

Reference was made in Chapter Two to the finding that even heightened expectation of therapeutic aid, served to marginally decrease levels of reported anxiety by control Ss receiving no-treatment. Thus, on self-report measures in the present study, control Ss are expected to achieve small improvements in their self-reported anxiety levels.

Moreover, since the placebo "programme" was believed to lack substance (relatively to the other programmes), it is held that SST, SD-A and SD-B Ss will report higher scores on the treatment evaluation questionnaire than the PG Ss (Control Ss did not complete this questionnaire). However, since none of the four treatment programmes were completely bogus, Ss in all groups are expected to score beyond the minimum high confidence level mark (of 24 or above; see in Section 6.1.3.4).

### 6.3.3 Hypotheses Formulated for the Self-Report Measures

(A) On the management of exam anxiety schedule, the experimental groups, SD-A, SD-B and SST will realise the greatest improvement in scores, with CG achieving the least improvement at both the post-treatment and 6-month follow-up contrast intervals. The PG will improve more than the CG, but less than SD-A, SD-B or SST.

(B) On the SUD-Scale, the experimental groups, SD-A, SD-B and SST, will have the largest performance gains, the CG the smallest and PG better than CG, but less than SD-A, SD-B or SST (at both post-treatment and 6-month follow-up contrast intervals).

### 6.3.4 Hypothesis Formulated for the Finger Sweat Print Measure

(C) On the finger sweat print measure, SD-A and SD-B will achieve the greatest reductions in finger sweat, followed by SST and PG, with no improvement evident in the CG (at both post-treatment and 6-month follow-up contrast intervals).

### 6.3.5 Hypothesis Formulated for the Measure of Academic Performance

(D) On the measure of academic performance, the SST Ss will achieve the greatest gains, followed by SD-A and SD-B Ss. CG Ss will realise a deterioration in academic performance, while PG Ss will not make any gains. Moreover, at 6-month follow-up, PG Ss will also experience a decrement in academic performance.

### 6.3.6 Hypothesis Formulated for the Treatment Evaluation Questionnaire (The Confidence Index)

(E) On the treatment evaluation questionnaire (or 'Confidence Index'), the experimental groups SST, SD-A and SD-B will all score higher than PG Ss.

(CG Ss did not complete this schedule).

## 6.4 STATISTICAL PROCEDURES

(All statistical tests and analyses, with only a few exceptions, were performed using statistical alternatives available through the SPSS computer programme, run initially on the ICL 1900 and later on the CDC 8300 computers at Rhodes.[*1]).

*1 / The Rhodes Computer Centre transferred across from their ICL system to a new CDC system, as from October 1982; which was during the time when statistical analyses were being computed by the researcher for the present investigation.

### 6.4.1 Brief Description of the Experimental Design

A completely randomised design (type CR4; after Kirk,1969,Pps 99 ff.) was employed in this research. The main reasons for using this design was that it:

(1) Does not require the use of equal sample sizes for each treatment level;
(2) Allows for the maximum number of degrees of freedom for the error sum of squares; and
(3) Does not require a subject to participate under more than one treatment level or the use of Ss who have been precisely matched on an appropriate variable.

However, despite this total freedom of design, Paul Robinson (1981) cautions that with smaller samples, treatment groups should be kept to approximately equal sizes; this caution was partially heeded in this research programme, where group sizes were in any event prescribed by the panel of student judges (who recommended groups numbering at least 6 or 7 Ss); see in Robinson,1981,Pp 311.

Robinson also advocates (for small samples) control over the sex ratio - the proportion of males to females. He observes that failure to control the sex ratio, does not negate the complete randomness of the CR-4 design, although it may weaken some of its advantages (ibid., Pp 314).

### 6.4.2 Presentation of a Sequential Model for Statistical Inference

The raw data was first tested for normality using a test designed for this purpose (see in Van der Watt,1969,Pp 122). Having determined that the data approximated a normal distribution, characteristics of the measures used in this randomised group design were investigated.

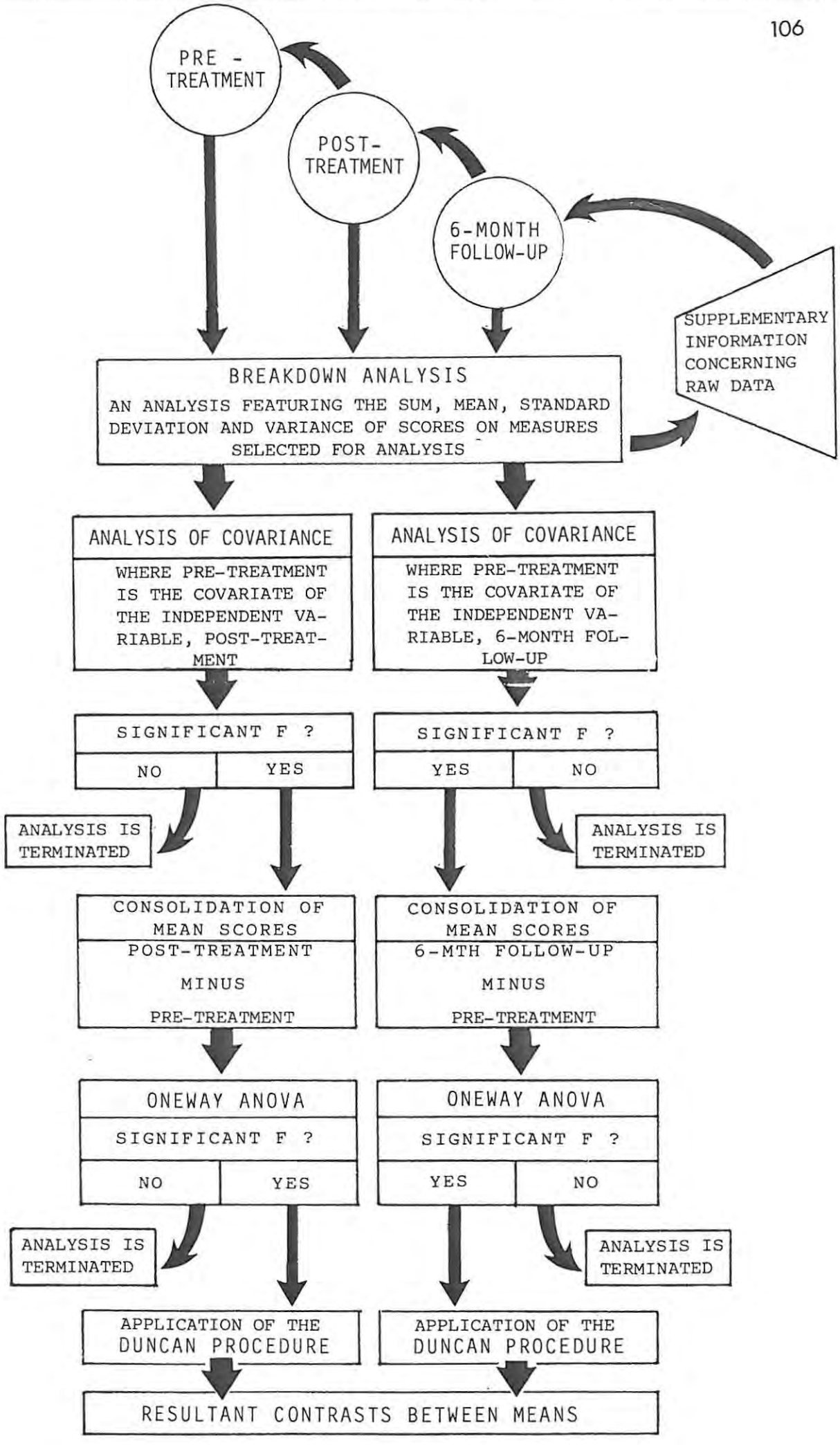
Based on this analysis, a sequential statistical model was established; a model which would best accommodate an assessment of all the data gathered from the self-report, physiological and observable measures (this model is presented schematically in BOX 6F).*1

*1 / Note that the raw data was initially subjected to a descriptive analysis, using the SPSS BREAKDOWN subprogramme, which provides information concerning the sum, mean, standard deviation and variance for each set of scores in this analysis. Tables reflecting this information appear for each measure in Appendices G1 to G4.

BOX 6F

A FLOW-CHART TO SCHEMATICALLY REPRESENT THE SEQUENTIAL MODEL OF STATISTICAL INFERENCE USED ON SELECTED MEASURES IN THE PRESENT STUDY.





The first inferential statistic employed in the analysis of the measures selected for detailed investigation, was the analysis of covariance, where for each of these measures (apart from the treatment evaluation questionnaire, which was only administered at post-treatment):

(1) The pre-treatment score served as the covariate of the post-treatment score; and

(2) The pre-treatment score served as the covariate of the 6-month follow-up score.

Such an analysis is highly appropriate in this study, since the major objective (according to A.L. Edwards,1972) of a covariate analysis is to obtain a reduced estimate of experimental error, by taking into account the regression of the Y-measures on the X-measures.*1 In the present analysis, the X-measures represent pre-treatment scores and the Y-measures represent either the post-treatment or 6-month follow-up scores.

Furthermore, this selection was strengthened by the high correlation between Y-measures and X-measures in the present study (which ranged from ,69 to ,92). Such a high correlation (according to Edwards,1972) results in a smaller estimate of experimental error than would be obtained from the analysis of variance (ANOVA) of the Y-measures.*2

The F-ratio reflected on the first line of the analysis of covariance table (see for example Table 7.T2 in section 7.1.3) does not indicate the F-ratio between pre-treatment means, but rather refers to the strength of the correlation coefficients between the covariate (pre-treatment) and the independent variable (or main effect; here: treatment programme); correlation coefficients which have, in any event, been predetermined to be significantly high (fulfilling a requirement for use of the analysis of covariance).

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*1 / Where the X-measures are supplementary or concomitant measures and are not then themselves of experimental interest, while the Y-measures are those obtained on the dependent variable of interest after the treatments have been applied. It is the significance of the differences between the four means for the various treatments that is of interest (after Edwards,1972,Pps 369 ff.)

*2 / The SPSS programme for the analysis of covariance, yields an output which provides information on the sum of squares, degrees of freedom, mean squares, F-scores and the significance of F-scores (as a probability) for the covariate (compare X-measure) and the main effect (compare Y-measure) which is the variable of interest to the researcher.

A significantly high F-ratio for the main effect on the analysis of covariance (presented on the second line in the table) reveals a meaningful difference between the means of the different treatment levels and/or the no-treatment (wait-list) control in the present study.

In order to examine the specific nature of these differences between means, a mean-difference score was computed for the appropriate set of data, such that:

A = Post-treatment mean minus pre-treatment mean
and B = 6-month follow-up minus pre-treatment mean.

Such an operation was deemed necessary, because an appropriate test to determine the specific nature of mean differences between treatments, is (given those tests available through the SPSS computer programme) the one-way analysis of variance (ANOVA), a procedure limited to problems where only one independent variable may be included.*1

It must be stressed that a significant F-ratio on the analysis of covariance test does not guarantee a significant F-ratio on the oneway ANOVA. However, a non-significant F-ratio on the analysis of covariance does not guarantee a non-significant F-ratio on the oneway ANOVA (Robinson,1981,Pp 277).

While attempting to diminish the chances of making Type I Error or Type II Error*2, an a posteriori contrast test was selected as an extension of the ONEWAY ANOVA. Duncan's multiple-range statistic (known as the DUNCAN procedure) was employed.

As with all a posteriori contrast tests, the DUNCAN procedure is a systematic test for comparing all possible pairs of group means. In the words of the SPSS manual (1975):

> " The groups are divided into homogenous subsets, where the difference in the means of any two groups in a subset is not significant at some prescribed level." *3 (Pp 427)

*1 / The SPSS ONEWAY ANOVA subprogramme, provides information on the degrees of freedom, the sum of squares, and the mean squares for both between-group and within-group variance; in addition, the F-score (and F-probability) is provided for the between-group variance.

*2 / Type I Error is when the null hypothesis is rejected when it is actually true, while Type II Error consists of not rejecting the null hypothesis when it should be rejected (see Downie & Heath,1970,Pp 168).

*3 / Ranges used in the DUNCAN procedure = 3.77 3.93 4.04 4.11

Based on a layer approach to significance tests, the DUNCAN procedure uses the concept of a special protection level rather than a significance level: the probability of finding a significant difference is thus less than or equal to the specified significance level (for the puposes of this research, the significance level where $\alpha$ = both 0.01 and 0.05 was considered).

## 6.5 Conditions and Assumptions underlying the Parametric Tests used in the Present Study

### 6.5.1 Conditions for the use of the Analysis of Covariance (After Kirk,1969,Pps 457 & 458)

(1) The experiment must contain one or more extraneous sources of variation believed to affect the dependent variable and considered irrelevant to the objectives of the experiment.

(2) Experimental control of the extraneous sources of variation is either not possible or not feasible.

(3) It is possible to obtain a measure of the extraneous variation that does not include effects attributable to the treatment.

Meeting the Conditions:

(1) Condition met. A clear extraneous source of variation was evident in the pre-treatment score on each measure for all Subjects.

(2) Condition met. Since the primary criterion for students to participate in this research, depended on a self-assessment as to whether they were test anxious or not, and moreover, because test anxiety is not viewed as a personality trait (in this study), experimental control of the extraneous sources of variation was not feasible.

(3) Because all pre-treatment measures were taken prior to- and during- the June (1981) examinations (and so, well before the introduction of the treatment programmes), this condition was met.

### 6.5.2 Some Assumptions behind the use of the Analysis of Covariance and Oneway ANOVA on a completely random design

(After Kirk,1969,Pps 102,103 & 469 ff.)

After the application of a number of tests and procedures to the data, the following assumptions were supported:

- That the distribution of the data is continuous*1.
- That the experimental errors are normally distributed within each treatment population (i.e. the observed frequency of distribution did not differ significantly from the expected frequency of a normal distribution)*2.
- That the variance due to experimental error within each treatment population is homogenous.

and
- That the population within-group regression coefficients are homogenous.◀

*1 / In the present study, statistical decision tests were only applied to data with a continuous distribution. Discrete measures were noted, but in broad terms for informational purposes only.

*2 / The test for normality used was taken from work by Van der Watt, 1969 (see Pps 122 ff.).

# CHAPTER SEVEN

## RESULTS

## 7.1 ANALYSIS OF RESULTS

### 7.1.1 Details of Presentation of the Results

In accordance with the statistical model proposed for analysing the data emanating from the present investigation (see BOX 6F in Section 6.4.2), tabulated summaries of the results of statistical tests applied to such data for each measurement device, are presented below. Raw data (in a condensed tabular form) is presented at the back of the report as Appendices G1 to G 4 .

To recapitulate (see earlier in Chapter Six for details), FIVE measures were ultimately selected for analysis; these are:

(1) The Management of Exam Anxiety Schedule
SELF-REPORT

(2) The Subjective Units of Disturbance (SUD) SCale
SELF-REPORT

(3) The Finger Sweat Print Measure
PHYSIOLOGICAL MEASURE

(4) The Evaluation of Academic Performance
OBSERVABLE PERFORMANCE MEASURE

and (5) The Treatment Evaluation Questionnaire
SELF-REPORT

With the exception of the treatment evaluation questionnaire, for each of the above measures, on two difference scores (pre-treatment to post-treatment and pre-treatment to 6-month follow-up), a tabulated summary of:

- An analysis of covariance;

and

- A oneway analysis of variance (where meaningful)

...are presented. Since the treatment evaluation questionnaire was administered at post-treatment only, a oneway ANOVA (with the associated DUNCAN contrast procedure) was applied to the data.

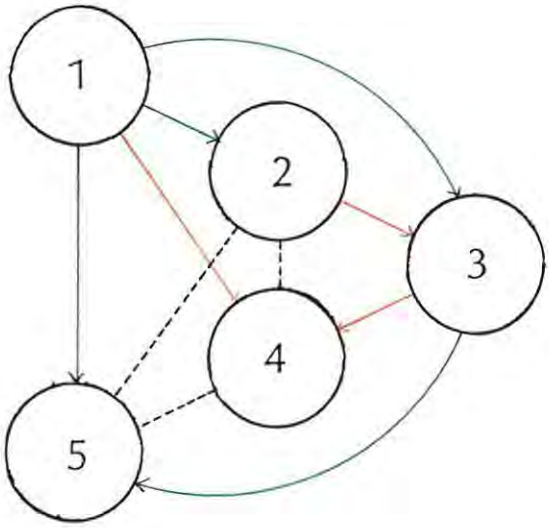
Where meaningful (i.e. where the F-ratio is significant on the oneway ANOVA) the DUNCAN procedure is then applied. To aid the reader in extracting a more direct comparison between the pre-/post-treatment and pre-treatment/6-month follow-up mean difference scores, the outcome of the DUNCAN procedure for both sets of scores are presented simultaneously (both graphically and in tabular form).

The hypothesis relevant to the measure analysed is then presented, together with a short indication of the support, given by the findings, to the hypotheses.

### 7.1.2 Key to Abbreviations used in this Presentation

CG : CONTROL GROUPS
PG : PLACEBO GROUPS/"PROGRAMME"
SST : STUDY SKILLS TRAINING PROGRAMME
SD-A : SYSTEMATIC DESENSITISATION - METHOD A
SD-B : SYSTEMATIC DESENSITISATION - METHOD B

> : Indicates significantly greater improvement in performance at the given level of alpha ( $\alpha$ ).




: This graphic illustration (on the left) represents the outcome on the DUNCAN contrast procedure, where 1,2, 3,4 and 5, represent the ranked order of performance gains of different treatment groups (from greatest to smallest gains).

ARROWHEADS INDICATE THE DIRECTION OF SIGNIFICANCE.

KEY FOR THE ABOVE LINKAGE LINES:

——— : INDICATES THAT THERE IS A SIGNIFICANT DIFFERENCE BETWEEN GROUP MEANS AT $\alpha$ = 0,01 LEVEL.

——— : INDICATES THAT THERE IS A SIGNIFICANT DIFFERENCE BETWEEN GROUP MEANS AT $\alpha$ = 0,05 LEVEL.

---------- : NO SIGNIFICANT DIFFERENCE BETWEEN GROUP MEANS AT EITHER THE 0.01 OR 0.05 LEVEL OF SIGNIFICANCE.

### 7.1.3 Management of Exam Anxiety Schedule

(*SEE SECTION 6.1.3.1 FOR FULL DESCRIPTION)

° SCORING: On a 5-point scale; Questions 1 - 9 representing the 'Facilitative anxiety' score; Questions 10 - 19 representing the 'debilitative anxiety' score. Score ranges vary accordingly.

° ADMINISTERED: On three occasions:
- Pre-treatment (at the orientation briefing);
- Post-treatment (during the final treatment session); and
- 6-month follow-up (at a special session for this purpose).

° DATA BREAKDOWN: Tables G.T1a,b,c in Appendix G feature a breakdown of data gathered on this schedule for each treatment level.

A brief synopsis of the performance of Ss in treatment groups on this schedule is presented in Table 7.T1 and Figure 7.F1.

TABLE 7.T1 MEAN SCORES AND STANDARD DEVIATIONS OF THE TREATMENT PROGRAMMES ON THE MANAGEMENT OF EXAM ANXIETY SCHEDULE

| PROGRAMME | PRE/POST - TREATMENT DIFFERENCE | S.D | PRE/6-MTH FOLLOW-UP DIFFERENCE | S.D |
|---|---|---|---|---|
| C G | + 2,91 | 10,69 | - 1,17 | 10,31 |
| P G | - 4,83 | 8,23 | - 4,94 | 8,28 |
| SST | - 10,57 | 10,97 | - 13,20 | 12,80 |
| SD-A | - 13,33 | 10,69 | - 16,44 | 8,71 |
| SD-B | - 17,38 | 10,56 | - 24,60 | 10,03 |

Application of the analysis of covariance on the pre-treatment to post-treatment scores, yielded significant F-ratios (see Table 7.T2 overleaf), which indicates a significant difference between means amongst treatment programmes.

FIGURE 7.F1 GRAPH OF MEAN MANAGEMENT OF EXAM ANXIETY SCORES FOR PRE-TREATMENT, POST-TREATMENT AND 6-MONTH FOLLOW-UP ASSESSMENTS

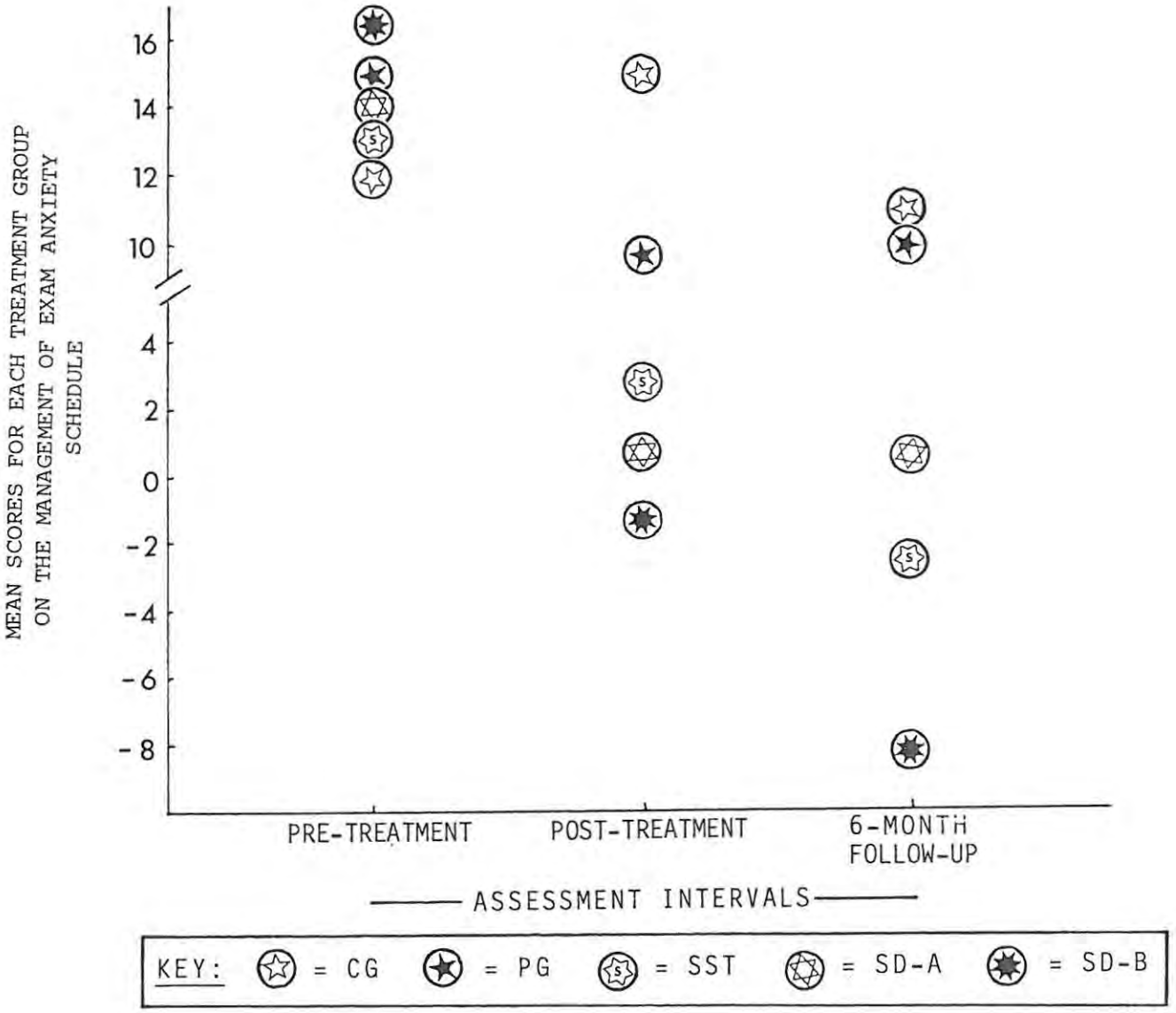



TABLE 7.T2 ANALYSIS OF COVARIANCE OF POST-TREATMENT MANAGEMENT OF EXAM ANXIETY SCORES

| SOURCE OF VARIATION | SUM OF SQUARES | D.F | MEAN SQUARE | F-RATIO | SIGNIF. OF F |
|---|---|---|---|---|---|
| Pre-Tret. Score | 4206,315 | 1 | 4206,315 | 170,441 | 0,001 |
| Treatment Programme | 3043,412 | 4 | 760,853 | 30,830 | 0,001 |
| Explained | 7249,727 | 5 | 1449,945 | 58,752 | 0,001 |
| Residual | 1431,383 | 58 | 24,679 | | |
| TOTAL | 8681,109 | 63 | 137,795 | | |

Because the main effect (the treatment programme) is significant, a one-way analysis of variance (in accordance with the sequential statistical model formulated for this study - see BOX 6F in Section 6.4) was performed on the difference score between the main effect and the covariate (i.e. post-treatment score minus pre-treatment score) - see Table 7.T2.

TABLE 7.T3 ANALYSIS OF VARIANCE OF MANAGEMENT OF EXAM ANXIETY DIFFERENCE SCORES DERIVED FROM THE POST-TREATMENT ASSESSMENT

| SOURCE | D.F | SUM OF SQUARES | MEAN SQUARES | F-RATIO | F-PROB. |
|---|---|---|---|---|---|
| Between Groups | 4 | 3122,3562 | 780,5890 | 31,683 | 0,0009 |
| Within Groups | 59 | 1445,3782 | 24,4979 | | |
| TOTAL | 63 | 4567,7344 | | | |

Application of the analysis of covariance on the pre-treatment to 6-month follow-up scores on this measure, also produced significant F-ratios (see Table 7.T4), which indicates a significant difference between means amongst treatment programmes.

TABLE 7.T4 ANALYSIS OF COVARIANCE OF FOLLOW-UP MANAGEMENT OF EXAM ANXIETY SCORES

| SOURCE OF VARIATION | SUM OF SQUARES | D.F | MEAN SQUARE | F-RATIO | SIGNIF. OF F |
|---|---|---|---|---|---|
| Pre-Tret. Score | 1077,005 | 1 | 1077,005 | 13,000 | 0,001 |
| Treatment Programme | 3891,142 | 4 | 972,786 | 11,742 | 0,001 |
| Explanied | 4968,147 | 5 | 993,629 | 11,994 | 0,001 |
| Residual | 4805,087 | 58 | 82,846 | | |
| TOTAL | 9773,234 | 63 | 155,131 | | |

Because the main effect is significant, a oneway analysis of variance was performed on the difference score between the main effect and the covariate (i.e. 6-month follow-up minus pre-treatment score) - see Table 7.T5.

TABLE 7.T5 ANALYSIS OF VARIANCE OF MANAGEMENT OF EXAM ANXIETY DIFFERENCE SCORES DERIVED FROM THE 6-MONTH FOLLOW-UP ASSESSMENT

| SOURCE | D.F | SUM OF SQUARES | MEAN SQUARES | F-RATIO | F-PROB. |
|---|---|---|---|---|---|
| Between Groups | 4 | 4375,6927 | 1093,9232 | 10,655 | 0,001 |
| Within Groups | 59 | 6057,6667 | 102,6723 | | |
| TOTAL | 63 | 10433,3594 | | | |

Since a significant F-ratio was obtained on the analysis of variance of scores derived from both post-treatment and 6-month follow-up on the management of exam anxiety schedule, the DUNCAN procedure for contrasting treatment groups, was applied to both sets of scores (see Tables 7.T6, 7.T7 and Figure 7.F2 for comparisons of the outcome).

TABLE 7.T6 OUTCOME OF THE DUNCAN PROCEDURE ON PRE/POST-TREATMENT & PRE/6-MTH FOLLOW-UP DIFFERENCE SCORES ON THE MANAGEMENT OF EXAM ANXIETY SCHEDULE

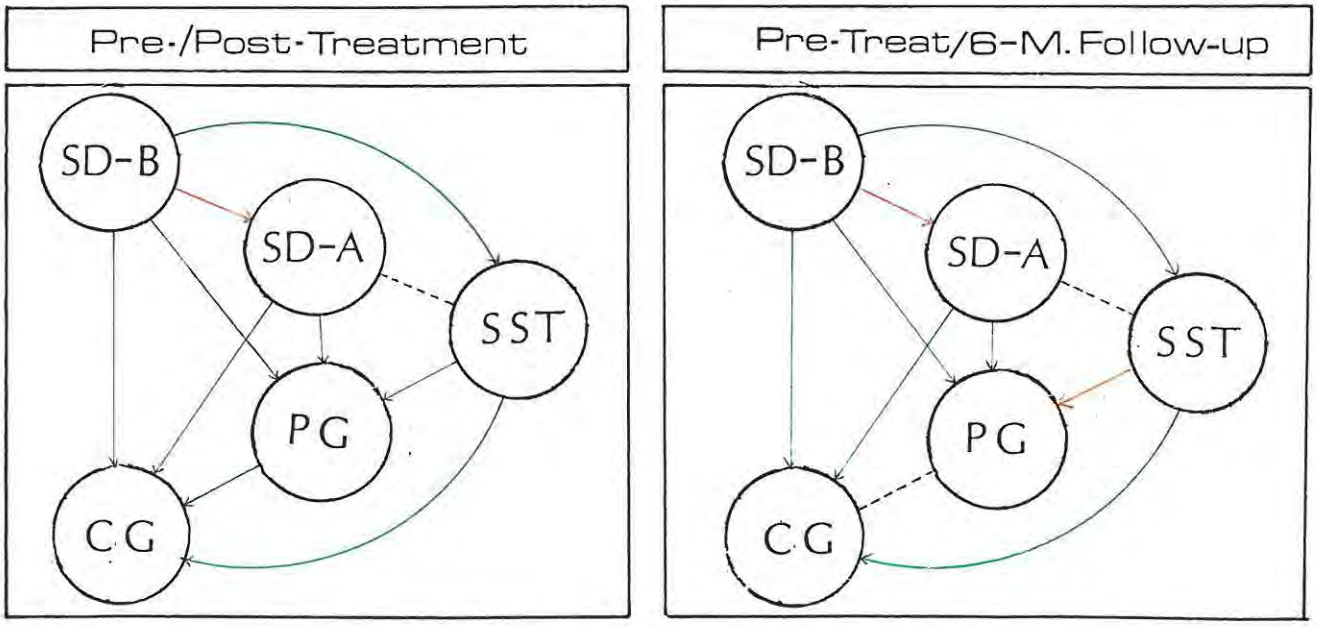
| PRE-TREAT/POST-TREAT | PRE-TRET/6-M FOLLOW-UP |
|---|---|
| AT $\alpha = 0{,}01$ LEVEL | AT $\alpha = 0{,}01$ LEVEL |
| SD-B > SST, PG, CG | SD-B > SST, PG, CG |
| SD-A > PG, CG | SD-A > PG, CG |
| SST > PG, CG | SST > CG |
| PG > CG | |
| AT $\alpha = 0{,}05$ LEVEL | AT $\alpha = 0{,}05$ LEVEL |
| SD-B > SD-A | SD-B > SD-A |
| | SST > PG |

TABLE 7.T7

RANKING THE OUTCOME
(Ordered greatest to least improvement)

| PRE-TREAT/POST-TREAT | | PRE-TRET/6-M FOLLOW-UP | |
|---|---|---|---|
| SD-B | - 17,38 | SD-B | - 24,60 |
| SD-A | - 13,33 | SD-A | - 16,44 |
| SST | - 10,57 | SST | - 13,20 |
| P G | - 4,83 | P G | - 4,94 |
| C G | + 2,91 | C G | - 1,17 |

FIGURE 7.F2 DIAGRAM TO ILLUSTRATE SIGNIFICANT GAINS ON THE MANAGEMENT OF EXAM ANXIETY SCHEDULE FOR PRE- TO POST-TREATMENT & PRE-TREATMENT TO 6-MONTH FOLLOW-UP CONTRASTS



7.1.3.1 Indication of Support for the Hypothesis of the Management of Exam Anxiety Schedule

STATEMENT OF HYPOTHESIS A (SEE SECTION 6.3.3)

On the management of exam anxiety schedule, the experimental groups, SD-A, SD-B and SST will realise the greatest improvement in scores, with CG achieving the least improvement at both the post-treatment and 6-month follow-up contrast intervals. The PG will improve more than the CG, but less than SD-A, SD-B or SST.

This hypothesis is well supported at post-treatment and less well supported at 6-month follow-up. As expected, for both of these assessment intervals, the SD-B, SD-A and SST programmes all achieved the best performance gains on this measure, while PG Ss realised significantly lower gains than all of these top-scoring programmes.

Also as expected, PG Ss improved significantly over CG Ss. In contrast, the SD-B groups (contrary to the hypothesis) attained a score significantly higher than both SD-A (at 0,05 level) and SST (at 0,01 level) programmes. Moreover, on the 6-month follow-up contrast, no significant difference is evident between PG and CG Ss; an unexpected outcome.

All programmes reported further reductions in anxiety levels from the pre/post-treatment to pre-treatment/6-month follow-up contrasts (notably, SD-B = -7,22; SD-A = -3,11; SST = -2,63; PG = -0,11 and CG = -4,08, where a minus indicates a reduction in reported anxiety).

7.1.4 The Subjective Units of Disturbance Scale (SUD-Scale)

(*SEE SECTION 6.1.3.2 FOR FULL DESCRIPTION)

° SCORING: Scores were determined by taking the mean SUD score for each Subject.

° ADMINISTERED: On three occasions:

- Pre-treatment (between the orientation meeting and the first treatment session)
- Post-treatment (during and immediately after the final treatment session)
- 6-month follow-up (at a special session for this purpose)

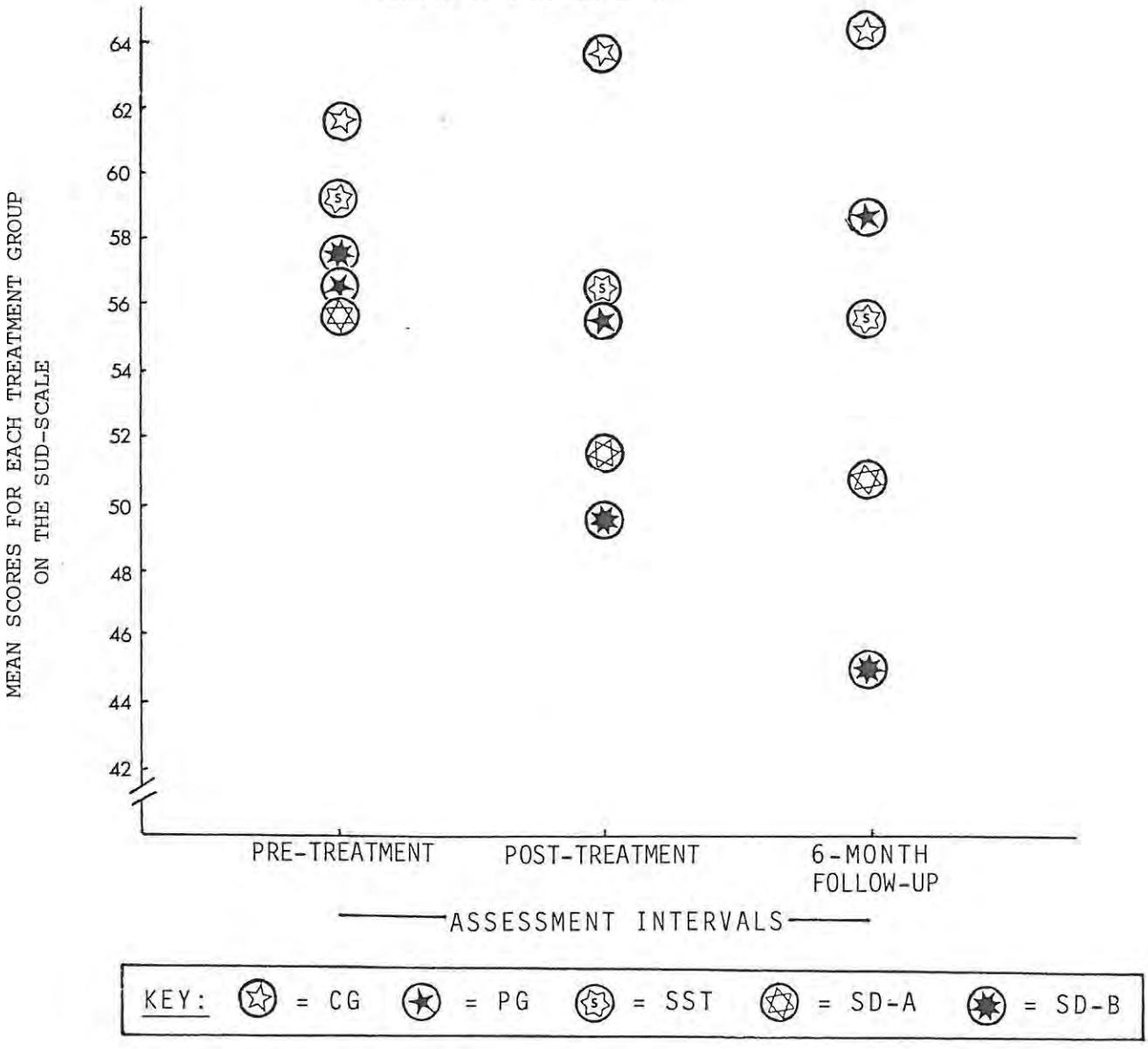
° DATA BREAKDOWN: Tables G.T2a,b,c in Appendix G feature a breakdown of data gathered on this schedule for each treatment level.

A brief synopsis of the performance of Ss in the treatment groups on this schedule is presented in Table 7.T8 and Figure 7.F3.

TABLE 7.T8 MEAN SCORES AND STANDARD DEVIATIONS OF THE TREATMENT PROGRAMMES ON THE SUBJECTIVE UNITS OF DISTURBANCE SCALE

| PROGRAMME | PRE/POST - TREATMENT DIFFERENCE | S.D | PRE/6-MTH FOLLOW-UP DIFFERENCE | S.D |
|---|---|---|---|---|
| C G | + 2,08 | 4,93 | + 2,91 | 6,47 |
| P G | - 1,10 | 9,94 | + 1,31 | 9,08 |
| SST | - 2,99 | 8,07 | - 3,49 | 8,10 |
| SD-A | - 4,97 | 8,05 | - 6,07 | 8,47 |
| SD-B | - 8,14 | 8,09 | - 12,63 | 8,13 |

FIGURE 7.F3 GRAPH OF MEAN SUD-SCALE SCORES FOR PRE-TREATMENT, POST-TREATMENT AND 6-MONTH FOLLOW-UP ASSESSMENTS



Application of the analysis of covariance on the pre-treatment to post-treatment scores, yielded significant F-ratios (see Table 7.T9) which indicates a significant difference between means amongst treatment programmes.

TABLE 7.T9 ANALYSIS OF COVARIANCE OF POST-TREATMENT SUD-SCORES

| SOURCE OF VARIATION | SUM OF SQUARES | D.F | MEAN SQUARE | F-RATIO | SIGNIF. OF F |
|---|---|---|---|---|---|
| Pre-Tret. Score | 4074,252 | 1 | 4074,252 | 424,187 | 0,001 |
| Treatment Programme | 759,668 | 4 | 189,917 | 19,773 | 0,001 |
| Explained | 4833,919 | 5 | 966,784 | 100,656 | 0,001 |
| Residual | 557,081 | 58 | 9,605 | | |
| TOTAL | 5391,000 | 63 | 85,571 | | |

Because the main effect (the treatment programme) is significant, a one-way analysis of variance was performed on the difference score between the main effect and the covariate (i.e. post-treatment score minus pre-treatment score) - see Table 7.T10.

TABLE 7.T10 ANALYSIS OF VARIANCE OF SUD DIFFERENCE SCORES DERIVED FROM THE POST-TREATMENT ASSESSMENT

| SOURCE | D.F | SUM OF SQUARES | MEAN SQUARES | F-RATIO | F-PROB. |
|---|---|---|---|---|---|
| Between Groups | 4 | 759,4487 | 189,8622 | 19,921 | 0,001 |
| Within Groups | 59 | 562,3013 | 9,5305 | | |
| TOTAL | 63 | 1321,7500 | | | |

Application of the analysis of covariance on the pre-treatment to 6-month follow-up scores on this measure, also produced significant F-ratios (see Table 7.T11

TABLE 7.T11 ANALYSIS OF COVARIANCE OF FOLLOW-UP SUD-SCORES

| SOURCE OF VARIATION | SUM OF SQUARES | D.F | MEAN SQUARE | F-RATIO | SIGNIF. OF F |
|---|---|---|---|---|---|
| Pre-Tret. Score | 4109,692 | 1 | 4109,692 | 280,362 | 0,001 |
| Treatment Programme | 1943,599 | 4 | 485,900 | 33,148 | 0,001 |
| Explained | 6053,291 | 5 | 1210,658 | 82,591 | 0,001 |
| Residual | 850,193 | 58 | 14,659 | | |
| TOTAL | 6903,484 | 63 | 109,579 | | |

Because the main effect on the analysis of covariance is significant, a oneway analysis of variance was performed on the difference score between the main effect and the covariate (i.e. 6-month follow-up minus pre-treatment score) - see Table 7.T12.

TABLE 7.T12 ANALYSIS OF VARIANCE OF SUD DIFFERENCE SCORES DERIVED FROM THE 6-MONTH FOLLOW-UP ASSESSMENT

| SOURCE | D.F | SUM OF SQUARES | MEAN SQUARES | F-RATIO | F-PROB. |
|---|---|---|---|---|---|
| Between Groups | 4 | 1941,0389 | 485,2597 | 33,327 | 0,001 |
| Within Groups | 59 | 859,0705 | 14,5605 | | |
| TOTAL | 63 | 2800,1094 | | | |

Since a significant F-ratio was obtained on the analysis of variance of scores derived from both post-treatment and 6-month follow-up on the subjective units of disturbance scale, the DUNCAN procedure for contrasting treatment groups, was applied to both sets of scores (see Tables 7.T13, 7.T14 and Figure 7.F4 for comparisons of the outcome).

TABLE 7.T13 OUTCOME OF THE DUNCAN PROCEDURE ON PRE-/POST-TREATMENT & PRE-/6-MTH FOLLOW-UP DIFFERENCE SCORES ON THE SUD-SCALE

| PRE-TREAT/POST-TREAT |
|---|
| AT $\alpha$ = 0,01 LEVEL |
| SD-B > SST, PG, CG |
| SD-A > PG, CG |
| SST > CG |
| AT $\alpha$ = 0,05 LEVEL |
| SD-B > SD-A |

| PRE-TRET/6-M FOLLOW-UP |
|---|
| AT $\alpha$ = 0,01 LEVEL |
| SD-B > SD-A, SST, PG, CG |
| SD-A > PG, CG |
| SST > PG, CG |
| AT $\alpha$ = 0,05 LEVEL |
| |

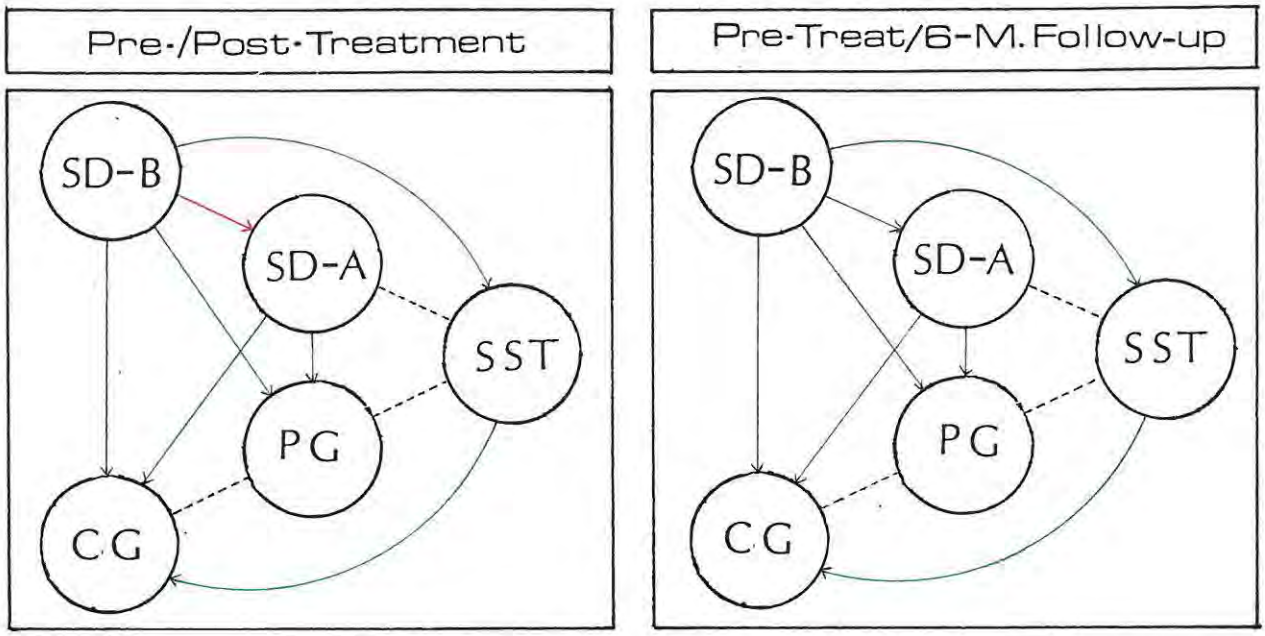
TABLE 7.T14

RANKING THE OUTCOME
(Ordered greatest to least improvement)

| PRE-TREAT/POST-TREAT | |
|---|---|
| SD-B | - 8,14 |
| SD-A | - 4,97 |
| SST | - 2,99 |
| P G | - 1,10 |
| C G | + 2,08 |

| PRE-TRET/6-M FOLLOW-UP | |
|---|---|
| SD-B | - 12,82 |
| SD-A | - 7,98 |
| SST | - 3,49 |
| P G | - 0,87 |
| C G | + 1,91 |

FIGURE 7.F4 DIAGRAM TO ILLUSTRATE SIGNIFICANT GAINS ON THE SUD-SCALE FOR PRE- TO POST-TREATMENT & PRE-TREATMENT TO 6-MONTH FOLLOW-UP CONTRASTS




KEY FOR THE ABOVE LINKAGE LINES:

———— : INDICATES SIGNIFICANT DIFFERENCE AT 0,01 LEVEL.

———— : INDICATES SIGNIFICANT DIFFERENCE AT 0,05 LEVEL.

---------- : INDICATES NO SIGNIFICANT DIFFERENCE AT EITHER LEVEL

7.1.4.1 Indication of Support for the Hypothesis of the Subjective Units of Disturbance Scale

STATEMENT OF HYPOTHESIS B (SEE SECTION 6.3.3)

On the SUD-Scale, the experimental groups, SD-A, SD-B and SST will have the largest performance gains, the CG the smallest and PG better than CG, but less than SD-A, SD-B or SST (at both the post-treatment and 6-month follow-up contrast intervals).

This hypothesis is only weakly supported at both post-treatment and 6-month follow-up, for while SD-A and SD-B realise significant gains over PG & CG and SD-A scores are not significantly higher than SST (as anticipated), SD-B made significantly higher gains than both SD-A (0,05 level at post-treatment; 0,01 at 6-M follow-up) and SST (0,01 level) - this was contrary to the hypothesis.

In addition (also against expectations), while the SST programme scored significantly over PG at 6-month follow-up, no significant difference between mean scores of SST and PG occurred at post-treatment.

For both intervals, PG evidenced a non-significant gain over CG; an unexpected result.

As with the management of exam anxiety analysis, all Ss (except for the PG) reported reduced levels of anxiety from pre-/post-treatment to pre-treatment/6-month follow-up difference scores on this schedule (SD-B = -4,68; SD-A = -3,01; SST = -0,50; PG = +0,23; CG = -0,17, where minus indicates a reduction in reported anxiety).

### 7.1.5 Measure of Finger Sweat Prints (FSP)

(*SEE SECTION 6.1.4.2 FOR A DESCRIPTION OF THIS MEASURE AND THE MONITORING PROCEDURE)

° SCORING: Finger Sweat Print readings were taken four times during each assessment. Two judges attributed a score to the prints, based on a standard index of fifteen prints (for details of this procedure, see Section 6.1.4.2).

° ADMINISTERED: At special sessions on three occasions:
- Pre-treatment
- Post-treatment
- 6-month follow-up

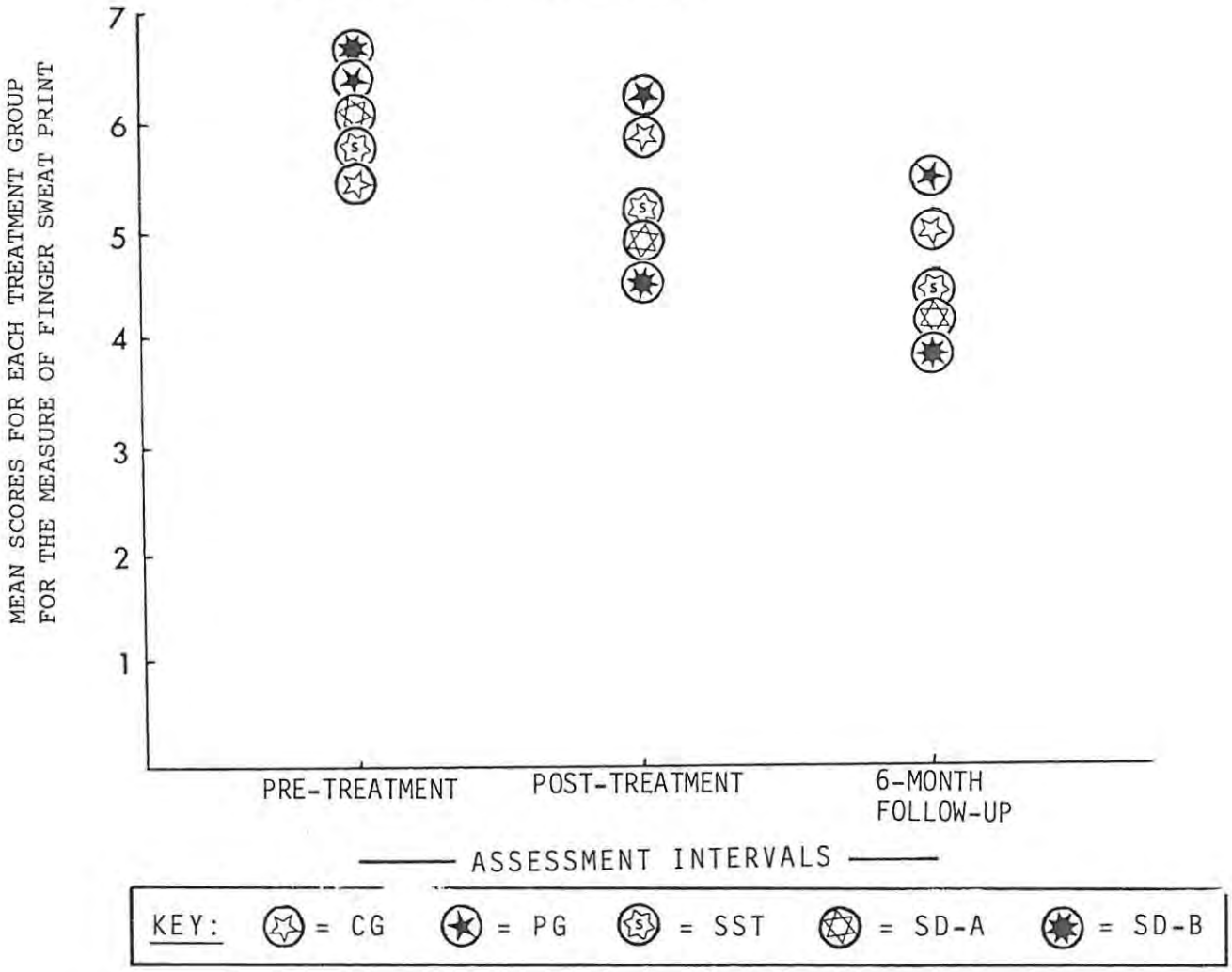
° DATA BREAKDOWN: Tables G.T3a,b,c in Appendix G feature a breakdown of data gathered on this measure for each treatment level.

A brief synopsis of the performance of Ss in the treatment groups on this measure is presented in Table 7.T15 and Figure 7.F5.

TABLE 7.T15 MEAN SCORES AND STANDARD DEVIATIONS OF THE TREATMENT GROUPS ON THE MEASURE OF FINGER SWEAT PRINT

| PROGRAMME | PRE/POST - TREATMENT DIFFERENCE | S.D | PRE/6MTH FOLLOW-UP DIFFERENCE | S.D |
|---|---|---|---|---|
| C G | + 0,08 | 1,40 | - 0,92 | 1,86 |
| P G | - 0,37 | 1,12 | - 1,15 | 1,70 |
| SST | - 0,87 | 1,01 | - 1,65 | 1,43 |
| SD-A | - 1,65 | 1,48 | - 2,49 | 1,63 |
| SD-B | - 1,59 | 1,29 | - 2,32 | 1,34 |

FIGURE 7.F6 GRAPH OF MEAN FINGER SWEAT PRINT SCORES FOR PRE-TREATMENT, POST-TREATMENT AND 6-MONTH FOLLOW-UP ASSESSMENTS




Application of the analysis of covariance on the pre-treatment to post-treatment scores, yielded significant F-ratios (see Table 7.T16) which indicates a significant difference between means amongst treatment programmes.

TABLE 7.T16 ANALYSIS OF COVARIANCE OF POST-TREATMENT FINGER SWEAT PRINT SCORES

| SOURCE OF VARIATION | SUM OF SQUARES | D.F | MEAN SQUARE | F-RATIO | SIGNIF. OF F |
|---|---|---|---|---|---|
| Pre-Tret. Score | 49,226 | 1 | 49,226 | 131,329 | 0,001 |
| Treatment Programme | 24,472 | 4 | 6,118 | 16,322 | 0,001 |
| Explained | 73,697 | 5 | 14,739 | 39,323 | 0,001 |
| Residual | 21,740 | 58 | 0,375 | | |
| TOTAL | 95,438 | 63 | 1,515 | | |

Because the main effect (the treatment programme) is significant, a one-way analysis of variance was performed on the difference score between the main effect and the covariate (i.e. post-treatment score minus pre-treatment score) - see Table 7.T17.

TABLE 7.T17 ANALYSIS OF VARIANCE OF FINGER SWEAT PRINT DIFFERENCE SCORES DERIVED FROM THE POST-TREATMENT ASSESSMENT

| SOURCE | D.F | SUM OF SQUARES | MEAN SQUARES | F-RATIO | F-PROB. |
|---|---|---|---|---|---|
| Between Groups | 4 | 28,4039 | 7,1010 | 14,684 | 0,0008 |
| Within Groups | 59 | 28,1859 | 0,4777 | | |
| TOTAL | 63 | 56,5898 | | | |

Application of the analysis of covariance on the pre-treatment to 6-month follow-up scores on this measure, yielded non-significant F-ratios (see Table 7.T18)

TABLE 7.T18 ANALYSIS OF COVARIANCE OF FOLLOW-UP FINGER SWEAT PRINT SCORES

| SOURCE OF VARIATION | SUM OF SQUARES | D.F | MEAN SQUARE | F-RATIO | SIGNIF. OF F |
|---|---|---|---|---|---|
| Pre-treat. Score | 2,573 | 1 | 2,573 | 0,751 | 0,999 |
| Treatment Programme | 15,594 | 4 | 3,899 | 1,138 | 0,348 |
| Explained | 18,167 | 5 | 3,633 | 1,060 | 0,392 |
| Residual | 198,770 | 58 | 3,427 | | |
| TOTAL | 216,937 | 63 | 3,443 | | |

Because the main effect on the analysis of covariance is not significant, the analysis of this measure is terminated (in accordance with the sequential statistical model formulated for analysis of data in the present study - see Figure 6.F1 in Section 6.4).

Since a significant F-ratio was obtained on the analysis of variance of scores derived from post-treatment on the finger sweat print measure, the DUNCAN procedure for contrasting treatment groups, was applied only on post-treatment scores (see Tables 7.T19, 7.T20 and Figure 7.F6 for an illustration of the outcome).

TABLE 7.T19 OUTCOME OF THE DUNCAN PROCEDURE ON THE PRE-TREATMENT/POST-TREATMENT DIFFERENCE SCORES ON THE FINGER SWEAT PRINT MEASURE

| PRE-TREAT/POST-TREAT | | |
|---|---|---|
| AT $\alpha = 0,01$ LEVEL | | |
| SD-A | > | SST, PG, CG |
| SD-B | > | PG, CG |
| SST | > | CG |
| AT $\alpha = 0,05$ LEVEL | | |
| SD-B | > | SST |

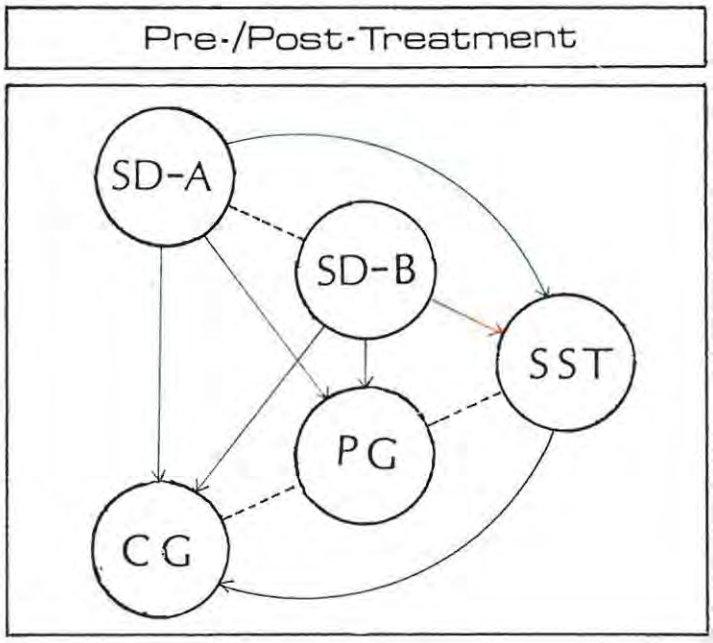
TABLE 7.T20

RANKING THE OUTCOME
(Ordered greatest to least improvement)

| PRE-TREAT/POST-TREAT | | |
|---|---|---|
| SD-A | - | 1,65 |
| SD-B | - | 1,59 |
| SST | - | 0,87 |
| P G | - | 0,37 |
| C G | + | 0,08 |

(The Non-significant mean difference scores on the finger sweat print measure derived from the 6-month follow-up contrast: SD-A = -2,49; SD-B = -2,32; SST = -1,35; PG = -1,15; CG = -0,92)

FIGURE 7.F6 DIAGRAM TO ILLUSTRATE SIGNIFICANT GAINS ON THE FINGER SWEAT PRINT MEASURE FOR PRE- TO POST-TREATMENT CONTRASTS




KEY FOR THE ABOVE LINKAGE LINES:

——— : INDICATES SIGNIFICANT DIFFERENCE AT 0,01 LEVEL.

——— : INDICATES SIGNIFICANT DIFFERENCE AT 0,05 LEVEL.

---------- : INDICATES NO SIGNIFICANT DIFFERENCE AT EITHER LEVEL.

7.1.5.1 Indication of Support for the Hypothesis of the Finger Sweat Print Measures

STATEMENT OF HYPOTHESIS C (SEE SECTION 6.3.4)

On the finger sweat print measure, SD-A and SD-B will achieve the greatest reductions in finger sweat, followed by SST and PG, with no improvement evident in the CG (at both the post-treatment and 6-month follow-up contrast intervals).

This hypothesis is well supported by the findings on the analysis of finger sweat print scores at post-treatment, but cannot be supported at all for the 6-month follow-up (where a totally non-significant analysis resulted).

As expected at post-treatment then, SD-A and SD-B achieved the greatest gains in reducing their anxiety levels. Moreover, both SD-B and SD-A achieved significantly higher scores than SST (respectively at the 0,01 & 0,05 levels), PG and CG Ss (both at 0,01 level).

Also expected is the non-significant difference between SST and PG, but contrary to the hypothesis, is the non-significant difference between PG and CG.

Despite the absence of a statistically significant result at 6-month follow-up, all programmes still made greater gains on the pre-treatment/6-M follow-up than the pre-/post-treatment mean differences (SD-A = -0,84; SD-B = -0,73; SST = -0,78; PG = -0,78; CG = -0,84, where a minus score indicates an increase in performance gains).

7.1.6 The Evaluation of Academic Performance

(*SEE SECTION 6.1.5 FOR FULL DESCRIPTION)

° SCORING: Using an overall difference score between the S's aggregate and the class average (see Section 6.1.5 for details and a case example).

° MONITORED: On three occasions - after the following sets of exams:
- June 1981 (pre-treatment)
- November 1981 (post-treatment)
- June 1982 (6-month follow-up)

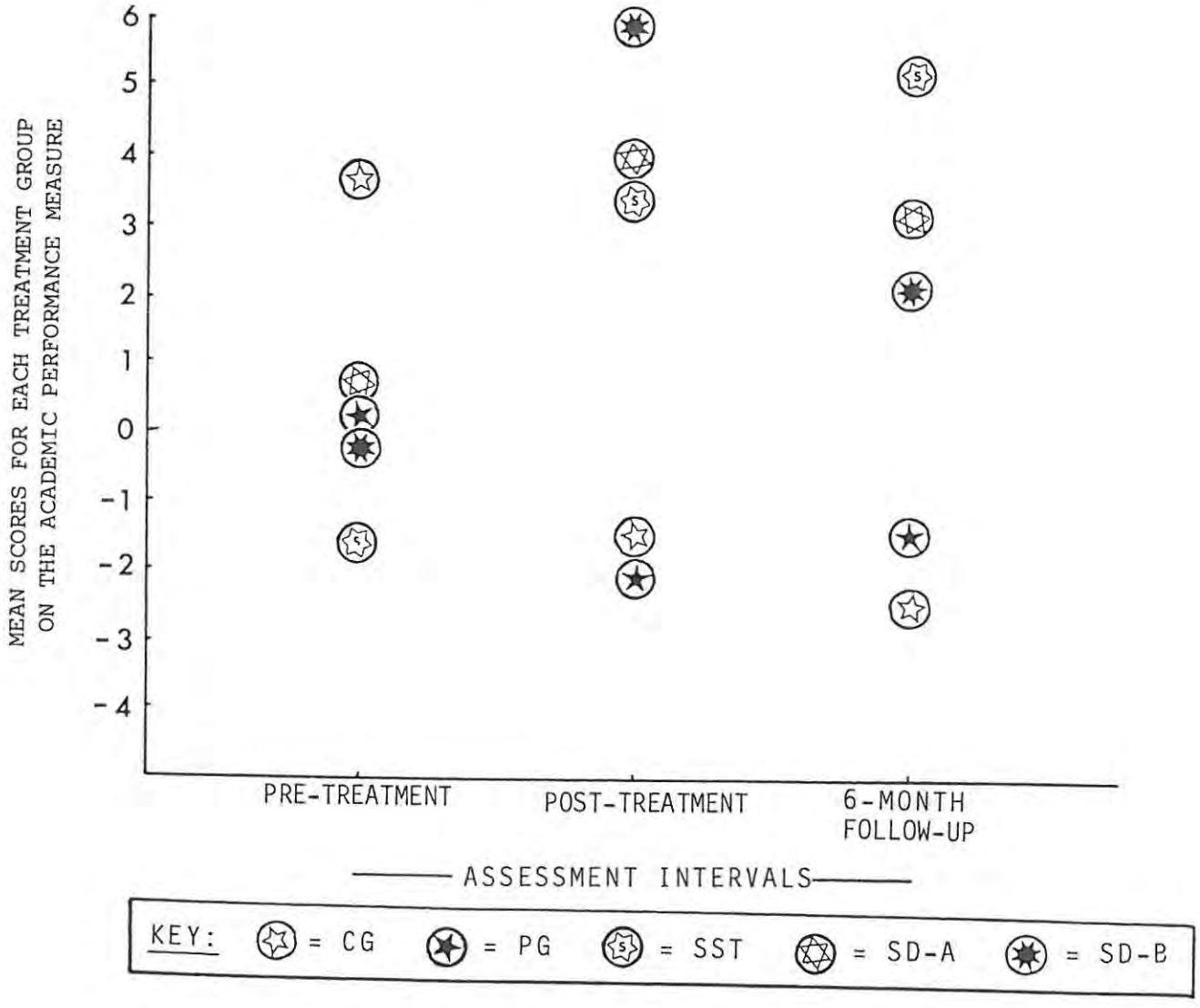
° DATA BREAKDOWN: Tables G.T4a,b,c in Appendix G feature a breakdown of data gathered on this measure for each treatment level.

A brief synopsis of the performance of Ss in the treatment groups on this measure is presented in Table 7.T21 and Figure 7.F7.

TABLE 7.T21 MEAN SCORES AND STANDARD DEVIATIONS OF THE TREATMENT PROGRAMMES ON THE MEASURE OF ACADEMIC PERFORMANCE

| PROGRAMME | PRE/POST - TREATMENT DIFFERENCE | S.D | PRE/6-MTH FOLLOW-UP DIFFERENCE | S.D |
|---|---|---|---|---|
| C G | - 5,00 | 7,14 | - 5,92 | 7,00 |
| P G | - 2,15 | 8,72 | - 1,37 | 7,67 |
| SST | + 4,92 | 7,45 | + 7,23 | 7,91 |
| SD-A | + 3,37 | 6,20 | + 2,70 | 6,40 |
| SD-B | + 6,08 | 6,60 | + 2,54 | 5,52 |

FIGURE 7.F7 GRAPH OF MEAN ACADEMIC PERFORMANCE SCORES FOR PRE-TREATMENT, POST-TREATMENT AND 6-MONTH FOLLOW-UP ASSESSMENTS



Application of the analysis of covariance on the pre-treatment to post-treatment scores, yielded significant F-ratios (see Table 7.T22) which indicates a significant difference between means amongst treatment programmes.

TABLE 7.T22 ANALYSIS OF COVARIANCE OF POST-TREATMENT ACADEMIC PERFORMANCE SCORES

| SOURCE OF VARIATION | SUM OF SQUARES | D.F | MEAN SQUARE | F-RATIO | SIGNIF. OF F |
|---|---|---|---|---|---|
| Pre-Tret. Score | 1439,503 | 1 | 1439,503 | 111,668 | 0,001 |
| Treatment Programme | 911,811 | 4 | 227,953 | 17,683 | 0,001 |
| Explained | 2351,314 | 5 | 470,263 | 36,480 | 0,001 |
| Residual | 747,670 | 58 | 12,891 | | |
| TOTAL | 3098,984 | 63 | 49,190 | | |

Because the main effect (the treatment programme) is significant, a one-way analysis of variance was performed on the difference score between the main effect and the covariate (i.e. post-treatment score minus pre-treatment score) - see Table 7.T23.

TABLE 7.T23 ANALYSIS OF VARIANCE OF ACADEMIC PERFORMANCE DIFFERENCE SCORES DERIVED FROM THE POST-TREATMENT ASSESSMENT

| SOURCE | D.F | SUM OF SQUARES | MEAN SQUARES | F-RATIO | F-PROB. |
|---|---|---|---|---|---|
| Between Groups | 4 | 1149,0901 | 287,2725 | 15,888 | 0,0009 |
| Within Groups | 59 | 1066,7692 | 18,0808 | | |
| TOTAL | 63 | 2215,8594 | | | |

Application of the analysis of covariance on the pre-treatment to 6-month follow-up scores on this measure, also produced significant F-ratios (see Table 7.T24).

TABLE 7.T24 ANALYSIS OF COVARIANCE OF FOLLOW-UP ACADEMIC PERFORMANCE SCORES

| SOURCE OF VARIATION | SUM OF SQUARES | D.F | MEAN SQUARE | F-RATIO | SIGNIF. OF F |
|---|---|---|---|---|---|
| Pre-Tret. Score | 520,323 | 1 | 520,323 | 19,622 | 0,001 |
| Treatment Programme | 754,708 | 4 | 188,677 | 7,115 | 0,001 |
| Explained | 1275,031 | 5 | 255,006 | 9,617 | 0,001 |
| Residual | 1537,969 | 58 | 26,517 | | |
| TOTAL | 2813,000 | 63 | 44,651 | | |

Because the main effect on the analysis of covariance is significant, a oneway analysis of variance was performed on the difference score between the main effect and the covariate (i.e. 6-month follow-up minus pre-treatment score) - see Table 7.T25.

TABLE 7.T25 ANALYSIS OF VARIANCE OF ACADEMIC PERFORMANCE DIFFERENCE SCORES DERIVED FROM THE 6-MONTH FOLLOW-UP ASSESSMENT

| SOURCE | D.F | SUM OF SQUARES | MEAN SQUARES | F-RATIO | F-PROB. |
|---|---|---|---|---|---|
| Between Groups | 4 | 1220,2179 | 305,0545 | 6,999 | 0,01 |
| Within Groups | 59 | 2571,5321 | 43,5853 | | |
| TOTAL | 63 | 3791,7500 | | | |

Since a significant F-ratio was obtained on the analysis of variance of scores derived from both post-treatment and 6-month follow-up on the measure of academic performance, the DUNCAN procedure for contrasting treatment groups, was applied to both sets of scores (see Tables 7.T26, 7.T27 and Figure 7.F8 for comparisons of the outcome).

TABLE 7.T26 OUTCOME OF THE DUNCAN PROCEDURE ON PRE-/POST-TREATMENT & PRE-/6-MTH FOLLOW-UP DIFFERENCE SCORES ON THE ACADEMIC PERFORMANCE MEASURE

| PRE-TREAT/POST-TREAT | | |
|---|---|---|
| AT $\alpha$ = 0,01 LEVEL | | |
| SD-B | > | PG, CG |
| SST | > | PG, CG |
| SD-A | > | PG, CG |
| AT $\alpha$ = 0,05 LEVEL | | |

| PRE-TRET/6-M FOLLOW-UP | | |
|---|---|---|
| AT $\alpha$ = 0,01 LEVEL | | |
| SST | > | PG, CG |
| SD-A | > | CG |
| SD-B | > | CG |
| AT $\alpha$ = 0,05 LEVEL | | |
| SST | > | SD-B |
| SD-A | > | PG |
| SD-B | > | PG |

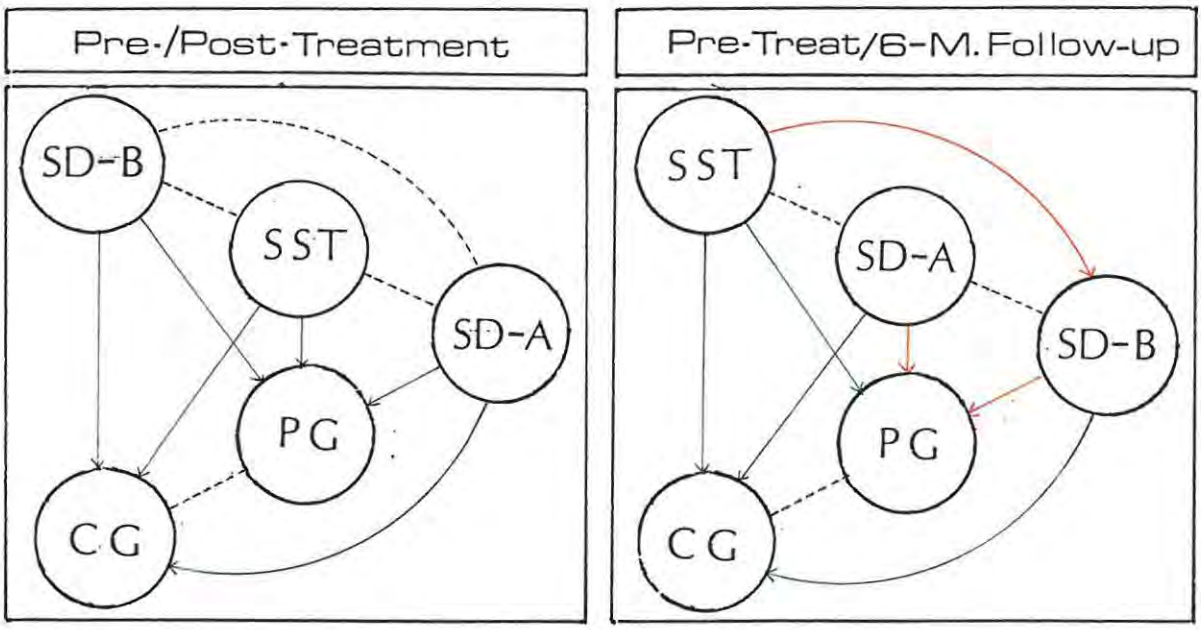
TABLE 7.T27

RANKING THE OUTCOME
(Ordered greatest to least improvement)

| PRE-TREAT/POST-TREAT | |
|---|---|
| SD-B | + 6,08 |
| SST | + 4,92 |
| SD-A | + 3,37 |
| P G | - 2,15 |
| C G | - 5,00 |

| PRE-TRET/6-M FOLLOW-UP | |
|---|---|
| SST | + 7,23 |
| SD-A | + 2,96 |
| SD-B | + 2,54 |
| P G | - 1,37 |
| C G | - 5,92 |

FIGURE 7.F8 DIAGRAM TO ILLUSTRATE SIGNIFICANT GAINS ON THE ACADEMIC PERFORMANCE MEASURE FOR PRE- TO POST-TREATMENT TO 6-MONTH FOLLOW-UP CONTRASTS




KEY FOR THE ABOVE LINKAGE LINES:

——— : INDICATES SIGNIFICANT DIFFERENCE AT 0,01 LEVEL.

——— : INDICATES SIGNIFICANT DIFFERENCE AT 0,05 LEVEL.

---------- : INDICATES NO SIGNIFICANT DIFFERENCE AT EITHER LEVEL.

7.1.6.1 Indication of Support for the Hypothesis of the Academic Performance Measure

STATEMENT OF HYPOTHESIS D (SEE SECTION 6.3.5)

On the measure of academic performance, the SST Ss will achieve the greatest gains, followed by SD-A and SD-B Ss. CG Ss will realise a deterioration in academic performance, while PG Ss will not make any gains. Moreover, at 6-month follow-up, PG Ss will also experience a decrement in academic performance.

This hypothesis can only be weakly supported, since although SST Ss realised the greatest gain at 6-month follow-up (significantly better at 0,05 level than SD-B), it achieved only the second-highest score at post-treatment (although SD-B, SST and SD-A all realised non-significant gains over one another).

In support of the hypothesis, SD-B, SST and SD-A Ss all made a significant improvement over both PG and CG (mostly at the 0,01 level; at the 0,05 level for SD-A over PG and SD-B over PG at 6-month follow-up).

As expected, CG Ss did experience a deterioration in academic performance, but so did PG Ss (contrary to the hypothesis).

Only SST and PG Ss realised larger gains at the pre-treatment/6-month follow-up contrast than at the pre-/post-treatment contrast interval (SST = +2,31; PG = +0,78; with SD-A = -0,41; SD-B = -3,54 and CG = -0,92, where a plus indicates an increase in academic performance between the two intervals).

### 7.1.7 The Treatment Evaluation Questionnaire (or 'Confidence Index')

(*SEE SECTION 6.1.3.4 FOR FULL DESCRIPTION)

- ° SCORING: Six items scored along a 7-point continuum.
- ° ADMINISTERED: On one occasion only:
  - Shortly after the November 1981 exams (i.e. beyond post-treatment)
- ° DATA BREAKDOWN: Table G.T5 in Appendix G features a breakdown of data gathered on this schedule for each treatment level.

A brief synopsis of the performance of Ss in the treatment groups on this questionnaire is presented in Table 7.T28.

TABLE 7.T28 SUM SCORES AND STANDARD DEVIATIONS OF THE TREATMENT PROGRAMMES ON THE TREATMENT EVALUATION QUESTIONNAIRE

| PROGRAMME | POST-TREATMENT ADMINISTRATION | S.D |
|---|---|---|
| C G | (DID NOT COMPLETE THIS Q.) | |
| P G | 27,41 | 5,42 |
| SST | 23,86 | 8,13 |
| SD-A | 28,72 | 3,81 |
| SD-B | 31,82 | 3,56 |

This questionnaire (as has been noted earlier) was only administered on one occasion at post-treatment; for this reason, a oneway analysis of variance was performed on post-treatment scores yielding a small, yet significant F-ratio (see Table 7.T29).

TABLE 7.T29 ANALYSIS OF VARIANCE OF TREATMENT EVALUATION DIFFERENCE SCORES DERIVED FROM THE POST-TREATMENT ASSESSMENT

| SOURCE | D.F | SUM OF SQUARES | MEAN SQUARES | F-RATIO | F-PROB. |
|---|---|---|---|---|---|
| Between Groups | 3 | 403,7692 | 134,5897 | 5,039 | 0,004 |
| Within Groups | 48 | 1282,1538 | 26,7115 | | |
| TOTAL | 51 | 1685,9231 | | | |

Since the F-ratio is significant, the DUNCAN contrast procedure was applied - see Tables 7.T30, 7.T31 and Figure 7.F9 for an illustration of the outcome.

TABLE 7.T30 OUTCOME OF THE DUNCAN PROCEDURE ON THE TREATMENT EVALUATION QUESTIONNAIRE SCORES

| AT $\alpha$ = 0,01 LEVEL | |
|---|---|
| SD-B | > SST |
| AT $\alpha$ = 0,05 LEVEL | |
| SD-B | > PG |
| SD-A | > SST |

TABLE 7.T31

RANKING THE OUTCOME
(Ordered greatest to least improvement)

| | |
|---|---|
| SD-B | 31,82 |
| SD-A | 28,72 |
| P G | 27,41 |
| C G | 23,86 |

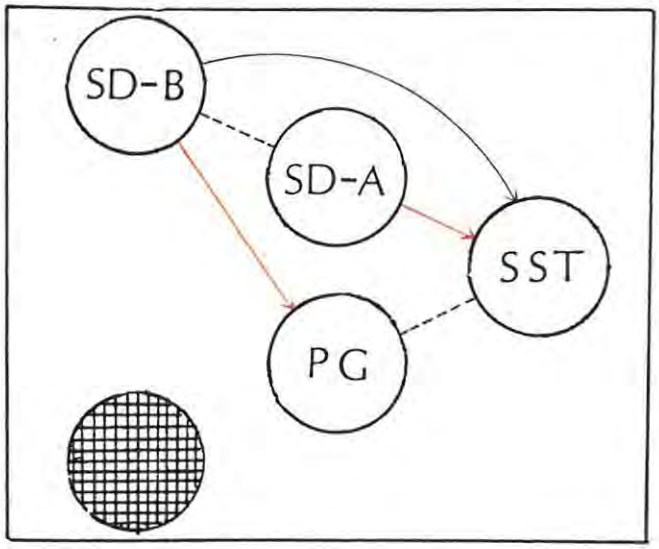
7.1.7.1 Indication of Support for the Hypothesis of the Treatment Evaluation Questionnaire

STATEMENT OF HYPOTHESIS E (SEE SECTION 6.3.6)

On the treatment evaluation questionnaire (or 'Confidence Index'), the experimental groups SST, SD-A and SD-B will all score higher than PG Ss.

(CG Ss did not complete this schedule)

FIGURE 7.F9 DIAGRAM TO ILLUSTRATE SIGNIFICANT GAINS ON THE TREATMENT EVALUATION QUESTIONNAIRE




KEY FOR THE ABOVE LINKAGE LINES:

——————— : INDICATES SIGNIFICANT DIFFERENCE AT 0,01 LEVEL.

——————— : INDICATES SIGNIFICANT DIFFERENCE AT 0,05 LEVEL.

---------- : INDICATES NO SIGNIFICANT DIFFERENCES AT EITHER LEVEL.

(SUPPORT FOR HYPOTHESIS E CONTINUED...)

This hypothesis is not supported, since only SD-B Ss achieved a score significantly higher than PG Ss (at 0,05 level). Contrary to expectations, SST scored the least on this evaluation, significantly less than both SD-B (at 0,01) and SD-A (at 0,05 level).

High scores (pre-determined as 24 or over in total, or a mean of 4 on each item - see Section 6.1.3.4 for details) were achieved by all Ss, although SST Ss scored just 23,86 in total and less than a mean of four on one item (a mean score of 3,0 on item 1, concerning the difficulty of acquiring skills taught

The only other group to score under 4 on any item, were the PG Ss, who scored a mean of 3,5 on item 6: concerning the potential durability of the treatment procedure they had undergone.

## 7.2 OTHER FINDINGS OF NOTE

### 7.2.1 Items on the Confidence Index (The Treatment Evaluation Q/nnaire)

In BOX 7A is featured the mean scores attained by Ss in the different treatment programmes on each of the six items included in the treatment evaluation questionnaire (see Section 7.1.7 for an analysis of the total scores for each treatment programme).

BOX 7A

| ITEMS LISTED ON THE CONFIDENCE INDEX (DESCRIBED AS THE TREATMENT EVALUATION QUESTIONNAIRE) | TREATMENT PROGRAMMES (MEAN SCORES ON EACH ITEM) | | | |
|---|---|---|---|---|
| | PG | SST | SD-A | SD-B |
| (1) In the course of this treatment programme you were coached in the use of specific skills/abilities; how did you find the acquisition of such skills? (Difficult/Easy to acquire). | 4,8 | 3,0 | 4,2 | 4,4 |
| (2) In your opinion, how competently was the treatment programme presented to you by the Supervisor? (Not Very/Highly competently). | 4,8 | 4,4 | 5,0 | 5,7 |
| (3) To what extent did you experience the group sessions as 'enjoyable'? (Not at all/Highly enjoyable). | 4,9 | 4,0 | 4,6 | 5,0 |
| (4) Did you at any stage during or in-between sessions feel you were wasting your time doing the research programme? (Often/Never). | 4,1 | 4,2 | 4,6 | 5,1 |
| (5) Quite often, programmes designed to reduce the debilitative effects of anxiety resulting out of the exam situation, also enable the participant involved...to become socially more 'agreeable'...To what extent do you find this true of your own experiences? (Not at all-/Very True- of me). | 5,3 | 4,2 | 5,6 | 6,0 |
| (6) How durable (long-lasting) do you think the effects of the programme will be for you (given the skills/abilities you have now acquired) as far as future exam encounters are concerned? (Not very-/Very- Durable). | 3,5 | 4,2 | 4,7 | 5,6 |
| TOTALS ($\bar{x}$) | 4,6 | 4,0 | 4,8 | 5,3 |

It will be observed (in BOX 7A) that SD-B Ss achieved the highest overall mean score on the confidence index, and achieved the highest mean score on five of the six items (being second only to PG on Item 1, concerning the difficulty of skill acquisition).

SST Ss showed the lowest level of convidence (although still at the "high confidence level", pre-determined as a mean of 4 or above on each item - see Section 6.1.3.4), with the lowest mean score on four of the six items (Items 1,2,3 & 5).

PG Ss scored the highest on Item 1 (concerning skill acquisition) and the least on Items 4 and 5.

Only two treatment programmes scored less than the mean of 4 (see above):

(a) SST Ss scored a mean of 3,0 on Item 1; and
(b) PG Ss scored a mean of 3,5 on Item 6.

### 7.2.2 The Descriptive Variables

No hypotheses were postulated for the 'descriptive' variables (such as 'occupation before university', and so on - see Section 6.1.2), because this information was merely sought in order to provide the researcher with a more comprehensive 'profile of the test anxious student'.

However, chi-squared tests were applied to a number of crosstabulations between different variables in the present study; two such crosstabulations thought (by the researcher) to be of interest here are those between the SEX and SELF-INJURY variables, as well as between the NATURAL ANXIETY and SELF-INJURY variables[*1]. Results of this application are indicated in Tables 7.T32 and 7.T33.

*1 / where SEX = The sex of the Subject; SELF-INJURY = Whether or not the Subject would commit self-injury to evade sitting for an exam; NATURAL ANXIETY = An index as to whether or not the Subject considers him/herself as "naturally anxious".

TABLE 7.T32 CROSSTABULATION BETWEEN THE SEX AND SELF-INJURY VARIABLES

| | | SELF-INJURY POTENTIAL | | | |
|---|---|---|---|---|---|
| | | OFTEN | SOMETIMES | NEVER | |
| SEX | MALE | 9 (32%) | 12 (43%) | 7 (25%) | 28 (44%) |
| | FEMALE | 2 ( 6%) | 9 (25%) | 25 (69%) | 36 (56%) |
| | | 11/17% | 21/33% | 32/50% | 64 (100%) |

$\chi^2$ = 14,23 Significance = 0.0008

DEDUCTION: Men contemplated committing self-injurous acts (in order to avoid sitting for exams) significantly more than did women (compare 75% of the Males to 31% of the Females).

TABLE 7.T33 CROSSTABULATION BETWEEN THE NATURAL ANXIETY AND SELF-INJURY VARIABLES

| | | SELF-INJURY POTENTIAL | | | |
|---|---|---|---|---|---|
| | | OFTEN | SOMETIMES | NEVER | |
| NATURALLY ANXIOUS | YES | 10 (24%) | 16 (39%) | 15 (37%) | 41 (64%) |
| | NO | 1 ( 4%) | 5 (22%) | 17 (74%) | 23 (36%) |
| | | 11/17% | 21/33% | 32/50% | 64 (100%) |

$\chi^2$ = 8,89 Significance = 0.01

DEDUCTION: There is a significant relationship between Ss responses on these two variables. Of those who regarded themselves as "naturally anxious", 63% had contemplated committing self-jury to evade writing an exam, compared with just 26% of those Ss who did not regard themselves as naturally anxious.

# CHAPTER EIGHT

DISCUSSION

&

INTERPRETATION

## 8.1 DISCUSSION OF OVERALL PERFORMANCE OF EACH TREATMENT PROGRAMME

### 8.1.1 The Placebo "Programme"

Subjects involved in this "programme":

(a) Achieved a performance ranking of 4*1 on all measures analysed (followed each time only by the controls).

(b) Experienced a deterioration in scores on the measure of academic performance (for both pre-/post-treatment and pre-treatment/ 6-month follow-up intervals), as well as at 6-month follow-up on the SUD-Scale.

(c) Attained the Third-highest confidence score (better, but not significantly so, than the SST Ss); while scoring the highest on Item 1 - concerning the acquisition of skills - and the least on two of the six items on the confidence index (viz. Item 4: whether Ss ever felt they were "wasting their time"; and Item 6: the perceived durability of the effects of the treatment to last well after the training has ended).

#### 8.1.1.1 Discussion of the Outcome of the Placebo 'Programme'

While clearly not inert*2, the placebo intervention proved to be the least effective of all behavioural manipulations employed in the present study.

Ss in the placebo groups in fact only evidenced significant gains in scores over the CG, on the management of exam anxiety self-report schedule (and this moreover, only at the pre-/post-treatment interval).

The main implication from this treatment outcome, is that cognitive modification (the only behavioural intervention used in the placebo 'programme'), when used in isolation to other techniques, is not very useful in helping students to master their test anxiety.

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*1 / The performance ranking refers to the relative performance gain achieved by the programme in question, in relation to other programmes, as determined by the Duncan Procedure.

*2 / A requirement established by O'Leary & Borkovec,1978, for the inclusion of a bogus programme to be meaningful (see Section 5.3).

However, in support of the findings by Yalom (1970) and Katahn (1966), Ss agreed that simply having the opportunity of talking to other test anxious students, "helped considerably" in alleviating the feeling of helplessness, which many identified as resulting from debilitative exam tension. Probably for this reason, PG Ss also recorded the second-highest 'enjoyment' score on the confidence index (see Section 7.1.7 for details).

While Ss appeared to "feel better" about study and exams (supported somewhat by the marginal decreases in anxiety experienced, as measured by the self-report and physiological devices), their academic performance deteriorated; this deterioration is consistent with the findings (for cognitive modification) of D'Alelio & Murray (1981) referred to in Section 2.2.4.1. Additionally, Ss found the programme insubstantial (witness here, the PG scores, which are the lowest, on Items 4 & 6 of the confidence index - which indicates that these Ss saw their programme as (a) not very durable and (b) occasionally a "waste of time").

One of the difficulties evident from comments made by Ss in the placebo groups (both on the confidence index and during feedback discussions), is that most of them, while accepting the rationale behind the treatment, would have preferred (as one Subject put it): "More tangible skills to be internalised". On the same point, another Subject went further noting: "It's simply unnatural to artificially create positive thoughts from negative ones, let alone talking to oneself about them!".

A possible reason for this apparent resistance to become too involved in this programme, could stem from the observation made by two members of the placebo groups, who suggested that they were concerned about being overly-complacent about exams, should they be able to "...significantly modify their thoughts enough to stop worrying about upcoming exams".

In summary then, Ss in the placebo groups felt the 'programme' lacked substance and direction. They also believed the benefits derived from the programme are only likely to persist in the short term. On the positive side however, they found the acquisition and understanding of 'skills' involved, easy to learn and comprehend. In addition, they enjoyed the sessions more than Ss in most other groups and felt more confident in their ability to "do something" about their test stress.

### 8.1.2 The Study Skills Training Programme

Subjects involved in this programme:

(a) Achieved the highest gain (significantly so) at 6-month follow-up on the academic performance measure, and second-highest gain on the same instrument at post-treatment.

(b) Attained a performance ranking of 3 on the management of exam anxiety, the SUD-Scale and finger sweat print measures (significantly better than both PG and CG on the management of exam anxiety schedule at both post-treatment and 6-month follow-up contrasts and on the SUD-Scale at 6-month follow-up. Also significantly better than CG on the SUD-Scale and finger sweat print at post-treatment).

(c) Scored the least on the confidence index (while realising a total on the borderline of the "high confidence level"; pre-determined at 24 or over, with SST = total score of 23,86). Moreover, SST Ss scored the least on 4 of the 6 items on the index (see detailed reference to this in Section 7.2.1).

#### 8.1.2.1 Discussion of the Outcome of the Study Skills Training Programme

The finding that SST Ss achieved the highest improvement on the academic performance measure at 6-month follow-up, but not at post-treatment, was surprising, given the emphasis placed in this programme on study counselling techniques.

One possible reason for not also realising the best performance at post-treatment, is that many of the study counselling techniques taught concerned improvement of study mechanics (or habits) maintained by Ss; these techniques thus took time to integrate into each S's study method. It is likely therefore that the techniques were only partially implemented by Ss by the time of the November 1981 exams (at post-treatment); but fully-integrated by Ss at the 6-month follow-up assessment (June 1982 exams).

This finding is in concert with the literature presented on SST in Section 2.2.3.1 (material by Marston & Feldman,1971; and Beneke & Harris,1972), where it is reported that students do not generally favour study skills training programmes, because of their "frequent textbook orientation".

Ss on the present programme reported (on the confidence index):

° Finding the acquisition of skills taught relatively difficult (relative that is to Ss in other treatment groups). It is the contention of this researcher (aided by the panel of student judges - see Section 5.2.4.2) that the techniques taught were in fact quite simple and that the SST Ss' response can be explained as a lack of motivation and interest in learning new study methods, from the outset.

This view is supported moreover, by the finding that SST Ss enjoyed their programme less than Ss in other groups.

° That far from making them less irritable at exam times (see item 5 on the confidence index), the skills acquired in fact made them more irritable.

While commenting generally on the SST package (comments noted in the space provided on the confidence index), many Ss indicated that they found the relaxation demonstration and cognitive restructuring exercises a "welcome break" (as one Subject put it) from the study skills training.*1

In summary then, while Ss viewed the study skills programme as beneficial, they were not overly enthusiastic about it; in fact, some Ss showed a clear aversion to learning new study skills (even though every effort was made to help each Subject integrate the new skills in with their own study routine).

### 8.1.3 The Systematic Desensitisation - Method A Programme

Ss involved in this programme:

(a) Achieved second-highest mean difference scores on both of the self-report measures (the management of exam anxiety schedule and the SUD-Scale), as well as the finger sweat print measure, at both the pre-/post-treatment and pre-treatment/6-month follow-up intervals.

*1 / SST Ss did not undergo intensive deep-muscle relaxation training, but were instead presented with a demonstration of the technique.

(b) Realised a performance ranking of 3 on the measure of academic performance at pre-/post-treatment, and a performance ranking of 2 on this same measure at 6-month follow-up.

(c) Scored second-highest on the confidence index.

#### 8.1.3.1 Discussion of the Outcome of the SD-A Groups

As measured on the self-report and physiological measures, the present findings fully support the claims expressed in Section 2.2.3 by Cornish & Dilley (1973) and Kostka & Galassi (1974) that SD is the most effective therapeutic intervention for test anxiety, especially in a group-counselling context.

Notwithstanding the non-significant findings on the finger sweat print measure at 6-month follow-up, one of the crucial aims of desensitisation: to help the student gain select mastery over the physiological aspects of test anxiety, was evident with this desensitisation group at post-treatment.

On the academic performance measure, the SD-A programme improved the least out of the three multicomponent programmes. However, a clear (significant) gain was achieved by these Ss over both the CG and PG Ss in academic performance, this partially answering the complaint of Kirkland & Hollandsworth (1980), that the ability of SD programmes to improve test-performance has "...only been weakly demonstrated". (see Section 2.2.3 for full quote).

Ss were also better able to maintain performance gains made at the pre-/post-treatment interval until the pre-treatment/6-month follow-up assessment than were other groups; this is most likely at least partly due to the finding that the SD-A Ss maintained a high level of confidence in the programme (scoring second-highest on the confidence index).

### 8.1.4 The Systematic Desensitisation - Method B Programme

Subjects involved in this programme:

(a) Achieved the greatest gains (all of which are significant) on both the management of exam anxiety schedule and the SUD-Scale at both

the post-treatment and 6-month follow-up intervals.

(b) Achieved the greatest gains (significant at post-treatment, but not at 6-month follow-up) on the measure of finger sweat print.

(c) Attained the best improvement (although not to a significant extent) on the academic performance measure at post-treatment; being ranked second at 6-month follow-up.

(d) Recorded the highest confidence score (as measured on the treatment evaluation questionnaire), where they also realised the highest mean score on five of the six items on this schedule (while scoring second highest on the item relating to the perceived degree of difficulty in acquisition of skills involved in each treatment programme).

#### 8.1.4.1 Discussion of the Outcome of the SD-B Groups

Clearly, the SD-B programme was the most effective employed in the present study, and the outstanding gains made by Ss in this treatment group underlines well the superiority of systematic desensitisation (as a 'core' procedure in a multicomponent package) over both study skills (also as emphasised in a multicomponent programme) and cognitive modification (used in isolation to other techniques); this once again supporting the claims of Cornish & Dilley (1973) - see Section 8.1.3.1.

Indeed, not only do SD-B Ss show (significantly) the best improvements on both self-report and finger sweat print measures (this latter demonstrating the clear influence of desensitisation on an individual's physiology), the SD-B participants also gained the highest post-treatment score on the academic measure. As in the case of the SD-A group, the ability of the SD-B programme to improve academic performance, runs contrary to the suggestion by Kirkland & Hollandsworth (1980 - see Section 2.2.2) that there is scant evidence in the literature, of this ability claimed for SD-B. Of course, being a multicomponent package, it is possible that the other components served to aid the desensitisation procedure in helping Subjects to improve their academic grades.

SD-B Ss had more confidence in their programme than Ss in the other treatment groups, and further (perhaps more importantly for students), Ss enjoyed this programme the most (as measured by Item 3 on the confidence index; see Section 7.2.1 for details).

While it is true that some Ss reported "difficulties" in efforts to relax "properly", and some "did not find it easy" to visualise scenarios listed in hierarchies effectively (two weaknesses identified by Adams & Unikel,1973, in their discussion of the efficacy of the SD procedure - see Section 2.2.2.2), these problems were rapidly overcome as the training proceeded.

The use made of the phenomenological research praxis in the present study (after Stones, cited in Kruger,1979) in the SD-B programme, is the first recorded employment of the phenomenological method in test anxiety research. Clearly, the research praxis greatly enhanced and facilitated discussion amongst Ss in the programme. Interestingly, hierarchal items formulated by the SD-B groups did not differ substantially in content from those formulated on an individualised basis in the SD-A group. It was found however, that items were often more broadly worded/phrased in the SD-B groups, while Ss in this programme focused the content of their items more on matters concerning (a) familial reaction to academic performance (for example: "Worried mother contacts me just before an exam") and (b) preoccupation with matters concerning competition with fellow students (for example: "When the results are posted on the noticeboard").

The results of Ss participating in the SD-B programme then, also forcibly illustrate the greater efficacy of the group-construction method of hierarchies as opposed to the personalised/individual construction method; this supports the contention of Robinson (1974) that group-construction of such hierarchies is more effective than individual construction (although the finding is contrary to the standpoint of Calef et al.,1974, see earlier discussion in Section 2.2.2.3).

Presumably, this notable superiority of the group- over individual- construction of anxiety hierarchies, can be attributed (at least in part)

to the greater interaction between Ss in the SD-B programme (relative tc the SD-A procedure), and the consequent development of a form of 'group identity'.

As one student suggested:

> " I felt at times as if I was on something of a discovery of test anxiety; a ship ahoy!-type of feeling....I felt we had spotted land by the time we, in our little cell of three, had completed our sub-hierarchy. Once we had resolved a total-group hierarchy, I felt we had all made it to land."
>
> (Subject in SD-B programme: extract from her diary of experience)

Similar comments were put forward by other Ss in the SD-B groups, while at least two participants indicated that they found the group discussions "awkward at times"; however, both of these individuals scored highly on the confidence index, when it was administered at post-treatment (this being implicit of their overall support for the efficacy of the SD-B programme).

Finally, it should be emphasised that the drop in performance gains by the SD-B Ss on the academic performance measure at 6-month follow-up, when compared with the post-treatment assessment, suggests that some Ss in the SD-B programme, relied too heavily on group-support (referred to on the previous page); support obviously broken by termination of the training sessions. The suggestion here then, is that the efficacy of the programme may rest in the interaction between participants; once this support is withdrawn, benefits are diminished (as evidenced by the lower academic performance scores at 6-month follow-up). However, such a proposition is not supported on the self-report and finger sweat print measures.

IN SUMMARY THEN, the SD-B multicomponent programme, was the most successful test anxiety management package, in the present investigation. Even on the all-important measure of academic performance, SD-B proved as effective in the short term as the SST programme (although in the longer term, these gains by SD-B Ss were significantly diminished).

According to scores on the confidence index, SD-B Ss:

- Enjoyed this programme more than other Ss enjoyed the programmes they were engaged upon;
- Hardly ever felt they were "wasting their time";
- Found that the SD-B treatment effects generalised easily to situations other than just those in which evaluation was involved;

and

- Believed the programme to have high potential durability (more so than Ss in other groups).

## 8.2 BRIEF DISCUSSION OF CONTENTS IN THE DIARIES OF EXPERIENCE

### 8.2.1 Introduction

The diaries ranged in length, from two to eight sides of A4-paper, and covered the period from the initial orientation session, through the application of treatment programmes, up to (and including) January 1982, following the S's receipt of his/her exam results in the mail.

Four Ss in the wait-list control group refused to maintain such diaries; otherwise the task was completed by all Ss.*1

Apart from a few specific references to minor interpersonal conflicts with other group members (noted in just four reports; two Ss from the SD-B programme, one from SST and one from PG), content in the diaries can be classified into five areas of interest:

(1) Difficulties concerning the acquisition of skills taught;

(2) Problems in modifying personal self-statements;

(3) Attitudes expressed towards examinations and academics in general;

(4) Suggestions for improving methods of evaluating academic performance;

and

(5) Attitudes towards parental interest/influence.

---

*1 / Control Ss were asked to keep diaries on their "experience of exams" in June 1981 and November 1981. The four control Ss did not specify why they were opposed to keeping such diaries, although one Subect suggested it was "pointless" for wait-list groups.

Each area of interest will now be discussed.

### 8.2.2 Comments Concerning the Acquisition of Skills Taught

In the PLACEBO GROUPS, a number of Ss (4/13*1) found the discussion of study behaviour in a group setting "awkward", and while advice from other group members was appreciated, it was regarded by many (6/13) as "unrealistic" or "too idealistic".

One Subject experienced the "meditation exercises" as difficult to acquire, because he was unable to "concentrate adequately" on the suggested exercises. He reported that his anxiety experiences during the day, "clouded" his mind with many "peripheral thoughts".

In the STUDY SKILLS TRAINING programme, Ss found the initial acquisition of study counselling techniques difficult; many (5/13) reported difficulties in modifying their own study behaviour to accommodate the principles taught in this programme.

One Subject noted that her study behaviour was "in a bad rut", with her habit of studying while reclining on her bed, or whilst tanning in the sun on her room balcony. However, by employing the 'critical exciting study factor' technique (described in Section 5.4.3), she found that she was able to discipline herself to study intensively for up to an hour, for which she rewarded herself with a short relaxation period in the sun.

Only one Subject still reported problems in his attempts at incorporating the newly acquired study techniques in with his own study behaviour, by the time of the post-treatment examinations (in November 1981).

SYSTEMATIC DESENSITISATION Ss in both SD-A and SD-B programmes (numbering respectively 6/13 and 2/13) reported difficulties in their attempts to vividly imagine the various scenarios in their anxiety hierarchies, although only Ss in the SD-A group (none in the SD-B) still referred to such difficulties by the end of the treatment period (ie. at post-treatment).

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*1 / This abbreviation means: 4 Ss out of a total of 13 Ss in the specific programme to which the ratio refers.

Contrary to the criticisms of Adams & Unikel (1973) (noted earlier in Section 2.2.2.2), Ss in the SD programmes, who referred to the relaxation training, expressed finding no difficulty in learning to relax. In addition, all of the Ss who referred to the inroduction of the electronic tone (SD-A = 8/13 and SD-B = 7/13), found it preferable to verbal cueing by the facilitator.

### 8.2.3 Comments Concerning the Modification of Personal Self-Statements

Each of the three multicomponent packages (SST, SD-A and SD-B) included a cognitive modification component; a component which was featured alone in the PG 'programme'.

A number of Ss (9/52, excluding the controls) reported difficulties in their attempts at modifying their cognitions related to study and exam situations. Some of these Ss wrote of feeling embarrassed at verbalising positive self-statements during group sessions.

On the other hand, three Ss reported that since they habitually talked to themselves, modifying self-talk (as a technique to modify cognitions) was experienced by them as "a relatively simple and meaningful process".

By the time of the post-treatment exams (in November 1981), none of the Ss still reported difficulties in modifying their exam-related cognitions.

### 8.2.4 Some Attitudes Expressed towards Examinations and Academics in General

Without exception, all Ss who completed diaries (N=60) indicated, both explicitly and implicitly, their attitude towards examinations as a means of evaluating academic performance and their opinion concerning academics and educationalists (from school teachers, to university lecturers and administrators of Education).

Opinions expressed were mostly negative, with Ss chiefly criticising:

(a) The emphasis usually placed on the 'final exam' in academic evaluations, together with the implied mistrust of students by academics/educationalists, concerning the originality of work done during the year (this notably so at university level).

(b) The seemingly careless regard displayed by some teachers, lecturers and university administrators, towards Ss who struggled with time management in exams, or who suffered from bona fide "mental blocks" during a test or exam.

(c) The importance placed on competition within the classroom and to a lesser extent, in the lecture theatre. Specifically, the posting-up of test and exam results "for all the world to see" (as one Subject put it), was experienced as demoralising by many Ss. Individual class prizes were also criticised as further aggrivating this 'competitive' aspect of evaluation.

Rey Carr (1977) has also encountered this negative attitude in students during his test anxiety research. Carr novelly views test anxiety as a political problem needing "preventive counselling strategies", rather than corrective remedial approaches.

Carr comments:

> " Testing and evaluation are seen (by students) as tools of oppression and as a means of expressing power and authority in educational settings." (1977,Pp 66)

He argues, that by assuming that test anxiety is the student's problem, student counsellors in fact contribute to the difficulty by facilitating a student's guilt.

### 8.2.5 Suggestions for Improving Methods of Evaluating Academic Performance

Ss generally wrote at greatest length on their suggestions for improving the system of evaluating academic performance (they were in fact all specifically requested to include such suggestions in the diaries).

Some of the more constructive suggestions made by Ss are now presented, together (where possible) with supportive material from literature consulted by this researcher.

° Suggestions Included:

(a) The importance of the exam should be underemphasised, either by increasing the value of the intra-year class aggregate when combined with the final exam mark (to at least 50% of the final overall mark), or by adopting the Semester 'write-off' system, as followed by American colleges.

Of course, there have been moves at Rhodes university in both of these directions, but the departments (such as those in the Commerce Faculty) which have introduced the Semester system, as well as those departments (such as the Psychology Department at Rhodes) which give a great deal of importance to the year-mark, are the exception rather than the rule.

(b) The importance of achievement and competition in a particular examination, should be underplayed by the person administering the exam.

Clearly, this would be difficult to achieve practically and Irwin Sarason (1978) has warned that while such a de-emphasis on achievement may well aid the performance of the highly test anxious student, the individual with low (facilitative) test anxiety may tend to react with a drop in motivation and in performance (see in Spielberger & Sarason,1978,Pp 174).

(c) The administration of a number (at least two) tests to assess the same material, with the S's highest mark counting as the assessment grade for the particular test/exam administered, was suggested by a number of Ss. One Subject noted that, for her at least, such a system would "take the heat off" the exam experience.

Sarason (1978) conducted studies where a second test on the same topic as the first, was prescribed in the same week as the first was written. The ground rule of this system, was that if a student got a higher grade on the second test, that would be the one entered in the "grade book"; if however, the score on the second test was lower, there would be no penalty for the lower performance.

After many repititions of this procedure, Sarason noted his finding that:

> " There was a marked facilitative effect of the no risk condition (the knowledge of the highest rank being counted) for students relatively high in test anxiety."
>
> (cited in Spielberger & Sarason, 1978,Pp 213,parenthesis mine)

This finding was consistent with the earlier work of Allen & Desaulniers (1974).

(d) The suggestion that academic evaluations be conducted orally; students note that while perhaps initially a more "nerve-racking" experience, "once one gets use to it, oral examinations will be no hassle at all" (as one Subject put it).

Condon & Allen (1980) found that students preferred taking oral exams, with this preference more pronounced for students with the better grades.

### 8.2.6 Attitudes towards Parental Interest/Interference

Only 4/60 Ss did not offer comment on the influence of guardians in their academic experience. Of the remaining 56 Ss who did express an opinion, most were extremely critical of parents, who were (amongst other things) accused of provoking excessive worry in students at exam time; such provocation resulting from numerous phonecalls and/or letters of "apparent concern".

Typically, as one Subject wrote:

> " Last year, during the year-end exams, I was extremely tense and very worried about how well I would do; my parents had warned me that I had to achieve an 'above-average' pass to stay on at Rhodes this year; hence my concern.
>
> I eventually sought advice from my Warden, concerning ways to relieve my anxiety about the exams; she was very helpful. On the evening before my first exam, I felt surprisingly in control of the situation. Unfortunately, my mother then phoned me at about 10 pm, apparently just 'to wish me luck'. As if someone had stuck a pin in my confidence bubble, all my confidence drained away and I became uncontrollably tense...after a sleepless night, I bombed out completely in the exam..."

This is a good example of experiences reported by the other Ss concerning what most saw as parental interference (although doubtless, interest by parents was mostly prompted by sincere concern, rather than in an attempt to 'scare' Ss into performing well in their exams).

Writing about his experiences of receiving his results in the mail (and subsequent parental comment), another Subject observed that he found himself:

> " ...trapped in a school report syndrome....although I was never actually punished for failing to achieve good grades, I always had the feeling I would be penalised by them if I achieved below-average marks. For this reason, I got and always get extremely nervous on the day before- and even after- sitting an exam or set of exams."

## 8.3 SOME PERCEIVED WEAKNESSES IN THE PRESENT STUDY

### 8.3.1 Questioning the Validity of Self-report and Physiological Measures Employed in the Present Study

The central issue here, is the extent to which self-report and physiological measures used in the present study, can be said to truly reflect the efficacy of a particular treatment programme (in the management of test anxiety) over other similar programmes. In Section 4.1 of this report, for example, Allen (1980) is quoted as suggesting that providing Ss are volunteers, any credible treatment programme will reduce self-reported anxiety.

Although the contention in this investigation is that self-report measures employed yielded reliable information concerning treatment groups, the extent to which these instruments may be subject to extraneous influences, is illustrated by the decrease in anxiety reported by CG Ss at 6-month follow-up on the management of exam anxiety schedule - see Section 7.1.3, when all other scores for the CG on the remaining self-report measures, reflected an increase in the level of reported anxiety.

The likely reason for this surprising decrease in reported anxiety for CG Ss, could be viewed as resulting from the so-called "expectancy effect"; in other words, from the fact that CG Ss (as a wait-list control) were on the point of entering into a special treatment programme in July 1982 (after the 6-month follow-up assessment); their enthusiasm for finally getting involved in a programme, may have lead to the creation of a more positive attitude on their part towards the present investigation, this more positive regard in turn leading to this unexpected decrease in reported anxiety on the management of exam anxiety schedule.

Given this possible weakness, it is clear that it may be dangerous to attach too much importance to self-report measures as a means of determining the efficacy of treatment programmes.

On the matter of the non-significant 6-month follow-up scores on the finger sweat print measure (after significant mean differences at post-treatment), it is suggested that this non-significance can be explained as indicating a certain 'lack of stability' in scores on this measure (as suggested of all physiological measures by Kirkland & Hollandsworth, 1980 - see in Section 2.1.3.3).

This suggestion is supported, because, not only did Ss in all groups enjoy measured reductions in anxiety levels between the pre-/post-treatment contrasts (on the one hand) and pre-treatment/6-month follow-up contrasts (on the other), the wait-list (no-treatment) controls also realised a decrease in finger sweat print by 6-month follow-up.

This finding could further be seen to fuel the debate ( referred to in Section 2.1.3) concerning the validity of physiological measures generally; i.e. the debate concerning the extent to which the link between anxiety levels resulting from test anxiety and different physiological states, has been proven to exist.

### 8.3.2 The Role of the Therapist and notes on the Closed Community Environment of Rhodes University

Recently, much has been written about the role of the therapist (or facilitator) in behaviour therapy.

Allen (1980) observed that little over 25% of investigations (reviewed by him) demonstrated that the treatment outcome was independent of the effects of the therapist/facilitator.

The argument against the use of only one facilitator for all treatment programmes, is that he/she is aware of the research hypotheses underscoring the research, and is thus in danger of prejudicing the results obtained in the study.

Since only one therapist/facilitator was employed in the present study to facilitate all treatment groups (initially with the assistance of a colleague; although this person never facilitated a group), this aspect of the research design can be viewed as a weakness.

However, many Ss indicated clearly at the outset of the research (during the orientation briefing), that they opposed the use of someone else as a facilitator. Moreover, to lessen the effect the facilitator may have had on the outcome, interaction between the facilitator and the Ss was kept to a minimum, and, as far as possible, was confined to session times (the room used for sessions was always reportedly booked for the period after sessions terminated). In addition, the facilitator used the rule of reacting at all times to all Ss with "unconditional positive regard" (after Feldman & Broadhurst,1976).

Supporting this claim of the minimal effect of facilitator bias on Ss who participated in the present study, is Item 2 on the confidence index, concerning the matter of how competently each treatment package was presented.

Not only did the PG Ss score higher than SST Ss on this item, they also scored equitably on this measure with the SD-A Ss (compare means of 4,8 for Pg and SD-A = 5,0; see Section 7.2.1, BOX 7A for details). Were experimenter bias present, PG Ss should have scored much less on Item 2 (and overall on the confidence index, on which they scored third-best, only 0,2 mean points behind SD-A) in relation to other treatment groups.

Amongst South African universities, Rhodes (which is all but the smallest[*1]) is well-known for its "closed community" type atmosphere (own observation). Because of this, another weakness manifested itself in the present study - viz. participating students saw one another frequently in between sessions, and although they were instructed not to discuss the progress they were making in their respective treatment programmes, this factor must be viewed as weakening efforts to effectively limit interaction between- and during- sessions (except where otherwise prescribed by the treatment method, as in the SD-B programme); it was noted earlier that Subject interaction between sessions could prove to be a complicating extraneous factor, which should be controlled for. (see Allen,1980).

### 8.3.3 The Problem of the Volunteer Subject

All Ss in the present study were volunteers, recruited on the basis of their own decision (after a detailed briefing) as to whether or not they were test anxious.

Bednar & Weinberg (1974) have cautioned that when volunteer Ss were used in both experimental and control groups, 80% of the eight studies they reviewed, reported positive findings. On the other hand, when all of the Ss were "forced" to participate in either the experimental or control group, only 55% of nine studies reported positive findings.

It is contended by this researcher however, that since the intention behind the present investigation, is to formulate group-counselling programmes for test anxious students, who are motivated to manage their test anxiety, recruitment should always be on the basis of using volunteers; hence the use of volunteers in this study, is not contrary to the goals of the investigation as a whole.

## 8.4 GENERAL DISCUSSION

The central thrust of this experimental investigation, was to employ a number of behavioural treatment programmes for test anxiety (which all

*1 / In 1982, the recently established University of the Transkei, was the smallest South African university, with Rhodes and the University of Fort Hare close behind.

met certain basic criteria prescribed by the researcher - see Section 4.1 for a list of the criteria), and to determine the most effective programme for (presently non-existent) group-counselling of test anxiety at Rhodes University.

Notwithstanding comment on a few of the weaknesses evident in the research design and measures used in the present study (see previous Section), meaningful and potentially useful findings have been established from analysis of the experimental data.

Although statistically, performance gains made by Ss in the SD-B multicomponent programme, outstrips all other experimental programmes on virtually all measures, the value of this finding to the practising clinical/counselling psychologist must be closely examined.

Probably the most important measure out of the battery of measures administered in the current research, is that of academic performance; after all, this is most often the sole criterion used to decide if a student at university may or may not progress to a higher academic level (in pursuance of a degree).

In the present study, results on the academic performance measure, place all three multicomponent programmes significantly ahead of both the placebo and control groups. This reveals the important superiority of the multicomponent package (as in SD-A, SD-B and SST) over the single-component programme (as with the use of only cognitive modification in the placebo groups); this observation supporting the findings by a number of researchers for almost a decade, from Wine (1971) to Allen (1980).

More specifically, on the academic measure (at post-treatment), SD-B Ss performed significantly better than both SST and SD-A Ss, this revealing the efficacy of both desensitisation (in a meaningful combination with other components) emphasising a group-constructed hierarchy (the Ss using brainstorming and phenomenological procedures to derive such a hierarchy).

However, these gains in academic performance by SD-B Ss, are apparently only short-term gains, since by the time of the 6-month follow-up assessment, Ss in this group had fallen to the third-highest performance ranking (after SST and SD-A Ss).

The SST programme then, appeared to yield the most consistent gains on this measure (recording second-best gain at post-treatment, and the best (significantly so) at 6-month follow-up).

A further drawback (already noted) implied here, is that, at least on the academic performance measure, Ss in the SD-B programme (a procedure which involved a certain amount of Subject interaction) may have become overly dependent on group support, and this may explain the decline in academic gains over those made at post-treatment (see previous page), since the Ss may have found it difficult to continue implementing the SD-B programme outside of the group structure. However, this suggestion is not supported by scores on either the self-report or physiological measures.

On the treatment evaluation questionnaire (or confidence index), extremely useful material was gathered; material supported both by verbal comment in feedback during sessions, and (by some) in the diaries of experience.

While an effective treatment package (although not the most effective), the study skills training programme was not found to be enjoyable by most SST Ss, while many found the study skills techniques difficult to acquire (or master). This finding is consistent with that of Beneke & Harris (1974), who referred to the frequently reported unpopularity of SST programmes. Further to this point, it was noted in discussion of the diaries of experience, that some Ss found the relaxation demonstration and cognitive exercises (included in this multicomponent package), "a welcome break" from the learning of specific study techniques.

On the other hand, the highest score achieved by a Subject in any programme on the confidence index, was a Subject in the SST programme (she scored a mean of 6,63 points over the six items, and also realised the greatest improvement in academic performance at the pre-treatment/6-month follow-up assessment (individual Subject scores for the confidence index have not been presented, although a table indicating distribution of the highest and lowest individual item scores on the confidence index, are listed in Appendix H).

In contrast, the lowest individual score on the confidence index, was from a Subject in the SD-B programme (which has already been declared the most efficient and effective treatment package offered); the Subject in question, scored a mean of just 2,8 on the index (see Appendix H).

Clearly then, the findings suggest that different programmes are suited to different test anxious students, with the implication that a majority of test anxious students at Rhodes (given that the sample of students used in the present study was fairly representative of test anxious individuals at this institution) would favour desensitisation (together with a measure of group interaction; i.e. SD-B) over both study skills training and desensitisation with an individualistic bias (as in SD-A).

This suggestion of the complex formula: 'Different therapeutic strokes for different test anxious folks', may not appear very helpful to the counsellor, but since the idea that client (or patient) uniformity is mythical (after Kiesler,1966) inheres in most psycho-therapy, the solution as to which treatment package best suits the characteristics of a particular test anxious client, can be overcome by limited additional investigation.

If the concept of matching a test anxious student up with a particular treatment is supported, there are already some guidelines in this regard, which emanate from the present findings...

For example (stated simply), if a test anxious student reports unusual levels of autonomic arousal (such as a migraine headache) during the stress of an evaluative situation, the SD-A and SD-B programmes appear most suitable, since both are designed chiefly to assuage the debilitative physiological reactions to anxiety.

A distinction may then moreover be drawn between these two SD programmes, if (for example), some Ss report a high level of physiological reactivity and note in addition that they are (at exam times) unable to "get along well" generally with people in their environment, the SD-B programme would be the best choice, since the programme has been found to have a good "generalisation effect" (see Item 5 on the confidence index, where SD-B Ss scored more than any other treatment programme - see Section 7.2.1).

In other words, improvements in reducing levels of test anxiety on the SD-B procedure, have the effect of helping the person to attain greater control over other aspects of his behaviour, such as social interaction.

On the other hand, for students whose test anxiety is sourced to unusual cognitive concern about how well they will perform on a particular exam, and it is established further that they are concerned about wasting time while studying, the study skills programme seems best suited to such an individual.

Of course, such a matching procedure (between components in multicomponent programmes, and the different characteristics of test anxious students) is potentially very time-consuming (especially for the busy therapist), and may well defeat one of the main purposes for introducing group counselling; that of economy (for not only would a matching procedure abuse the therapist's time, it would most likely demand more one-to-one interaction between the therapist/facilitator and the student, with all that such interaction implies).

Clearly, a workable solution, is for the institution which sponsors group-counselling programmes (for test anxious students), to offer a number of different multicomponent options for test anxious individuals. Each programme option could then be briefly described to students (during an orientation meeting), and they can be left to choose the programme they believe will best suit their needs.

Such a procedure should be effective, especially if the decision as to whether a student is test anxious or not, is left up to the student him/herself (as in the voluntary recruitment procedure followed in the present study).

Despite the fact that all programmes met the initial research criteria (see earlier in this discussion and in Section 4.1), during this experimental investigation, it was observed that one treatment package had "hidden" advantages over another (as far as the criteria are concerned); hidden insofar as the differences could not be predicted at the outset.

For example, the SST package was found to demand potentially more professional/facilitator supervision than either of the SD programmes; for with the latter, it will be recalled that the verbal cues used during desensitisation were paired with electronic cues, this eventually enabling Ss to work through the desensitisation programme by themselves (see Section 2.2.2.3 for details of this procedure).

Of course, it may well be possible to transfer study counselling techniques onto cassette tape (a procedure that has the added advantage of standardising the format of presentation to different research groups), but this would in turn withdraw some of the advantages of facilitated therapy; notably that of feedback: to get additional information as to how the study techniques could be integrated into a student's own personal study routine.

On the confidence index (see Section 7.2.1), Ss also reported that the skills were easier to acquire in the SD than SST programmes (compare mean scores: SD-A = 4,2; SD-B = 4,4; SST = 3,0 on item 1 on the confidence index).

One of the criteria for the "ideal programme" concerned abilities required by students to internalise skills taught and reap effective rewards from the programme (the requirement stating that in order to acquire effective skills, Ss should not need any special knowledge of extraordinary abilities, in order to 'pick-up' the skills presented).

In this regard, the skills in all programmes, were regarded (by the panel of student judges) as "straight-forward enough"; only study skills Ss complained of certain difficulties in learning the techniques (however, the importance of a need for motivation in any study skills counselling was stressed as a likely factor behind this finding - see earlier in this discussion).

Put simply, with the SST programme, Ss were especially required to have the basic academic ability to learn new techniques and to use them and think with them in a methodical manner, while SD Ss were especially required to have a basic "attribute" of a reasonable imagination and an ability to concentrate on a given task.

On the question of just how much previous experience the therapist should have had with behavioural interventions, it must be observed that in most of the clinical Masters programmes offered by the Psychology Departments in South African universities, priority is given to psychoanalytic and humanistic forms of therapy (own observation, based on literature obtained from universities, and discussions held with practising psychologists); this bias is illustrated in Chapter Three (of Part One), where it is noted that many of the psychologists interviewed, did not consider cognitive modification as "true behaviour therapy"; it is the contention of this researcher that these professionals did not wish to be identified as pactising "behaviour modification" (there appears to be something of an academic/professional taboo on behavioural interventions in most South African universities visited).*1

However, even for the professional who has received little, or no training in behaviour modification therapy, E.B. Fisher has observed (of SD), that for fears of a simple nature (such as test anxiety)...

> "...SD (Ss) in common clinical conditions yield highly positive results, even when applied by beginning therapists uncommitted to it or to behaviour therapy."
>
> (Pp 329)

This highlights the fact that (at least for the SD procedure) not only is it possible for psychologists to administer this form of behaviour modification with minimal experience, it is also obviously not difficult to recruit and adequately brief facilitators to run such multicomponent programmes. All that facilitators must have then, is detailed pre-training knowledge of the essential characteristics of the test anxious student.

It is disturbing to find that exactly 50% of Ss in the present study have contemplated (at some time or other) committing self-injury to postpone the writing of an exam (by, for example, obtaining an aegrotat, because of a broken arm on the day of the exam). That such a large number of Ss in the present research sample alone should even report contemplating such an extreme action, underscores the urgent need for relief programmes to be introduced on a fairly widescale at Rhodes University (and indeed, other universities in South Africa).

Perhaps predictably, many more males than females considered committing self-injury ("as a way out").

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*1 / Through discussions held, it became clear that the major objection to behaviour modification still rests with its inconsistent theory, and the limitations (often overlooked) in its practice.

The reason for this can probably be sourced to a cause of a sociological nature: i.e. the suggestion that men feel less able to openly express their distress to fellow students than do women (this because of the emphasis on the independence of the man in a male-dominated society such as South Africa; he should always be able to "stand on his own two feet").*1

Interestingly, 64% of the sample considered themselves to be "naturally anxious" (i.e. anxious about something most of the time). The question of which came first is hence posed:

(a) Did test anxiety experiences filter through to other general life situations and cause the person to feel naturally anxious ? ; or

(b) Does test anxiety develop only in the individual who is anxious most of the time ?

Since 36% of the sample considered themselves test anxious, but not naturally anxious, position (a) above, seems more probable; that, in some, debilitative levels of anxiety are caused by evaluative situations, these disabling feelings spilling over into the test anxious individual's other activities.

Although research findings which take the edge off this suggestion (cited earlier in Section 1.1.2) are those by Kierkegaard & Goldstein (1976) who observed that "particularly gifted people respond to all types of stress with anxiety"; according to this finding, it is not especially surprising to find that such a large number of Ss in the present study describe themselves as "naturally anxious" (see Section 7.2.2 for details relating to participating Ss who regarded themselves as "naturally anxious", as well as an indication of those who intimated that they had considered committing self-injury).

In this discussion thus far, emphasis has been given to corrective remedial approaches to the problem of test anxiety. However, with reference to the thesis of Rey Carr (1977)(see Section 8.2.4 for an earlier mention of Carr), the most logical (but not necessarily the most pragmatic) approach to test anxiety is preventive counselling strategies.

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*1 / Sourced to an unpublished Sociology Honours paper on "Sexism in South Africa", by Claire Marshall (Rhodes University, Grahamstown, 1979).

Such strategies include serving as an advocate of test anxious students to, for example, identify experiences of test anxiety as being caused chiefly by the institution and its policies of evaluation, rather than by the student alone (or even at all).

However, such an approach is rather idealistic, since this type of counselling can only be effectively done on an individual basis, thereby defeating the object of group-counselling for test anxiety.

Another preventive measure, would be the oft-discussed changes in the methods of evaluating academic performance. However, academics generally baulk at such suggestions, since many such changes advocated (such as running two tests on the same topic, say three days apart, while awarding the Student the higher grade achieved - see earlier in this discussion for details of this strategy - Section 8.2.5), would entail much more work on the part of the academic.

Moreover, the attitude of many people in the teaching profession (in the widest sense), can be seen as unsympathetic to test anxiety sufferers. This attitude is exemplified by the following comment from a leading academic:

> "...after all, an important part of academic evaluation, is the ability of the student to communicate a number of specific ideas in a comprehendible fashion, in a specified amount of time....it is only through such an assessment that students will be able to tell if they'll make it in the world outside the academic bubble."

Therefore, given the present situation, it is contended that the only short-term solution to the growing problem of test anxiety at institutions such as Rhodes University, is to be found in the immediate implementation of group counselling (along the lines described in this study).

There is however, little reason why counsellors in universities (and elsewhere) should not heed the solution posited by Carr (1977), when he writes:

> " Counsellors can work to eliminate test anxiety by consulting with Faculty, acting as student advocates and publically affirming research findings on humanistic growth."
>
> (Pp 69)◀

# CHAPTER NINE

Some Conclusions ...

## 9.1 CONCLUSIONS FOR THE CLINICAL/COUNSELLING PSYCHOLOGIST

- Multicomponent behavioural therapy, is highly efficacious in group counselling of anxiety resulting from evaluative situations (such as university examinations).

- The efficacy of treatment programmes presented in the current investigation, appear to be unaffected by the race or ethnicity of the test anxious student.*1

- While students who experience test anxiety suffer from similar debilitative "symptoms" resulting from such anxiety (such as 'mental blocks', for example), there are notable differences between such students (and their experience). This indicates that while one multicomponent programme (designed to manage test anxiety) may suit one student, it may be almost entirely unsuitable for another.

- As a rule, the systematic desensitisation programme (with the group-construction of anxiety hierarchies), offers the most universally effective programme (from those presented in this study). The study skills training programme is also effective, but only for students who are especially eager to correct/modify their study behaviour.

- The use of cognitive modification (or restructuring) as a treatment programme on its own, is at best minimally effective on self-report and physiological reactivity measures of anxiety, but is useless at improving academic performance.

- Some test anxious Ss may well require additional individual (or group encounter) therapy outside the behavioural training, in order to fully control test anxious experiences; such a requirement is likely to find its source outside of the university environment (for example: Parental concern over the student's progress - most students tend to resent this concern, seeing it as "interference" rather than "caring" or some more probable motive).

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*1 / While all racial and ethnic groups on Rhodes campus, participated in the present research, 55 of the 64 Ss were members of the so-called "white" racial group.

- It is recommended that only students who volunteer to enter test anxiety management programmes, be permitted to participate, since forced "participation" is not likely to yield a satisfactory outcome.

- Psychologists should support test anxious students in their efforts to achieve recognition of their anxiety concerning their poor management of evaluative situations; this support in the case of academics, faculty boards and university authorities.

- Such is the nature of the behavioural interventions advocated in the present research, that therapists in Grahamstown are encouraged to promote the holding of treatment sessions at venues off Rhodes campus (for example, in the abode of an Oppidan student*1, although distractions at such a venue should be controllable).

## 9.2 CONCLUSIONS FOR UNIVERSITY ADMINISTRATORS AND FACULTY BOARDS

Given the alarming situation of the high number of genuinely test anxious students prepared to commit self-injury to evade sitting an exam (or set of exams), Rhodes' Administration & the Faculty Boards, are advised to move rapidly to:

- Develop screening methods (for administration at the beginning of each academic year) which seek to investigate not only language proficiency, reading- and technical- ability (as is the case at present), but more specific questions relating to the experience of test anxiety (A good example of an instrument to determine this information, is the Achievement Anxiety Test, created by Alpert & Haber in 1960; such a device could simply be added to the present initial assessment schedule, currently used at Rhodes.

- Instruct academics on the problem of test anxiety. It is clear from the research findings that test anxiety management therapy need not be the sole preserve of persons with psychological training.

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*1 / "Oppidans" are those students who do not reside in university accommodation.

Rather, academics in other departments could simply be briefed on how programmes should be conducted; these academics could then offer test anxiety management courses in their respective departments.

Such a move would most likely relieve the strong antagonism displayed and felt towards university administrators (and Faculty Boards) by test anxious students, who would also see the academic staff as manifestly more caring and concerned about helping them to overcome their debilitative anxiety experiences. Pressure would, moreover, be taken off the overworked Rhodes' Clinic (which deals with almost all cases of test anxiety amongst students in Grahamstown).

- Be far more sympathetic towards students who have a "hostile" exam time-table; this can be relieved by allowing undergraduates to write (especially November exams) over a longer period.

- Consider implementing a special 'open' lecture programme (say one lecture a week) for most of the academic year. If estimates that one in three failures are caused by test anxiety (added to the suggestion that test anxiety may be considered "contagious", insofar as it tends to negatively influence other students[*1]), there is a case for the introduction of such a course of lectures; lectures which could feature a range of study counselling techniques, cognitive modification and information on "how to relax". Although doubtless ambitious and expensive, such a programme could relieve much of the pressure (feelings of helplessness and isolation) experienced by many test anxious students.

## 9.3 CONCLUSIONS FOR THE RESEARCHER AND FOR FURTHER RESEARCH

- A study is now needed, where volunteering test anxious students are left to choose between two or three different programmes by themselves, (following a briefing session). Group counselling should then be undertaken to determine the efficacy of this "free to choose" allotment procedure.

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*1 / See in the Introduction to PAUK's TA programme/workbook for more details (1962).

- The ability of the commercially-available automated instruction programmes (introduced in Section 3.1.3) to assist students in gaining meaningful control over their test anxiety, should be investigated; possibly even contrasted with a facilitated multicomponent programme.

- A survey of the attitudes of academics towards the test anxious student, and their knowledge of test anxiety (or lack thereof), should be conducted. On the strength of the findings from this survey, a detailed information booklet could then be compiled and circulated to all academics, in order to establish a more understanding and caring environment for the test anxious student.◀

# REFERENCES

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ADAMS, H.E. & UNIKEL, I.P. : Issues and Trends in Behavior Therapy. Illinois: Thomas Books, 1973.

ALLEN, G.J. : Effect of Three Conditions of Administration on "Trait" and "State" Measures of Anxiety. Journal of Consulting and Clinical Psychology, 1970, 34: 355-359.

ALLEN, G.J. : The Effectiveness of Study Counseling and Desensitisation in Alleviating Test Anxiety in College Students. Journal of Abnormal Psychology, 1971, 77: 282-289.

ALLEN, G.J. : Treatment of Test Anxiety by Group-Administered Relaxation and Study Counseling. Behavior Therapy, 1973, 4: 349-360.

ALLEN, G.J. : The Behavioral Treatment of Test Anxiety: Recent Research and Future Trends. Behavior Therapy, 1972, 3: 252-262 (a).

ALLEN, G.J. : Examination of some factors in the assessment and therapeutic remediation of test anxiety (Report MH-19739-01). Washington, D.C.: National Institute of Mental Health, 1972, (b).

ALLEN, G.J. : Understanding Psychotherapy: Comparative Perspectives. Champaign, Illinois: Research Press, 1977.

ALLEN, G.J. : The Behavioral Treatment of Test Anxiety: Therapeutic Innovations and Emerging Conceptual Challenges. In Hersen, M., Eisler, R.M. & Miller, P.M. (Eds), Progress in Behavior Modification Vol. 9. New York: Academic Press, 1980.

ALLEN, G.J. & DESAULNIERS, G.J. : Effectiveness of Study Counseling & Desensitisation in Alleviating Test Anxiety: A Two-year Follow-up. Journal of Abnormal Psychology 1974, 83(2): 186-191.

# REFERENCES Continued...


ALLEN, G.J., ELIAS, M.J. & ZLOTLOW, S.F. : Behavioral Interventions for Alleviating Test Anxiety: A methodological overview of current therapeutic practices. In Sarason, I.G. (Ed), Test Anxiety: Theory, Research & Applications. Hillsdale, New Jersey: Lawrence Erlbaum Associates, 1981.

ALPERT, R. & HABER, R.N. : Anxiety in Academic Achievement Situations. Journal of Abnormal & Social Psychology, 1960, 61(2): 207-215.

ANTON, W.D. : An Evaluation of the Outcome Variables in the Systematic Desensitisation of Test Anxiety. Behavior Research & Therapy, 1976, 14: 217-224.

APONTE, J.F. & APONTE, C.E.: Group Preprogrammed Systematic Desensitisation without the simultaneous presentation of Aversive Scenes with Relaxation Training. Behavior Research & Therapy, 1971, 9: 337-346.

ATKINSON, J.W. & FEATHER, N.T. : A Theory of Achievement Motivation. New York: Wiley Press, 1966.

BASTIAANS, J. : The Optimal use of Anxiety in the Struggle for Adaptation. In Spielberger, C.D. & Sarason, I.G. (Eds), Stress & Anxiety Vol.5. New York: Hemisphere Publishing Corp., 1978.

BEATY, D. : Preventing Accumulated Test Stress (PATS© Automated Instruction Programme). Published Privately, 1980.

BEATY, D. & BARLING, J. : Positive Exam Results - Without Stress. Johannesburg: McGraw-Hill Book Company, 1982.

BECK, A.T. : Cognitive Therapy and the Emotional Disorders. New York: International Universities Press, 1976.

BEDNAR, R.L. & WEINBERG, S.L. : Ingredients of Successful Treatment Programs for Underachievement. Journal of Counseling Psychology, 1970, 17(1): 1-7.

BENEKE, W.M. & HARRIS, M.B. : Teaching Self-Control of Study Behavior. Behavior Research and Therapy, 1972, 10: 35-41.

BERGLER, E. : Psychoanalysis of a Case of Examination Anxiety. Zentbl. Für Psychotherap., 1933, 6: 65-83.

BLAKE, W.S. : Study Skills Programs. Journal of Higher Education, 1955, 26: 97-99.

BROWN, C.H. : Emotional Reactions Before examinations II: Results of a Questionnaire. Journal of Psychology, 1938, 5: 11-26.

BROWN, C.H. : Emotional Reactions Before examinations III: Interrelations. Journal of Psychology, 1938, 5: 27-31.

BURROWS, G.K. & DAVIES, S. (Eds) : Handbook of Studies on Anxiety. Amsterdam: Elsevier North-Holland Biomedical Press, 1980.

CALEF, R.A., CALEF, R.S., SUNDSTROM, P., JARRETTI,J.; & DAVIS, B. Facilitation of Group Desensitisation of Test Anxiety. Psychological Reports, 1974, 35: 1285-1286.

CALEF, R.A. & SUNDSTROM, P. : Facilitation of Group Desensitisation of Test Anxiety (Follow-up Study). Psychological Reports, 1974, 35: 1366-1368.

CANNON, W.B. : Bodily Changes in Pain, Hunger, Fear and Rage. New York: Appleton, 1929.

CARMEN, R.A. & ROYCE ADAMS, W. : Study Skills: A Student's Guide for Survival. New York: John Wiley & Sons, 1972.

CARR, R.A. : Test Anxiety: A political problem (An Alternative View). Canadian Counselor, 1977, 11(2): 65-69.

CARTER, H.D. : Education in Perspective. Californian Journal of Educational Research, 1948, 1: 23-26.

CARTER, H.D. : Mechanics of Study Procedure. Californian Journal of Educational Research, 1958, 9: 8-13.

# REFERENCES Continued...


CHABAZI, G.N. : Evaluation of the Efficacy of the Components of Reciprocal Inhibition Psychotherapy. Journal of Consulting Psychology, 1957, 21: 485-490.

COHEN, R. : The Effects of Group Interaction and Progressive Hierarchy Presentation. Behavior Research and Therapy, 1969, 7: 15-26.

COLLINS, G.R. : Overcoming Anxiety. Illinois: Key Publishers, 1973.

CONDON, T.J. & ALLEN, G.T. : Differential Effects of Oral and Written Assessments on Retention, Test Anxiety and Student Satisfaction in a Personalised Instruction Course. Journal of Personalised Instruction. New York: Academic Press, 1980. (A non-serialised publication).

COOK, T.D. & CAMPBELL, D.T. : The Design and Conduct of quasi-experiments and True Experiments in Field Settings. In Dunnette, M.D. (Ed), Handbook of Industrial and Organisational Psychology. Chicago: Rand McNally, 1976.

COOLEY, E.J. & SPIEGLER, M.D. : Cognitive versus Emotional Coping Responses as Alternatives to Test Anxiety. Cognitive Therapy and Research, 1980, 4(2): 159-166.

CORNISH, R.D. & DILLEY, J.S. : Comparison of three methods of reducing Test Anxiety: Systematic Desensitisation, Implosive Therapy and Study Counseling. Journal of Counseling Psychology, 1973, 20(6): 499-503.

D'ALELIO, W.A. & MURRAY, E.J. : Cognitive Therapy for Test Anxiety. Cognitive Therapy and Research, 1981, 5(3): 299-307.

DAVIDSON, R.J. : The Psychobiology of Relaxation and Reward States: A Multi-process Theory. In Mostofsky, D.I. (Ed), Behavior Control and Modification of Physiological Activity. Englewood Cliffs, New Jersey: Prentice-Hall, 1976.

DEFFENBACHER, J.L. : Comparison of Anxiety Management Training and Desensitisation in Reducing Test and Other Anxieties. Journal of Counseling Psychology, 1978, 25: 277-282.

DE L. HORNE, D.J. : Behaviour Therapy and the Treatment of Anxiety. In Burrows, G.D. & Davies, B. (Eds), Handbook of Studies on Anxiety. Amsterdam: Elsevier/ North-Holland Biomedical Press, 1980.

DEMBER, C. & MAHONEY, B.H. : An Historical View of the Stress Field. Journal of Human Stress, 1974, 1(2): 22-36.

DENNY, J.P. : Effects of Anxiety and Intelligence on Concept Formation. Journal of Experimental Psychiatry, 1966, 72: 596-602.

DENNEY, D.R. : Self-Control Approaches to the Treatment of Test Anxiety. In Sarason, I.G. (Ed), Test Anxiety: Theory, Research & Applications. Hillsdale, New Jersey: Erlbaum, 1978.

DENNEY, D.R. & RUPERT, P.A. : Desensitisation and Self-Control in the Treatment of Test Anxiety. Journal of Counseling Psychology, 1977, 24: 272-280.

DESIDERATO, O. & KOSKINEN, P. : Anxiety, Study Habits and Academic Achievement. Journal of Counseling Psychology, 1969, 16(2): 162-165.

DOCTOR, R.M. & ALTMAN, F. : Worry and Emotionality as Components of Test Anxiety: Replication and Further Data. Psychological Reports, 1969, 24: 563-568.

DOCTOR, R.M., APONTE, J., BURRY, A. & WELCH, R. : Group Counseling versus Behavior Therapy in Treatment of College Underachievement. Behaviour Research and Therapy, 1970, 8: 87-90.

DONNER, L. & GUERNEY, B.G. : Automated Group Desensitisation for Test Anxiety. Behaviour Research and Therapy, 1969, 7: 1-13.

DOWNIE, N.M. & HEATH, R.W. : Basic Statistical Methods. New York: Harper & Row Publishers, 1970.

DROPPLEMAN, L.F. & McNAIR, D.M. : Screening for Antichloinergic Effects of Atropic and Chlodiazepoxide. Psychopharmacologica, 1968, 12: 164-169.

DROPPLEMAN, L.F. & McNAIR, D.M. : An Experimental Analog of Public Speaking. Journal of Consulting and Clinical Psychology, 1971, 36(1): 91-96.

EDWARDS, A.L. : Experimental Design in Psychological Research (4th Ed). New York: Holt, Rinehart and Winston Inc., 1972.

ELIASZ, H. : Test Anxiety: The Problem and Possible Responses. Przeglad Psychologiczny, 1977, 20(4): 655-667.

ENTWISLE, D.R. : Evaluations of Study Skills Courses: A Review. Journal of Educational Research, 1960, 53(7): 243-251.

EMERY, J.R. & KRUMBOLTZ, R.D. : Standard versus Individualised Hierarchies in Desensitisation to Reduce Test Anxiety. Journal of Counseling Psychology, 1967, 14: 204-209.

FELDMAN, M.P. & BROADHURST, A. (Eds): Theoretical and Experimental Bases of Behaviour. London: John Wiley, 1976.

FERGUSON, J.M. : Probation Students under Guidance. Educational Review, 1928, 75: 224-228.

FINGER, R. & GALASSI, J.P. : Effects of modifying cognitive versus emotionality responses in the treatment of test anxiety. Journal of Consulting and Clinical Psychology, 1977, 45: 280-287.

FISHER, E.B. (Jnr.) : Effects of Systematic Desensitisation by Trainees in an "exam fear" clinic. Journal of Behavior Therapy and Experimental Psychiatry 1977, 8: 329-330.

FOLIN, O., DENNIS, W. & SMILLIE, W.G. : Some Observations on Emotional Glycosuria in Man. Journal of Biological Chemistry, 1914, 17: 519-520.

FREUD, S. : The Problem of Anxiety. New York: Norton, 1936.

GALASSI, J.P., FRIERSON, H.T. & SHARER, R. : Behavior of high, moderate and low test anxious students during an actual test situation. Journal of Consulting and Clinical Psychology, 1979, 49(1): 51-62.

GARLINGTON, W.K. & COTLER, S.B. : Systematic Desensitisation of Test Anxiety. Behavior Research and Therapy, 1968, 6: 247-256.

GOLDFRIED, M.R. : Reduction of Test Anxiety through Cognitive Restructuring. Journal of Consulting and Clinical Psychology, 1978, 46(1): 32-39.

GOLDFRIED, M.R., LINEHAN, M.M. & SMITH, J.C. : Reduction of Test Anxiety through Cognitive Restructuring. Journal of Consulting and Clinical Psychology, 1978, 46(1): 32-39.

GORSUCH, R.L. : The general factor in the Test Anxiety Questionnaire. Psychological Reports, 1966, 19: 308.

HOLLANDSWORTH, J.G. : Tensions in School Achievement Examinations. Journal of Experimental Education, 1972, 12: 143-164.

HOLLANDSWORTH, J.G., GLAZESKI, R.C., KIRKLAND, K., JONES, G. & VAN NORMAN, L.R. : An Analysis of the Nature and Effects of Test Anxiety: Cognitive, Behavioral and Physiological components. Cognitive Therapy and Research, 1979, 3: 165-180.

HOLROYD, K.A. : Effectiveness of "Attribution Therapy" Manipulation with Test Anxiety. Behavior Therapy, 1978, 9: 526-534.

HORNE, A.M. & MATSON, J.L. : A comparison of modeling, desensitisation, study skills and control groups for reducing Test Anxiety. Behavior Therapy, 1977, 8: 1-8.

HUCK, S.W. & JACKO, E.J. : Effect of Varying the Response Format of the Alpert-Haber Achievement Anxiety Test. Journal of Counseling Psychology, 1974, 21: 159-163.

HUCK, S.W. & McLEAN, R.A. : Using a repeated measure ANOVA to analyse data from a pretest-posttest design: A potentially confusing task. Psychological Bulletin, 1975, 82(4): 511-518.

JACOBSON, E. : Progressive Relaxation. Chicago: University of Chicago Press, 1938.

JAFFE, P.G. & CARLSON, P.M. : Modelling Therapy for Test Anxiety: The role of Model Affect and Consequences. Behaviour Research and Therapy, 1972, 10: 329-339.

JOHNSON, D.T. & SPIELBERGER, C.D. : The Effects of Relaxation Training and the Passage of Time on Measures of State- and Trait- Anxiety. Journal of Clinical Psychology 1968, 24: 20-23.

KATAHN, M., STRENGER, S., & CHERRY, N. : Group Counseling and Behavior Therapy with Test Anxious College Students. Journal of Consulting Psychology, 1966, 30(6): 544-549.

KIERKEGAARD, E. & GOLDSTEIN, S. : Fear reduction and Fear Behavior: Some Problems in Treating a Construct. In Schlein, J.M. (Ed), Research in Psychotherapy Vol.3, Washington D.C.: American Psychological Association, 1976.

KIESLER, D.J. : Some Myths of Psychotherapy and the Search for a Paradigm. Psychological Bulletin, 1966, 65: 110-136.

KIRK, R.E. : Experimental Design: Procedures for the Behavioral Sciences. Belmont, California: Brooks/Cole Publishing Company, 1969.

KIRKLAND, K. & HOLLANDSWORTH, J.G. : Effective Test-Taking: Skills acquisition versus Anxiety-reduction techniques. Journal of Consulting and Clinical Psychology 1980, 48(4): 431-439.

KJERULFF, K. & WIGGINS, N. : Graduate student's style for coping with Stressful Situations. Journal of Educational Psychology, 1976, 68(3): 247-254.

KLINGER, E. : Consequences of Commitment to and Disengagement from Incentives. Psychological Review, 1975, 82: 1-25.

KOSTKA, M.P. & GALASSI, J.P. : Group systematic desensitisation versus covert positive reinforcement in the reduction of Test Anxiety. Journal of Counseling Psychology 1974, 21(6): 464-468.

LAZARUS, A.A. : Multimodal Behaviour Therapy. New York: Springer Publishing Company, 1976.

LEMON, A.C. : An experimental study of guidance and placement in the lowest decile of the Iowa Qualifying Examination (1925). Iowa City: University of Iowa (Studies in Education), 1927.

LENT, R.W. & RUSSELL, R.K. : Treatment of test anxiety by cue-controlled desensitisation and study skills training. Journal of Counseling Psychology, 1978, 25(3): 217-224.

LIEBERT, R.M. & MORRIS, L.W. : Cognitive and emotional components of Test Anxiety: A distinction and some initial data. Psychological Reports, 1967, 20: 975-978.

LIEBERT, R.M. & MORRIS, L.W. : Effects of Anxiety on Timed and Untimed Intelligence Tests. Journal of Consulting and Clinical Psychology, 1969, 33: 240-244.

LLOYD-ROBERTS, T. : How to Study and Win. Cape Town: College Press, 1982.

LONG, M.H. : Studies of Anxiety. World Psychiatric Association. Headley Brothers, 1968. (Venue of Publication not specified).

LURIA, A.R. : The Nature of Human Conflicts. (W.H. Gantt, Translation). New York: Liveright, 1938.

MANDLER, G. & SARASON, S.B. : A study of Anxiety and Learning. Journal of Abnormal and Social Psychology, 1952, 47: 166-173.

MANDLER, G. & WATSON, D.L. : Anxiety and the Interruption of Behavior. In Spielberger, C.D. (Ed), Anxiety and Behavior. New York: Academic Press, 1966.

MARLETT, N.J. & WATSON, D.L. : Test Anxiety and immediate or delayed feedback in a Test-like avoidance task. Journal of Personality and Social Psychology, 1968, 8: 200-203.

MARSTON, A.R. & FELDMAN, S.E. : Toward use of Self-control in Behavior Modification. Unpublished Paper, University of Southern California & Northern Illinois University, 1971 (Copy obtained for the present study).

MAY, R. : The Meaning of Anxiety. New York: Ronald Press, 1950.

McMILLAN, J.R. & OSTERHOUSE, R.A. : Specified and generalised anxiety as determinants of outcome with desensitisation of Test Anxiety. Journal of Counseling Psycholcgy, 1972, 19(6): 518-521.

McMANUS, M. : Group Desensitisation of Test Anxiety. Behaviour Research and Therapy, 1971, 9: 51-56.

MEICHENBAUM, D.H. : An Examination of Model Characteristics in Reducing Avoidance Behavior. Journal of Personal and Social Psychology, 1971, 17: 298-307.

MEICHENBAUM, D.H. : Cognitive Modification of Test Anxious College Students. Journal of Consulting and Clinical Psychology, 1972, 39(3): 370-380.

# REFERENCES Continued...


MEICHENBAUM, D.H. : Self-instructional Methods. In Kanfer, F.H. & Goldstein, A.P. (Eds), Helping People Change. New York: Permagon Press, 1974. (Pps 357-392).

MEICHENBAUM, D.H. : Use of Direct Expectancy to Modify Academic Performance and Attitudes of College Students. Journal of Counseling Psychology, 1971, 18: 531-535.

MEICHENBAUM, D.H. & BUTLER, L. : Toward a conceptual model for the treatment of Test Anxiety: Implications for Research and Treatment. In Sarason, I.G. (Ed), Test Anxiety : Theory, Research and Applications. Hillsdale New Jersey: Larence Erlbaum Associates, 1980.

MEICHENBAUM, D.H. & TURK, D. : The cognitive-behavioral management of anxiety, hunger and pain. In Davidson, P.O. (Ed), The Behavioral Management of Anxiety, Depression and Pain. New York: Brunnel/Mazel, 1976.

MILES, C., NORTON, G.K. & STILL, J. : The University Aegrotat: Aide or Accomplice ? Unpublished Investigative Media Report; Held by the Department of Journalism & Media Studies, Rhodes University. Grahamstown, 1978.

MITCHELL, K.R. & INGHAM, R.J. : The Effects of General Anxiety on Group Desensitisation of Test Anxiety. Behavior Research and Therapy, 1970, 8: 69-78.

NEALE, B. & KATAHN, M. : Anxiety Choice and Stimulus Uncertainty. Journal of Personality, 1968, 36: 235-245.

NEUMANN, J. : Anxiety and Illness Before Examinations. Gutersloh. Bertels., 1933. (Copy obtained through the German Embassy Cultural Attaché, Pretoria).

NIE, N.H., HULL, C.H., JENKINS, J.G., STEINBRENNER, K. & BENT, D.H. : Statistical Package for the Social Sciences. New York: McGraw-Hill Book Company, 1975.

# REFERENCES Continued...


O'LEARY, K.D. & BORKOVEC, T.D. : Conceptual, methodological and ethical problems in Psychotherapeutic Research. American Psychologist, 1978, September Issue.

OSTERHOUSE, R.A. : Desensitisation and study skills training as treatment for two types of test anxious students. Journal of Counseling Psychology, 1972, 19(4): 301-307.

PAUK, W. : How to Study in College. Boston: Houghton Mifflin Company, 1962.

PAUL, G.L. : Insight versus Desensitisation in Psychotherapy. Stanford: Stanford University Press, 1966.

PAUL, G.L. : Outcome of SD II: Controlled investigations of Individual treatment, technique variations and current status. In Franks, C.M. (Ed), Behavior Therapy: Appraisal and Status. New York: McGraw-Hill, 1969.

PAUL, G.L. : Introduction to Behavior Modification Techniques Stanford: University Press, 1976.

PAUL, G.L. & ERIKSEN, C.W. : Effects of Test Anxiety on "Real-life" Examinations. Journal of Personality, 1964, 32: 480-494.

PAUL, G.L. & SHANNON, D.T. : Treatment of anxiety through Systematic Desensitisation in Therapy Groups. Journal of Abnormal Psychology, 1966, 71: 124-125.

REDL, F. : We Teachers and the Fear of Examinations. Z. Psychoanal. Padag., 1933, 7: 378-400.

RICHARDSON, F.C. : Anxiety Management Training: A Multimodal Approach. In Lazarus, A.A. (Ed), Multimodal Behavior Therapy. New York: Springer, 1976.

RICHARDSON, F.C., O'NEIL, H.F., WHITMORE, S. & JUDD, W.A. : Factor analysis of the Test Anxiety Scale and evidence concerning the components of Test Anxiety. Journal of Consulting and Clinical Psychology, 1977, 45: 704-705.

RITTER, B.G. : The Psychology of Study. London: Methuen & Company, 1928.

ROBINSON, F.P. : Effective Study. New York: Harper & Row Publishers, 1946.

ROBINSON, F.P. : Another Look at Effective Study. New York: Harper & Row Publishers, 1970.

ROBINSON, H.B. : Active, Passive and Vicarious Desensitisation. Journal of Counseling Psychology, 1974, 21: 369-375.

ROBINSON, P.W. : Fundamentals of Experimental Psychology. New Jersey: Prentice-Hall Inc., 1981.

ROSENTHAL, P. & ROSNOW, R.L. : The Volunteer Subject. New York: John Wiley & Sons, 1975.

SARASON, I.G. : Anxiety, Reinforcement and Experimental Instructions in a Free Verbal Situation. Journal of Abnormal and Social Psychology, 1962, 65: 300-307.

SARASON, I.G. : Test Anxiety and the Observation of Models. Journal of Personality, 1968, 36: 493-511.

SARASON, I.G. : Experimental Approaches to Test Anxiety, Attention and the Uses of Information. In Spielberger, C.D. (Ed), Anxiety: Current Trends in Theory and Research (Vol.2). New York: Academic Press, 1972.

SARASON, I.G. : Test Anxiety and Cognitive Modeling. Journal of Personality and Social Psychology, 1973, 28: 58-61.

SARASON, I.G. : Test anxiety and the Self-disclosing Coping Model. Journal of Consulting and Clinical Psychology, 1975, 43: 148-153.

SARASON, I.G. : The Test Anxiety Scale: Concept and Research. In Spielberger, C.D. & Sarason, I.G. (Eds), Stress and Anxiety (Vol.5). New York: Hemisphere/Wiley Publishers, 1978.

SARASON, I.G. : Some Measurement Issues Concerning Test Anxiety. In Spielberger, C.D. & Sarason, I.G. (Eds), Stress and Anxiety (Vol.8). New York: Hemisphere/Wiley Publishers, 1981.

SARASON, I.G., PEDERSON, A.M. & NYMAN, B. : Test Anxiety and the Observation of Models. Journal of Personality, 1968, 36: 493-511.

SARASON, S.B. & MANDLER, G. : Some Correlates of Test Anxiety. Journal of Abnormal and Social Psychology, 1952, 47: 810-817.

SARASON, S.B. : What Research says about Test Anxiety in Elementary Schoolchildren. NEA Journal, 1960, 48: 26-27.

SASSENRATH, J.M. : A Factor analysis of rating-scale items on the Test Anxiety Questionnaire. Journal of Consulting Psychology, 1964, 28: 371-377.

SASSENRATH, J.M. : Measurement of Anxiety. New York: Raven Press, 1977.

SCISSONS, E.H. & NJAA, L. : Systematic Desensitisation of Test Anxiety: A comparison of group and individual treatment. Journal of Consulting and Clinical Psychology, 1973, 41: 470.

SIMPOWSKI, J. : The Relationship of Stress and Creativity to Cognitive Performance. Diss. Abs. Int., 1973, 34(5-A): 2399.

SPIELBERGER, C.D. : The Effects of Manifest Anxiety on the Academic Achievement of College Students. Mental Hygiene, 1962, 46: 420-426.

SPIELBERGER, C.D. : The Effects of Anxiety on Complex Learning and Academic Achievement. In Spielberger, C.D.(Ed) Anxiety and Behavior. New York: Academic Press, 1966.

SPIELBERGER, C.D. : The State-Trait Anxiety Inventory Test Manual for Form X. Palo Alto, California: Consulting Psychology Press, 1968.

SPIELBERGER, C.D., GONZALES, H.P., TAYLOR, C.J., ALGAZE, B. & ANTON, W.D. : Examination Stress and Test Anxiety. In Spielberger, C.D. & Sarason, I.G. (Eds), Stress and Anxiety Vol.5. New York: Hemisphere/Wiley, 1978.

STENGEL, E. : Exam Fear and Exam Neuroses. Z. Psychoanalitical Depagogy, 1936, 10: 300-320.

STEVEN RICHARDS, C. : Behavior Modification of studying through study skills advice and self-control procedures. Journal of Counseling Psychology, 1975, 22(5): 431-436.

STONES, C.R. : Research Toward a Phenomenological Praxis. In Kruger, D., Introduction to Phenomenological Psychology. Cape Town: Juta & Company Ltd., 1979.

SUINN, R.M. : The STABS, a measure of test anxiety for behavior therapy: Normative Data. Behaviour Research and Therapy, 1969, 7: 335-339.

TASTO, D.L. & SUINN, R.M. : Fear Survey Schedule: Changes on total and factor scores due to nontreatment effects. Behavior Therapy, 1972, 3: 275-278.

TAYLOR, D.W. : A comparison of Group Desensitisation with Two Control Procedures in the treatment of Test Anxiety. Behaviour Research and Therapy, 1971, 9: 281-284.

TAYLOR, D.W. & EPSTEIN, G. : On Stress and Coping Mechanisms. In Spielberger, C.D. & Sarason, I.G. (Eds), Stress and Anxiety (Vol.5). Washington: Hemisphere, 1971.

TOMKINS, C.J. : The Nature and Measurement of Test Anxiety. Unpublished Masters Thesis, University of South Florida, 1976. (Copy obtained for present study)

VAN DER WATT, P. : Toetse Vir Normaliteit. Unpublished Ph.D. Thesis, UNISA: 1969, Pp 122ff.

WEBER, C. : Examination Anxiety in taking Information Tests. Industrial Psychotechnology, 1934, 11: 53-55.

WINE, J. : Test Anxiety and Direction of Attention. Psychological Bulletin, 1971, 76(2): 92-104.

WINE, J. : Cognitive-attentional theory of Test Anxiety. In Sarason, I.G. (Ed), Test Anxiety: Theory, Research and Application. Hillsdale, New Jersey: Lawrence Erlbaum Associates, 1980.

WOLPE, J. : Objective Psychotherapy of the Neuroses. South African Medical Journal, 1952, 26: 825-829.

WOLPE, J. : The Practice of Behavior Therapy. New York: Permagon Press, 1958.

WOLPE, J. : Behavior Therapy. New York: Permagon Press, 1969.

WOLPE, J. & LAZARUS, A.A. : Behavior Therapy Techniques. Elmsford, New York: Permagon Press, 1966.

YALOM, I.D. : The Theory and Practice of Group Psychotherapy. New York: Basic Books, 1970.

ZENMORE, R. : Systematic Desensitisation as a method of teaching a general anxiety-reducing skill. Journal of Consulting and Clinical Psychology, 1975, 43(2): 157-161.

# ADDITIONAL BIBLIOGRAPHY

ALLEN, G.J. : Understanding Psychotherapy. Illinois: Research Press Company, 1977.

CRIGHTON, J. & JEHU, D. : Treatment of Examination Anxiety by Systematic Desensitisation or Psychotherapy in Groups. Behaviour Research and Therapy, 1969, 7: 245-248.

DAVIDSON, P.O. (Ed) : The Behavioral Management of Anxiety, Depression and Pain. New York: Brunnel/Mazel, 1976.

DEFFENBACHER, J.L. & SHELTON, J.L. : Comparison of anxiety management training and desensitisation in reducing test and other anxieties. Journal of Counseling Psychology, 1978, 25: 277-282.

DOCTOR, R.M. & ALTMAN, F. : Worry and Emotionality as Components of Test Anxiety: Replication and Further Data. Psychological Reports, 1969, 24: 563-568.

FRANKS, C.M. (Eds) : Behavior Therapy: Appraisal and Status. New York: McGraw-Hill, 1969.

GRAFF, R.W., MacLEAN, M., & LOVING, A. : Group reactive inhibition and reciprocal inhibition therapies with anxious college students. Journal of Counseling Psychology, 1971, 18: 431-436.

HOLROYD, K.A. : Cognition and desensitisation in the Group Treatment of Test Anxiety. Journal of Consulting and Clinical Psychology, 1976, 44: 991-1001.

HOLROYD, K.A., WESTBROOK, T., WOLF, M., & BADHORN, E. : Performance, cognition and physiological responding in Test Anxiety. Journal of Abnormal Psychology, 1978, 87: 442-451.

LAZARUS, A.A. (Ed) : Multimodal Behavior Therapy. New York: Springer, 1976.

MITCHELL, K.R. & INGHAM, R.J. : The Effects of general anxiety on group dessensitisation of Test Anxiety. Behaviour Research and Therapy, 1970, 8: 69-78.

MOSTOFSKY, D.I. (Ed) : Behavior Control and Modification of Physiological Activity. Englewood Cliffs, New Jersey: Prentice-Hall, 1976.

RUSSELL, R.K. & SIPICH, J.F. : Cue-controlled Relaxation in the Treatment of Test Anxiety. Journal of Behavior Therapy and Experimental Psychiatry, 1973, 4: 47-49.

SARASON, I.G. (Ed) : Test Anxiety: Theory, Research and Applications. Hillsdale, New Jersey: Erlbaum, 1978.

SCHLEIN, J.M. (Ed) : Research in Psychotherapy (Vol.3). Washington D.C.: American Psychological Association, 1976.

SCHOFIELD, W. : Psychotherapy: the purchase of friendship. Englewood Cliffs, New Jersey: Prentice-Hall, 1964.

SPIELBERGER, C.D. (Ed): Anxiety and Behavior. New York: Academic Press 1966.

SPIELBERGER, C.D. (Ed): Anxiety: Current Trends in Theory and Research. (Vol.2). New York: Academic Press, 1972.

SPIELBERGER, C.D. & SARASON, I.G. (Eds) : Stress and Anxiety (Vol.5). New York: Hemisphere/Wiley Publishers, 1978.

(Ibid.) : Stress and Anxiety (Vol.8). New York: Hemisphere/Wiley Publishers, 1981.

WRIGHT, R.L.D. : Understanding Statistics - an informal introduction for the Behavioural Sciences. New York: Harcourt, Brace & Janovich, 1976.

# APPENDICES

# APPENDIX A





EXTRACTS OF SOME REPLIES RECEIVED IN RESPONSE TO THE MAIL SURVEY OF ALL SOUTH AFRICAN UNIVERSITIES, CONCERNING THE AVAILABILITY OF GROUP & INDIVIDUAL COUNSELLING SPECIFICALLY FOR TEST ANXIOUS STUDENTS ON THEIR CAMPUS.

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG
Counselling and Careers Unit • 3001 Senate House

1922-1982

Telephone (011) 716-3380 Our ref AS/pw

Date 2 December 1982 Your ref

The Counselling and Careers Unit has run various workshops and/or groups in attempts to reduce examination anxiety. The format in 1981 was built on the concepts of cognitive restructuring, and run by Dr David Beaty. He and Professor Julian Barling have recently (1982) published a book (which you may already have) entitled :

"Positive Exam Results - Without Stress"
available from McGraw-Hill, Johannesburg.

As feedback from students and other CCU staff-members was not all that encouraging, in 1982 we reverted to an earlier model which aimed to combine aspects of cognitive control with progressive relaxation exercises. We took two groups of up to ten students through courses of four successive daily, hour-and-a-half long sessions. Briefly we tried to change anxiety-provoking attitudes by:

a) Explaining research findings about the differences between debilitative and facilitative arousal/anxiety and the differing test-behaviour patterns of high and low test-anxious people. Group discussion aimed at sharing their experiences of test-anxiety was encouraged, and was linked to illustrative research material.

b) Using a modified version of Jacobsen's progressive relaxation exercises students were trained while lying on mattresses to focus on areas of muscular tension and to tense and relax specific areas voluntarily. This seems to be the most useful part of the course, giving students a sense of control and therefore reassuring them that they could control test-anxiety and channel it productively in the directions indicated by the research material we had shared with them.

Feedback has generally been good, but students indicated that they would have appreciated more time between sessions to practise and develop the relaxation skills. Since it also seems that attitudes generally change slowly, we plan to offer similar courses in 1983 but over a four or five week period with one session per week.

As you can see, we too are only in the first stages of developing a group programme, but if you would like me to expand on any of the areas mentioned, please feel free to approach me again.

Yours sincerely

Andrew B Swart
Head

# APPENDIX A




## UNIVERSITY OF CAPE TOWN

(WITH WHICH IS INCORPORATED THE SOUTH AFRICAN COLLEGE)

Telephone: 69-8318

University Ave,
University of Cape Town,
Rondebosch,
7700

STUDENTS' HEALTH SERVICE




*23 November 1982*

*Unfortunately, the situation at U.C.T. appears to be similar to that at Rhodes in that such counselling is only available on an individual basis through the Students' Health Service and, less formally, through interested individual members of the academic and Faculty support staff who might be in a position to advise individual students. The counselling within the Students' Health Service is generally conducted by the Clinical Psychologists / Psychotherapists employed by the Service (one full-time, three part-time), although the Medical Officers (three full-time, one part-time) and Consultant Psychiatrist (part-time) also play a significant part in the management of a number of individual cases.*

*Counselling is largely in terms of generalized anxiety management and study skills advice and training but is strictly limited to those students who are referred or refer themselves to the Service. Because of the generally high demand for counselling services at the University, the current staff resources do not allow for anything but short-term intervention (with an arbitrary maximum engagement of approximately six counselling sessions) with individual students and medium - to long-term intervention, where indicated, usually involves referral to external resources / agencies.*

*In terms of the demand for test anxiety management programmes, I should envisage that there is a need for more formal arrangements at this University. Although the number of students who have attended for counselling related primarily / specifically to this area within recent months has been in the region of 20, I am sure that many others have not been referred or have not referred themselves despite considerable difficulties of this nature. The provision of a specific programme would most certainly realize a more significant demand.*

*As far as the outcome of current counselling is concerned, I would venture to estimate that only approximately 50% of those counselled are likely to have achieved appreciable reduction in specific test-anxiety-related disability. Of these, only 50% would have achieved relatively lasting remission of such disability through the adoption and assimilation of comparatively permanent adaptive techniques and approaches. Of the 50% of students who are considered to have achieved little or no reduction in disability, most would undoubtedly have benefitted from more intensive and structured programmes and many from programmes which were more extensive and not necessarily "test-focused".*

*We would be very interested indeed to learn of developments within this area, particularly in terms of the progress of your investigations at Rhodes. In the meantime, please do not hesitate to contact us should you require any further information about the situation at this Service.*

*Yours sincerely,*

John Griffiths

*J. A. GRIFFITHS*

*PRINCIPAL CLINICAL PSYCHOLOGIST*
*STUDENT HEALTH SERVICE*

# APPENDIX A



**Universiteit van Pretoria**

Studentediensburo
Pretoria 0002
Republiek van Suid-Afrika
Teleks 30160 SA Telegramme "Puniv"
Tel. 43-6051 X333

**University of Pretoria**

Bureau for Student Services
Pretoria 0002
Republic of South Africa
Telex 30160 SA Telegrams "Puniv"
Tel. 43-6051

In reply to your letter dated 8 November 1982, I wish to describe the kind of assistance a student with test anxiety that occurs as a result of university excaminations, may expect at the Student Service Bureau of the University of Pretoria.

As seen in recent literature and by personal experience, we feel that test anxiety stems mainly from personality problems as well as uncertainty that occurs because of bad study habits. Students who experience test anxiety will therefore receive guidance in how to study effectively and independantly, either individually or in groups. Councelling for these students is done on individual basis by either a clinical or councelling psychologist. In severe cases of test anxiety medication will be given by a medical practitioner.

Unfortunately we have no statistics available as a measurement of our success, except for the verbal reports of students performing successfully, and the fact that more and more students report every year for assistance at the Student Service Bureau.

Your sincerely

G. du Plessis
Mrs G du Plessis
COUNCELLING PSYCHOLOGIST

UNIVERSITY OF NATAL

STUDENT ADVISORY SERVICE

KING GEORGE V AVENUE
DURBAN

Telegrams: "UNIVERSITY"
Telephone: 253411

At Natal University in Durban, I have asked Mrs R Cheetham of the Student Advisory Service to undertake an investigation into test anxiety among students and to implement a programme for dealing with the problem.

It would, I believe, be in the interests of students if a conference, or workshop, on test anxiety could be arranged, preferably within the next year or so, since the problem is possibly larger than we imagine and the means of reducing it not entirely effective at present.

I would be very interested in your research findings when they become available.

Yours sincerely

I B GIBSON
DIRECTOR: STUDENT ADVISORY SERVICE

**Randse Afrikaanse Universiteit**

Aucklandpark Johannesburg
Posbus 524 Johannesburg 2000

Hulp aan studente i.v.m. toets- en eksamenvrees word nie aan ons studente gegee nie.

Ons het 3 dae gelede die funksionering van die Akademiese Adviesburo geëvalueer en tot die gevolgtrekking gekom dat dit noodsaaklik is om hieraan aandag te gee. Ons het toe besluit om in die toekoms daaraan aandag te gee en moet ook programme bepaal. Indien ons vordering maak sal ons u op hoogte stel.

Ons sal dit waardeer indien u ons ook met inligting kan voorsien na gelang u vorder.

U samewerking sal hoog waardeer word.

Groetend

PROF SJL BOUWS
HOOF: AKADEMIESE ADVIESBURO

UNIVERSITEIT VAN STELLENBOSCH Studentegesondheidsdiens
UNIVERSITY OF STELLENBOSCH Student Health Service

7 Claassen Street
STELLENBOSCH
7600
SUID-AFRIKA/SOUTH AFRICA

TEL.: 72827

VERW./REF.:

30 November 1982

In reply to your letter of 8 November 1982 I regret sincerely to have to inform you that Stellenbosch does not offer any therapeutic programme specifically designed to assist students in managing test anxiety. Those students who are referred with agrotatism or present themselves for help are evaluated individually and treated sympathetically both by clinical psychologists associated with our health service or counsellors of the Students' Advisory Bureau.

Again potential victims are often singled out in questionnaires completed by first years for (1) the Health Service and (2) the Advisory Bureau. The latter have been using the S.A. Personality Questionnaire (NIPR) for the last two years to determine general anxiety, root cause of test anxiety.

It is a pity that university administrations generally, including our own, show little sympathy for students with this problem.

I shall be happy to learn in time of what success you achieve at Rhodes by implementing a group therapeutic scheme.

Yours sincerely

Jan v Heerden

Dr. J.J. van Heerden
HEAD MEDICAL OFFICER

# APPENDIX B



REVIEW OF A LOCALLY PRODUCED TEST ANXIETY MANAGEMENT PROGRAMME

Title: Positive Exam Results - Without Stress

Authors: Dave Beaty & Julian Barling

Published by: McGraw-Hill Book Company, Johannesburg, 1982 (103 pages; R 6,95, excluding GST)

"POSITIVE EXAM RESULTS - WITHOUT STRESS", is essentially a workbook of the automated instruction variety and can be said to fall under the generic heading of "bibliotherapy".

In the course of its 103 well layed-out (and often humorously illustrated) pages, the authors pack a wealth of practical information concerning the physiological, cognitive and organisational considerations inherent in the present system of academic evaluation in force in most South African academic institutions.

Directed primarily at the university- and upper-secondary level- student, the book is designed to:

" ° Demonstrate the degree to which stress either hinders or helps students in exams, by means of having each student work out their own unique level of stress through a simple, self-scored test.

° Discussing the actual causes and consequences of exam stress.

° Showing students how they can deal effectively with their exam stress by "nipping it in the bud".

° Demonstrating the correct learning skills that students can combine with their stress management techniques to be used well before, immediately prior to, while taking, and after completing any examination.

° Demonstrating to each student how they can identify and implement the psychological conditions necessary to produce motivation, particularly in subjects normally considered boring and uninteresting. "

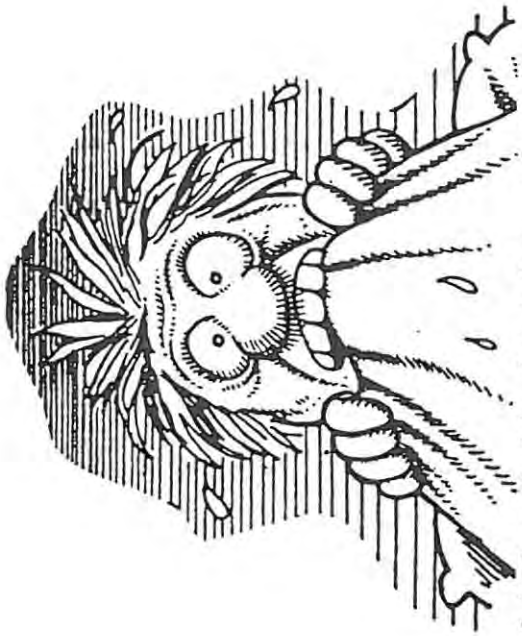
(see Preface in this text)

The book opens with a self-monitoring "stress-level indicator"; a questionnaire scoring system, based on the AAT (Achievement Anxiety Test) of Alpert & Haber,1960 (which yields an index for both debilitative and facilitative anxiety).


(THE ILLUSTRATION FEATURED IS EXTRACTED FROM THE TEXT BEING REVIEWED)

# APPENDIX B





Traditional behavioural methods for improving exam preparation are then introduced; including so-called "critical-exciting study factors" (based on the operant conditioning principle of using rewards to establish a motivation for engaging in "little liked" behaviour; such as studying 30 minutes of French in exchange for a programme of "Dallas" on television.

Memory techniques (such as acronyms) are introduced, and cramming is critically compared with reviewing. A sample "Study Time Schedule" is delineated, while students are offered advice on peculiarities they may encounter in their own study situation.

Advice given on exam technique, stresses self-descriptive statements and tips to help students in taking an essay-type versus an objective-type exam.

In a very readable chapter, the authors discuss the causes and consequences of paralysing exam stress, including environmental presses and poor on-task concentration. The importance of controlling cognitions at exam time are stressed again in a chapter designed to assist the student in mastering self-reward statements.

Finally, Beaty & Barling present a brief look at the physiological aspects of exam stress, while presenting physical relaxation techniques (notably "breathing" & "calm scene" techniques).

Given the fact that automated instruction programmes have seldom proved to be highly successful in reducing test anxiety, Beaty & Barling also advocate the use of their workbook in combination with test anxiety counselling; this recommendation is strongly supported by the present author.

One reservation concerning the text however, is the underlying (often not so subtle) tone in the book, which is opposed to established academia, as exemplified in the cover illustration of the book - see right illustration.

While such a negative perspective of academics and exams may well appeal to the test anxious student, the reinforcement of such negative feelings, can only be risky for the student - who may well "show them all" by improving study and test-taking behaviour, but is likely to perform less well in general course work, while the student will remain unhappy "with his lot".

With this reservation in mind, "POSITIVE EXAM RESULTS-WITHOUT STRESS" can be viewed as a valuable addition to the growing test anxiety counselling movement in South Africa.

# APPENDIX C



HANDOUT GIVEN TO SD Ss TO ILLUSTRATE DEEP-MUSCLE RELAXATION
(After Jacobson,1938 & Wolpe,1958)



# LEARNING TO RELAX

We are all aware of the calm ease in our bodies when we are lying or sitting in a position of rest. Joseph Wolpe, however, has developed a method of relaxation that permits individuals to relax even beyond that point by helping them become aware of the activities involved in tensing various muscle groups and then letting them go.

The following exercise may be useful in assisting you to increase your normal level of relaxation ...

To begin the exercise, seat yourself comfortably in a desk chair and grip the arm of the chair with one hand. Notice the different sensations produced in your forearm and hand. The sensations in your hand are primarily due to touch and pressure, whereas the sensation in your forearm is due to muscle tension. Carefully study the tension of the muscles in your forearm, as these are the muscle contractions that you will seek to relax. Relax and observe the contrast in feeling. It is important to note that this letting go is also an activity, but it is of a negative kind. It is the negative activity of letting go or relaxing the muscles that you wish to learn.

By progressively concentrating on different muscle groups, tensing and relaxing each in turn, you can, through practice, increase your ability to let go and enter progressively deeper states of relaxation. As your body becomes more relaxed, you will begin to notice further sensations. The usual ones are tingling, numbness or warmth. These sensations indicate a degree of deep muscle relaxation that goes beyond the usual state of rest.

Each of the following techniques is useful in locating particular muscle groups that you may want to relax ...

THE ARMS

Ask a friend to grip your wrist while you bend your arm against that resistance. This activity will make you aware of tension in your biceps. Straighten your bent elbow against your friend's resistance in order to feel the tension in muscles along the back of your upper arm. Once you have located these muscles, practice relaxing your arms by gradually increasing the negative activity of letting go. Place your hands comfortably in your lap and allow the muscles of both arms to relax.

→

(ILLUSTRATIONS BY MICHAEL SOUTER OF GRAHAMSTOWN)

(LEARNING TO RELAX HANDOUT CONTINUED...)

THE FACIAL REGION

Raise your eyebrows and wrinkle your forehead to create an anxious expression. Slowly and gradually relax them. Close your eyes tightly, then let them relax. In turn, wrinkle your nose, purse your lips and press them together, clench your jaw and bite your teeth together. As you relax your jaw, your lips will part slightly. Press your tongue hard against the backs of your lower teeth, and then let it fall back into your mouth. These activities assist in locating the muscles of the forehead, eyes, lips, jaw and tongue.

THE NECK AND SHOULDERS

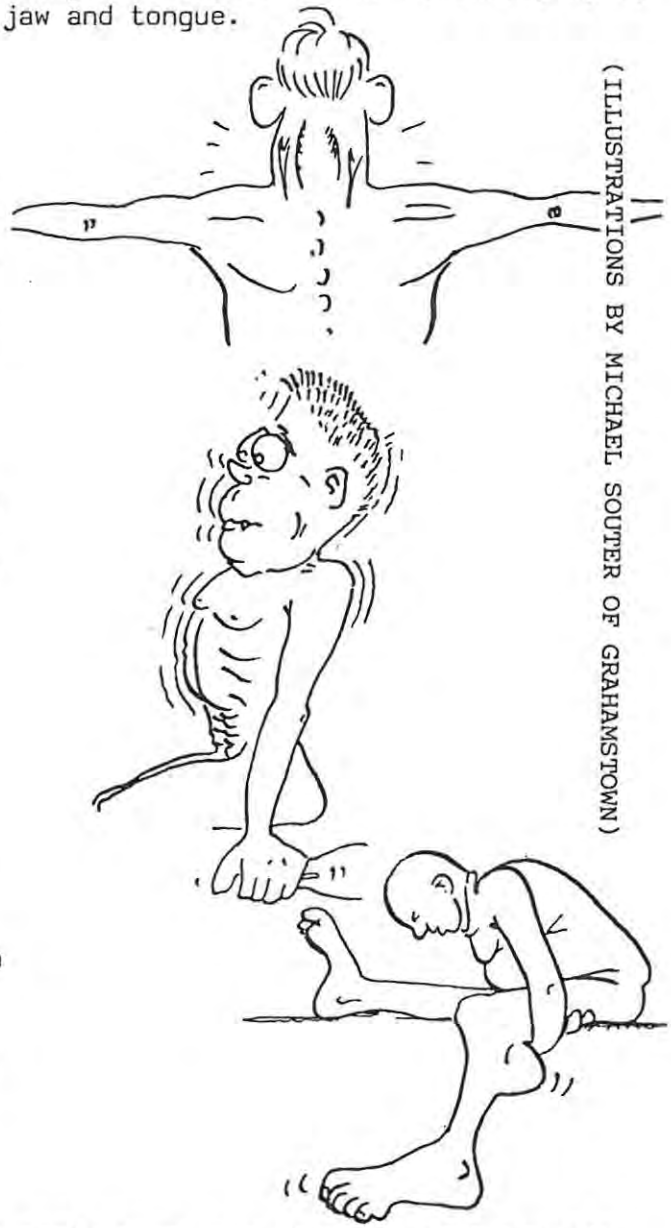
Concentrate on the sensations present at the back of your neck as you maintain your head in an erect posture. As you relax these muscles, the head will fall forward. Hold your arm in a horizontal position and then move it backward, forward, and up to the ear to become aware of the muscles in your shoulders.

THE BACK, ABDOMEN AND THORAX

Contract your back muscles by arching your spine. Tighten your abdominal muscles and make your abdomen hard, as if you were expecting a punch in the belly. Breathe in deeply, fill your lungs, and notice the tension created as you hold your breath. As you exhale, you will automatically relax.

THE LOWER LIMBS

Bend your toes in order to locate muscles within your foot. Press your toes on the floor to tense your calf muscles. Move your foot backward and forward. Straighten your knee and try to bend it against resistance. Place your hand on the inner side of the knee and move your leg against that resistance. These activities assist in locating various muscles in the lower limbs.



(ILLUSTRATIONS BY MICHAEL SOUTER OF GRAHAMSTOWN)

PERFECT RELAXATION WILL NOT BE ACHIEVED THE FIRST TIME, BUT WITH PRACTICE YOU CAN BECOME INCREASINGLY AWARE OF VARIOUS MUSCLE GROUPS AND THE SENSATIONS INVOLVED AS YOU RELAX THEM. YOUR BODY WILL BECOME HEAVY AND YOU WILL FEEL INCREASINGLY TRANQUIL AS YOU ARRIVE AT DEEPER AND DEEPER LEVELS OF RELAXATION.

(Adapted from Joseph Wolpe, The Practice of Behaviour Therapy, 2nd Ed., New York: Permagon Press, 1973)

# APPENDIX D



(EXTRACTED FROM ROBINSON, 1970, Pps 92-93)

## Check List of Work Behavior

| | Individual "A" | Individual "B" |
|---|---|---|
| *Work activities:* | | |
| Reading | | |
| Note-taking | | |
| Self-recitation | | |
| Working problems | | |
| *Distractions:* | | |
| Conversation | | |
| Aimless looking around | | |
| Aimless leafing through books | | |
| Students going by | | |
| Applying makeup | | |
| Attracted by certain individuals | | |
| Daydreaming | | |
| Reading or writing letters | | |
| Arranging hair and clothes | | |
| Miscellaneous | | |
| *Time use:* | | |
| About what proportion of the time was spent in studying | | |

## Evaluation of Study Conditions and Plans for Correction

| Area | What's wrong | Specific plans |
|---|---|---|
| Auditory distractions in room | | |
| Visual distractions in room | | |
| Personal worries and interests that distract | | |
| Auditory distractions in library | | |
| Visual distractions in library | | |
| Constancy of study conditions to stimulate study | | |
| Posture while studying | | |
| Adequacy of lighting | | |
| Adequacy of work space | | |
| Availability of materials | | |

# APPENDIX D



## READING TEST ADMINISTERED TO STUDY SKILLS SUBJECTS

This frame and the next will take about fifteen or twenty minutes. If you do not have that much time, do not go on. Come back here when you do. If you do have time, do not begin until you have access to a watch or a clock with a second hand.

You are going to time yourself while you read from the following article, "Should It Be Legalized?" Judging from the title, state what you think will be your purpose for reading the article.

Reading Purpose: _____

Check your watch or clock and write down your beginning reading time. Start exactly on the minute.

Starting Time: _____

Begin reading.

---

### SHOULD IT BE LEGALIZED?

by Dr. James L. Goddard

(EXTRACTED FROM CARMEN & ROYCE ADAMS, 1972, Pps 81-84)

(1) Man has used marijuana both socially and medicinally for several thousands of years and yet today there is little scientific knowledge of its dangers or merits. In spite of our lack of knowledge, an estimated 12 million Americans have used the drug in recent years. Now we are in a near crisis caused by ignorance and the blanket of misinformation which governmental agencies have used to cover their ineptitudes.

(2) One thing we know about marijuana is that it is definitely not a narcotic even though our federal laws (and most of our state laws) restricting its usage erroneously define it as such. The effects of the drug are variable, depending largely on the experience of the user, his mood, the quantity smoked or eaten, the potency of the plant and the form the drug is used in—leaf (grass) or resin (hashish). The drug effects sought by the user are a state of relaxation, an enhancement of sensory stimuli, particularly sound, an apparent expansion of time, a dispelling of the problems of the day. He may also experience a marked increase in appetite, a slight increase in pulse rate, a pronounced dryness of the mouth and throat, a sensation of heaviness of the extremities. He may even experience a mild period of depression and, in some rare cases, an acute panic reaction which may lead to brief hospitalization.

(3) Marijuana, unlike narcotics, does not produce tolerance, requiring higher dosages to produce the same effect. Nor does it produce addiction, which is true of narcotics. But this does not mean it is without its dangers. The principal danger is that one may become psychologically dependent on marijuana and, instread of coping with everyday problems, withdraw through frequent use of the drug. Adolescents are particularly vulnerable to this danger because of their limited experience and less well-developed habits of living.

(4) Though marijuana has been the drug first used by 90% to 95% of heroin users in the U. S., there is nothing inherent in it to cause people to switch from it to the addictive and more potent drugs. Rather it is thought that personality factors are responsible. I find parents to be most concerned about this one facet of the problem, and the only reassurance I can offer them is that while marijuana usage has skyrocketed in the last decade, heroin addiction has increased only gradually.

(5) Some of the questions we must answer are:

Does long-term usage of marijuana have harmful effects?
Does it affect the reproductive processes?
What type of treatment will be most effective in rehabilitating chronic marijuana users?
What conditions favor continuation of marijuana use as opposed to moving to hard drugs?
What kinds of educational approaches are most effective in reducing misuse?
Does marijuana affect human chromosomes?

(6) Steps are being taken to obtain answers to these and other questions. The major support for this research comes from an element of the U. S. Public Health Service—the National Institute of Mental Health. Its program was initiated early this year, although limited studies had been supported in earlier years, and involves providing funds ($1 million in fiscal year 1969) and supplies of the drug in both natural and synthetic forms to scientists in institutions across the U. S.

(7) Phase I of the program—assuring adequate supplies of the drug for testing—has been largely completed. Phase II—study of the effects on various animals—is under way. Parts of Phase III—clinical tests on humans—have been started. Answers to some of our questions will be forthcoming within a matter of months. Within two or three years, according to Dr. Stanley Yolles, director of NIMH, most of what we need to know will be available.

(8) Our laws governing marijuana are a mixture of bad science and poor understanding of the role of law as a deterrent force. They are unenforceable, excessively severe, scientifically incorrect and revealing of our ignorance of human behavior. The federal and state laws should be revised to reflect the fact that marijuana is a hallucinogen and should be classified as such. The federal statutes should be repealed, and the Food, Drug and Cosmetic Act should be amended to bring marijuana under the jurisdiction of that act, thereby automatically de-escalating the penalties for simple possession to a more reasonable level (a misdemeanor, with the judge being given considerable authority to adjust the penalty to more nearly fit the circumstances). At the same time sufficiently serious penalties should be provided to handle the major traffickers in the drug. State laws should then be revised in conformance with a model law containing similar provisions.

(9) I do not believe that marijuana should now be legalized and the steps which I have suggested will not satisfy those who seek to legalize it. Their arguments are that the laws are not enforceable, that the use of marijuana is a private act and does not harm society, and that marijuana is less a danger than alcohol. These are attractive arguments, but they begin to break down upon closer examination. First, although not precisely defined, law may have a deterrent effect. Second, although the use of marijuana is a private act, it has the potential to cause harm to society. One has only to visualize marijuana being more freely available and more widely used by adolescents who have not learned to cope with the problems of daily life, and it is not difficult to reach the conclusion that cannabism would become a societal problem. Our inability to keep cigarettes away from minors should serve as a reminder that we would not be able to keep marijuana out of their hands.

(10) I know that my stand on marijuana may seem contradictory. If the known harmful effects of alcohol and tobacco are greater than those of marijuana, and those substances are legal, why do I not advocate legalizing marijuana? I believe that if alcohol and tobacco were not already legal, we might very well decide not to legalize them—knowing what we now know. In the case of marijuana, we will know in a very few years how harmful it is or is not. If it turns out to be quite harmful—a distinct possibility—we will have introduced yet another public-health hazard that for social and economic reasons might become impossible to dislodge.

Record your finishing time: _____

---

Now subtract your starting time from your finishing time to see how many minutes and seconds it took you to read the article.

Finishing Time: _____

Starting Time: _____

Total Reading Time: _____

Use the chart below to figure out how many words per minute you read. For instance, if you read the article in 4 minutes and 15 seconds, your rate would be 270 words per minute (WPM).

| Time | WPM | Time | WPM |
|---|---|---|---|
| 1:00 | 1150 | 4:00 | 287 |
| 1:15 | 920 | 4:15 | 270 |
| 1:30 | 766 | 4:30 | 255 |
| 1:45 | 657 | 4:45 | 242 |
| 2:00 | 575 | 5:00 | 230 |
| 2:15 | 511 | 5:15 | 219 |
| 2:30 | 460 | 5:30 | 209 |
| 2:45 | 418 | 5:45 | 200 |
| 3:00 | 383 | 6:00 | 191 |
| 3:15 | 353 | 6:15 | 184 |
| 3:30 | 328 | 6:30 | Too slow—you need practice to increase your reading speed. |
| 3:45 | 306 | | |

Record your WPM: _____.

# APPENDIX E



THE DESCRIPTIVE/INFORMATIONAL QUESTIONNAIRES

PRIVATE & CONFIDENTIAL PDS

PERSONAL DATA SYNOPSIS

(PLEASE PRINT CLEARLY)

NAME : _____ _____ SEX : M F

ADDRESSES : GRAHAMSTOWN - _____

_____

HOME - _____

_____

_____ POSTAL CODE - _____

AGE (as on 31 May 1981) : _____ Years _____ Months

1) Under which Education system did you achieve your Matriculation Exemption (or equivilant) ? _____
And in which year ? _____

2) In which year did you first register for a degree at a University ? _____

3) Name the course for which you are presently registered at Rhodes (give the formal initials and the year; Eg. BA II) : _____

4) List your major Subjects (if they are as yet undetermined, list all Subjects for which you are currently registered) : _____

_____

_____

5) On what date do you write your first June examination ? The morning/afternoon of ___ June 1981.
What Subject is it ? _____
(Please bring a complete copy of your exam time-table with you to the interview)

TWENTY-MINUTE INITIAL ASSESSMENT

You are required to undergo an initial assessment, lasting 20-minutes. When would you be willing to come to the Psychology Department for such an assessment, given the following time options ? (Indicate at least five possible alternatives, by placing an X on the appropriate line) ...

| TIME PERIODS AVAILABLE | TUES 02/06 | WED 03/06 | THURS 04/06 | FRI 05/06 | SAT 06/06 | SUN 07/06 |
|---|---|---|---|---|---|---|
| 09H00 - 09H20 | ____ | ____ | ____ | ____ | ____ | ____ |
| 09H20 - 09H40 | ____ | ____ | ____ | ____ | ____ | ____ |
| 09H40 - 10H00 | ____ | ____ | ____ | ____ | ____ | ____ |

(PERSONAL DATA SYNOPSIS CONTINUED...)



| TIME PERIODS AVAILABLE | TUES 02/06 | WED 03/06 | THURS 04/06 | FRI 05/06 | SAT 06/06 | SUN 07/06 |
|---|---|---|---|---|---|---|
| 14H00 - 14H20 | | | | | | |
| 14H20 - 14H40 | | | | | | |
| 14H40 - 15H00 | | | | | | |
| 15H00 - 15H20 | | | | | | |
| 15H20 - 15H40 | | | | | | |
| 17H00 - 17H20 | | | | | | |
| 17H20 - 17H40 | | | | | | |
| 17H40 - 18H00 | | | | | | |

AUGUST/SEPTEMBER TRAINING PERIOD

This period will involve small-group 'training sessions' - the groups meeting weekly for a length of time to be determined by you as follows :-

Given the following 'periods', indicate:
(a) by means of an asterisk (*) your preference of time-period; AND
(b) by means of a dot (•), the maximum amount of time you would be prepared to spend on the sessions ...

---

○ A One-hour long weekly meeting over FIVE weeks
○ A One-hour long weekly meeting over SIX weeks
○ A One-hour long weekly meeting over SEVEN weeks
○ A One-hour long weekly meeting over EIGHT weeks

---

○ A Two-hour long weekly meeting over FIVE weeks
○ A Two-hour long weekly meeting over SIX weeks
○ A Two-hour long weekly meeting over SEVEN weeks
○ A Two-hour long weekly meeting over EIGHT weeks

---

○ A One-hour long meeting TWICE a week for FOUR weeks
○ A One-hour long meeting TWICE a week for FIVE weeks
○ A One-hour long meeting TWICE a week for SIX weeks

---

When would you prefer to attend group sessions (ring applicable response) ? ...

A During Weekday Evenings (before 19H00)
B On Weeknights (after 19H00)
C On Weekends during the day (SAT SUN - underline pref.)
D No Preference

# APPENDIX E



MANAGEMENT OF EXAM ANXIETY - DESCRIPTIVE SCHEDULE

ANSWER THE FOLLOWING QUESTIONS AS FULLY AS YOU CAN; BEAR IN MIND THAT ALL INFORMATION OFFERED HERE BY YOU IS VERY STRICTLY CONFIDENTIAL.

A) WITH REFERENCE TO STATEMENTS 14,15 & 19 IN PART ONE (q.v.), DO YOU IN FACT EVER EXPERIENCE "MENTAL BLOCKS" (OR "BLANKS") IN AN EXAM ?

YES NO

IF "YES", WHAT FORM DO THESE "BLOCKS" TAKE ? (OFFER HERE A BRIEF DESCRIPTION OF ITS NATURE AND INTENSITY):

_____

_____

_____

_____

_____

B) DO YOU PERSONALLY REGARD YOURSELF AS A "NATURALLY TENSE PERSON" ? (ie. Are you anxious about something most of the time ?) YES NO

(If "YES", elaborate on this:)_____

_____

_____

C) HOW FAR BACK IN YOUR ACADEMIC CAREER ARE YOU ABLE TO TRACE EVIDENCE OF DISABLING EXAM ANXIETY ? (Tick appropriate circle)

- ○ At Primary School (pre-Std. 6 / Form 1)
- ○ At High School (pre-Std. 10 / Form 5)
- ○ In 'Matric' (Std. 10 / Form 5/6)
- ○ While at University

D) WOULD YOU/HAVE YOU EVER SERIOUSLY CONSIDERED COMMITING SELF-INJURY IN ORDER TO TENTATIVELY AVOID SITTING AN EXAM ABOUT WHICH YOU FEEL/ FELT PARTICULARLY ANXIOUS ? (Please give details)

_____

_____

_____

_____

_____

(MANAGEMENT OF EXAM ANXIETY - DESCRIPTIVE SCHEDULE CONTINUED...)

E) GIVEN THE FOLLOWING LIST OF PHYSIOLOGICAL REACTIONS TO STRESS, WHICH, IF ANY, DO YOU EXPERIENCE DURING OR PRIOR TO AN EXAM : (Tick appropriate circle)

- ○ PERSPIRATION (Specify area - _____)
- ○ "SHAKES" (Detail - _____)
- ○ DRY MOUTH
- ○ DIFFICULTIES IN BREATHING
- ○ "RACING" HEART BEAT
- ○ HEADACHES (Detail Intensity - _____)
- ○ FEELINGS OF NAUSEA
- ○ INSOMNIA (Detail Intensity - _____)
- ○ OTHER (Specify - _____
  _____
  _____
  _____
  _____)

F) WHAT 'STRATEGIES' DO YOU USE (IF ANY) IN AN ATTEMPT TO ALLEVIATE UNDUE TENSION BEFORE OR DURING AN EXAM ? (Tick and Specify)

- ○ Taking Barbiturates/Analgesics (Eg. 'Calmettes')
  _____
  _____
- ○ Increase Smoking-rate or the intake of alcohol
  _____
  _____
- ○ Engage in generally exhaustive exercise
  _____
  _____
- ○ Practice T.M., Yoga, or related relaxation techniques
  _____
  _____
- ○ Other 'strategies'
  _____

# APPENDIX F



MANAGEMENT OF EXAM ANXIETY - A DESCRIPTIVE PROFILE PART ONE

In the course of this schedule, a number of statements are presented for your consideration in an attempt to determine various personality traits involved in University examinations. Alongside each of these statements is a set of figures, the meaning of which appears below (see 'Frequency Code'). By placing an 'X' in the appropriate square, you are required to indicate which frequency (1-5) best describes you, given the statement in question. Remember that there is no "ideal" response; give the one that is most true of your experience.

FREQUENCY CODE :

WHERE 1 means "no"; "never"; "not at all"; etc.
2 means "sometimes"; "seldom"; "a little"; etc.
3 means "about as often as not"; "an average amount"; etc.
4 means "quite often"; "usually"; "a good deal"; etc.
5 means "pratically always"; "entirely"; etc.

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

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

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

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

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

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

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

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

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

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

6) I look forward to exams.

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

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

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

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

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

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

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

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

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

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

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

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

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

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

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

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

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

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

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

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

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

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

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

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

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

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

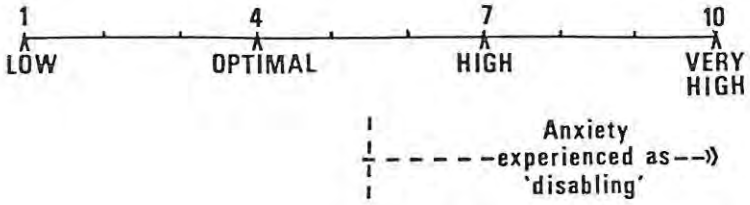
| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

# APPENDIX F



A COPY OF THE ANTICIPATED ANXIETY RATING SCALE

ANXIETY CONTINUUM KEY




WHERE: "LOW ANXIETY" refers to a totally carefree attitude; entirely devoid of any conscious feelings of anxiety.

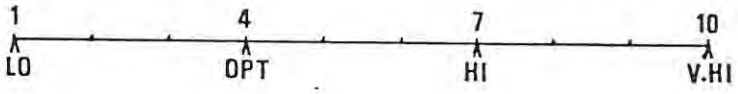
"OPTIMAL ANXIETY" indicates that the individual experiences a moderate amount of anxiety consciously, but far from being 'disabling', the feeling is found to be stimulating; almost exciting.

"HIGH ANXIETY" indicates that the anxiety experienced is somehow discomforting, to the extent that it becomes disabling.

"VERY HIGH ANXIETY" indicates that the anxiety is experienced as totally uncontrollable and is extremely upsetting to the Subject; fundamental physiological side-effects come to the fore at this level of intensity.

GIVEN THE ABOVE CONTINUUM CODE, RATE THE FOLLOWING LIST OF EXAM SITUATIONS (SET IN THE CONTEXT OF RHODES UNIVERSITY), BY CLEARLY PLACING AN ASTERISK (*) AT THE APPROPRIATE POINT ALONG THE CONTINUUM :

(i) One month prior to an exam




(ii) Three days prior to an exam


(iii) The evening prior to an exam


(iv) Walking/Driving to the exam hall on the day of the exam

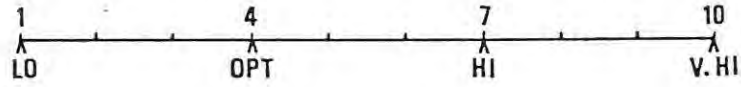
(ANTICIPATED ANXIETY RATING SCALE CONTINUED...)

(v) Sitting in the exam hall, in anticipation of the distribution of the exam scripts


(vi) During "reading time", five minutes prior to the start of an exam


(vii) While writing the exam paper


(viii) Awaiting the results of the exam through the mail




## A COPY OF THE SUBJECTIVE UNITS OF DISTURBANCE (SUD) SCALE

In order to determine more accurately subjective assessments about one's own level of anxiety at any given moment, an anxiety score-scale of 0-100 has been proposed - based on the following ranked guideline :-

| | |
|---|---|
| 0 | TOTALLY DEVOID OF ANXIETY |
| 25 | SLIGHTLY TENSE, BUT THIS TENSION IS NOT EVIDENT, UNLESS SPECIFICALLY REFLECTED UPON |
| 50 | STRONG FEELINGS OF ANXIETY, BUT NOT TO THE EXTENT OF EXPERIENCING ANY PHYSIOLOGICAL SIDE-EFFECTS |
| 75 | EXTREMELY ANXIOUS WITH EVIDENCE OF MILD PHYSIOLOGICAL SIDE-EFFECTS (Nausea; tension headaches...) |
| 100 ↓ | UNCONTROLLABLY ANXIOUS, WITH EXTREME PHYSIOLOGICAL SIDE-EFFECTS (Vomiting; Migraine; Shakes...) |

For example, while completing this document, you may be feeling just a little anxious, but may acknowledge the presence of minial anxiety only upon reflection; hence you may indicate your anxiety-level presently to be about 32.

(SUBJECTIVE UNITS OF DISTURBANCE SCALE CONTINUED...)

With this scale in mind, score your anticipated anxiety level for each of the following situations (which were constructed by a panel of Student Judges from Rhodes, and are presented here chronologically for reasons of convenience only):

| EVENT | ANXIETY SCORE SCALE : 0-100 |
|---|---|
| a) While completing this questionnaire | _____ |
| b) One week before an exam | _____ |
| c) Four days before an exam | _____ |
| d) Three days before an exam | _____ |
| e) Two days before an exam | _____ |
| f) One day before an exam | _____ |
| g) The night before an exam | _____ |
| h) An hour before an exam | _____ |
| i) Walking/Driving to the exam hall | _____ |
| j) Standing before the unopened doors of the exam hall | _____ |
| k) Awaiting distribution of the exam papers | _____ |
| l) Staring at the "face down" exam paper | _____ |
| m) Reading the paper during "reading time" (5 mins before the exam) | _____ |
| n) In the process of answering the paper | _____ |
| o) When the final 5 minutes is called at the end of the exam | _____ |
| p) Waiting for the results to arrive in the mail | _____ |

ONCE YOU HAVE COMPLETED THIS TASK, PLEASE STORE THIS SHEET SAFELY AND BRING IT WITH YOU WHEN YOU COME FOR THE TWENTY-MINUTE INITIAL ASSESSMENT.

THANK YOU !

## A COPY OF THE IN VIVO ANXIETY SCHEDULE

Using the anxiety score-scale (0-100) with which you are familiar, you are required to monitor your levels of anxiety during each of the situations cited below, in terms of the score scale. Obviously, because no documents of this type are permitted in the examination hall, you are advised to 'jot down' values on your question paper, or to make a 'mental note' of your anxiety level at specific intervals, which you can later transfer onto the table given below. You will also be given a number of copies of the table, to enable you to monitor your anxiety levels throughout all the exams you write during this period.

# APPENDIX F



(A COPY OF THE IN VIVO ANXIETY SCHEDULE CONTINUED...)

You are however required to submit only three forms, which should (respectively) reflect the exam you experienced:

(a) the greatest anxiety over;

and (b) the least anxiety over;

These (a & b) should be submitted together with (c) a list reflecting the 'mean anxiety' levels experienced by you during the exam period as a whole.

| EVENT | ANXIETY SCORE SCALE : 0-100 |
|---|---|
| a) While completing this questionnaire | _____ |
| b) One week before an exam | _____ |
| c) Four days before an exam | _____ |
| d) Three days before an exam | _____ |
| e) Two days before an exam | _____ |
| f) One day before an exam | _____ |
| g) The night before an exam | _____ |
| h) An hour before an exam | _____ |
| i) Walking/Driving to the exam hall | _____ |
| j) Standing before the unopened doors of the exam hall | _____ |
| k) Awaiting distribution of the exam papers | _____ |
| l) Staring at the "face down" exam paper | _____ |
| m) Reading the paper during "reading time" (5 mins before the exam) | _____ |
| n) In the process of answering the paper | _____ |
| o) When the final 5 minutes is called at the end of the exam | _____ |
| p) Waiting for the results to arrive in the mail | _____ |

DEPICTION OF THE PULSE WATCH EMPLOYED IN THE PRESENT STUDY. →

(THE PULSE WATCH WAS HIRED FROM THE LOCAL DISTRIBUTERS, WOLMAN ENTERPRISES OF JOHANNESBURG)

# APPENDIX F



## THE TREATMENT EVALUATION QUESTIONNAIRE
## (OR CONFIDENCE INDEX)

THIS SCHEDULE IS INTENDED TO BE AN OBJECTIVE AND HONEST ASSESSMENT BY YOU OF THE PARTICULAR TREATMENT PROGRAMME YOU UNDERWENT IN THE COURSE OF THIS RESEARCH. INDICATE YOUR RESPONSE CLEARLY, BY PLACING A CIRCLE AROUND THE MOST APPLICABLE DIGIT.

1) In the course of this treatment programme you were coached in the use of specific skills/abilities; how did you find the acquisition of such skills ?

DIFFICULT TO ACQUIRE 1 2 3 4 5 6 7 EASY TO ACQUIRE

Comment: _____

_____

_____

2) In your opinion, how competently was the treatment programme presented to you by the Supervisor ?

NOT VERY COMPETENTLY 1 2 3 4 5 6 7 HIGHLY COMPETENTLY

Comment: _____

_____

_____

3) To what extent did you experience the group sessions as 'enjoyable' (ie. as something you looked forward to) ?

NOT AT ALL ENJOYABLE 1 2 3 4 5 6 7 HIGHLY ENJOYABLE

Comment: _____

_____

_____

4) Did you at any stage during or in-between sessions feel you were wasting your time doing the research programme ?

OFTEN 1 2 3 4 5 6 7 NEVER

Comment: _____

_____

_____

(TREATMENT EVALUATION QUESTIONNAIRE/CONFIDENCE INDEX CONT...)

5) Quite often, programmes designed to reduce the debilitative effects of anxiety resulting out of the exam situation, also enable the participant involved in such a programme to become socially more 'agreeable' (in that they are generally more communicative and less irritable than was previously the case during exams). To what extent do you find this true of your own experiences ?

NOT AT ALL TRUE OF ME 1 2 3 4 5 6 7 VERY TRUE OF ME

Comment: _____

_____

_____

6) How durable (long-lasting) do you think the effects of the programme will be for you (given the skills/abilities you have now acquired) as far as future exam encounters are concerned ?

NOT VERY DURABLE 1 2 3 4 5 6 7 VERY DURABLE

Comment: _____

_____

_____

WHAT MODIFICATIONS (IF ANY) WOULD YOU PERSONALLY PROPOSE FOR THE IMPROVEMENT OF THIS TREATMENT PROGRAMME ?

_____

_____

_____

_____

_____

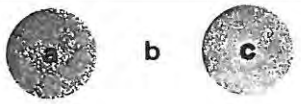
_____

_____

_____

JUNE 1981

SCORE SHEET USED TO MONITOR PULSE RATE




| BASELINE (b/m) | |
|---|---|

| MEASURE INTERVAL | b/m | Δ FROM BASELINE |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

÷ 3 =

| POST-ASSESSMENT (b/m) | |
|---|---|

APPENDIX F10

NOV. 1981

| BASELINE (b/m) | |
|---|---|

| MEASURE INTERVAL | b/m | Δ FROM BASELINE |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

÷ 3 =

| POST-ASSESSMENT (b/m) | |
|---|---|

## JUNE 1982

SCORE SHEET USED TO MONITOR PULSE RATE

| BASELINE (b/m) | |
|---|---|

| MEASURE INTERVAL | b/m | Δ FROM BASELINE |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

| | | |
|---|---|---|
| | ÷ 3 = | |

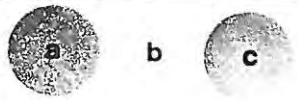
| POST-ASSESSMENT (b/m) | |
|---|---|

## • SYNOPSIS

| | ($\bar{X}$) Δ FROM BASELINE | Δ |
|---|---|---|
| • JUNE 1981 | | |
| • NOV. 1981 | | |
| • JUNE 1982 | | |

## JUNE 1981

SCORE SHEET USED TO MONITOR FINGER SWEAT PRINT




| BASELINE RATING | |
|---|---|

| PERIOD | RATING | Δ FROM BASELINE |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

÷ 3 = . 

| POST-ASSESSMENT RATING | |
|---|---|

PEAK

APPENDIX F 11

## NOV. 1981

| BASELINE RATING | |
|---|---|

| PERIOD | RATING | Δ FROM BASELINE |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

÷ 3 = . 

| POST-ASSESSMENT RATING | |
|---|---|

PEAK

## JUNE 1982

SCORE SHEET USED TO MONITOR FINGER SWEAT PRINT

| BASELINE RATING | |
|---|---|

| PERIOD | RATING | Δ FROM BASELINE |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

÷ 3 = . 

| POST-ASSESSMENT RATING | |
|---|---|

PEAK

## SYNOPSIS

| Peak Comparison | B | P | Peak Δ |
|---|---|---|---|
| • JUNE 1981 | | | |
| • NOV. 1981 | | | |
| • JUNE 1982 | | | |

# APPENDIX G



TABLE G.T1a DESCRIPTION OF PRE-TREATMENT SCORES DERIVED FROM THE MANAGEMENT OF EXAM ANXIETY SCHEDULE

| TREATMENT GROUPS | SUM | MEAN | STD. DEV. | VARIANCE | N |
|---|---|---|---|---|---|
| CONTROL GROUPS | 157 | 12,67 | 11,32 | 130,533 | 12 |
| PLACEBO 'PROGRAMME' | 199 | 15,18 | 8,34 | 70,222 | 13 |
| STUDY SKILLS TRAINING | 183 | 14,11 | 9,99 | 99,836 | 13 |
| SYS. DESENS.- METHOD A | 192 | 14,64 | 9,03 | 81,919 | 13 |
| SYS. DESENS.- METHOD B | 214 | 16,41 | 10,80 | 116,772 | 13 |

TABLE G.T1b DESCRIPTION OF POST-TREATMENT SCORES DERIVED FROM THE MANAGEMENT OF EXAM ANXIETY SCHEDULE

| TREATMENT GROUPS | SUM | MEAN | STD. DEV | VARIANCE | N |
|---|---|---|---|---|---|
| CONTROL GROUPS | 187 | 15,58 | 10,06 | 102,817 | 12 |
| PLACEBO 'PROGRAMME' | 135 | 10,35 | 8,12 | 67,222 | 13 |
| STUDY SKILLS TRAINING | 46 | 3,54 | 11,95 | 145,693 | 13 |
| SYS. DESENS.- METHOD A | 17 | 1,31 | 12,34 | 152,986 | 13 |
| SYS. DESENS.- METHOD B | -12 | - 0,97 | 10,32 | 106,626 | 13 |

TABLE G.T1c DESCRIPTION OF 6-MONTH FOLLOW-UP SCORES DERIVED FROM THE MANAGEMENT OF EXAM ANXIETY SCHEDULE

| TREATMENT GROUPS | SUM | MEAN | STD. DEV | VARIANCE | N |
|---|---|---|---|---|---|
| CONTROL GROUPS | 138 | 11,50 | 9,29 | 86,800 | 12 |
| PLACEBO 'PROGRAMME' | 133 | 10,24 | 8,21 | 68,372 | 13 |
| STUDY SKILLS TRAINING | 10 | 0,91 | 15,60 | 243,339 | 13 |
| SYS. DESENS.- METHOD A | -22 | - 1,80 | 8,38 | 74,793 | 13 |
| SYS. DESENS.- METHOD B | -106 | - 8,19 | 9,25 | 86,219 | 13 |

TABLE G.T2a DESCRIPTION OF PRE-TREATMENT SCORES DERIVED FROM THE SUD-SCALE

| TREATMENT GROUPS | SUM | MEAN | STD. DEV | VARIANCE | N |
|---|---|---|---|---|---|
| CONTROL GROUPS | 743 | 61,92 | 4,46 | 20,084 | 12 |
| PLACEBO 'PROGRAMME' | 742 | 57,27 | 9,26 | 86,003 | 13 |
| STUDY SKILLS TRAINING | 767 | 59,43 | 7,38 | 54,738 | 13 |
| SYS. DESENS.- METHOD A | 739 | 56,86 | 7,52 | 56,623 | 13 |
| SYS. DESENS.- METHOD B | 749 | 57,67 | 8,15 | 67,334 | 13 |

TABLE G.T2b DESCRIPTION OF POST-TREATMENT SCORES DERIVED FROM THE SUD-SCALE

| TREATMENT GROUPS | SUM | MEAN | STD. DEV | VARIANCE | N |
|---|---|---|---|---|---|
| CONTROL GROUPS | 768 | 64,00 | 5,39 | 29,067 | 12 |
| PLACEBO 'PROGRAMME' | 729 | 56,17 | 10,62 | 94,700 | 13 |
| STUDY SKILLS TRAINING | 730 | 56,44 | 8,75 | 76,969 | 13 |
| SYS. DESENS.- METHOD A | 674 | 51,89 | 8,58 | 73,636 | 13 |
| SYS. DESENS.- METHOD B | 643 | 49,53 | 8,02 | 64,619 | 13 |

TABLE G.T2c DESCRIPTION OF 6-MONTH FOLLOW-UP SCORES DERIVED FROM THE SUD-SCALE

| TREATMENT GROUPS | SUM | MEAN | STD. DEV | VARIANCE | N |
|---|---|---|---|---|---|
| CONTROL GROUPS | 778 | 64,83 | 8,47 | 20,034 | 12 |
| PLACEBO 'PROGRAMME' | 759 | 58,58 | 8,89 | 79,484 | 13 |
| STUDY SKILLS TRAINING | 722 | 55,94 | 8,82 | 78,169 | 13 |
| SYS. DESENS.- METHOD A | 660 | 50,79 | 9,41 | 88,705 | 13 |
| SYS. DESENS.- METHOD B | 586 | 45,04 | 8,11 | 66,026 | 13 |

TABLE G.T3a DESCRIPTION OF PRE-TREATMENT SCORES DERIVED FROM THE FINGER SWEAT PRINT MEASURE

| TREATMENT GROUPS | SUM | MEAN | STD. DEV | VARIANCE | N |
|---|---|---|---|---|---|
| CONTROL GROUP | 70,5 | 5,88 | 1,58 | 2,538 | 12 |
| PLACEBO 'PROGRAMME' | 85,0 | 6,51 | 1,19 | 1,439 | 13 |
| STUDY SKILLS TRAINING | 78,0 | 6,05 | 0,87 | 0,759 | 13 |
| SYS. DESENS.- METHOD A | 87,0 | 6,69 | 1,59 | 2,536 | 13 |
| SYS. DESENS.- METHOD B | 82,5 | 6,36 | 1,29 | 1,736 | 13 |

TABLE G.T3b DESCRIPTION OF POST-TREATMENT SCORES DERIVED FROM THE FINGER SWEAT PRINT MEASURE

| TREATMENT GROUPS | SUM | MEAN | STD. DEV | VARIANCE | N |
|---|---|---|---|---|---|
| CONTROL GROUP | 71,0 | 5,96 | 1,21 | 1,521 | 12 |
| PLACEBO 'PROGRAMME' | 80,0 | 6,14 | 1,04 | 1,143 | 13 |
| STUDY SKILLS TRAINING | 67,0 | 5,18 | 1,15 | 1,330 | 13 |
| SYS. DESENS.- METHOD A | 65,0 | 5,04 | 1,36 | 1,880 | 13 |
| SYS. DESENS.- METHOD B | 61,0 | 4,77 | 0,99 | 0,990 | 13 |

TABLE G.T3c DESCRIPTION OF 6-MONTH FOLLOW-UP SCORES DERIVED FROM THE FINGER SWEAT PRINT MEASURE

| TREATMENT GROUPS | SUM | MEAN | STD. DEV | VARIANCE | N |
|---|---|---|---|---|---|
| CONTROL GROUPS | 59,5 | 4,96 | 2,14 | 4,605 | 12 |
| PLACEBO 'PROGRAMME' | 69,5 | 5,39 | 2,21 | 4,878 | 13 |
| STUDY SKILLS TRAINING | 57,5 | 4,40 | 1,98 | 3,919 | 13 |
| SYS. DESENS.- METHOD A | 55,0 | 4,20 | 1,67 | 2,943 | 13 |
| SYS. DESENS.- METHOD B | 52,0 | 4,04 | 1,38 | 1,938 | 13 |

TABLE G.T4a DESCRIPTION OF PRE-TREATMENT SCORES DERIVED FROM THE ACADEMIC PERFORMANCE MEASURE

| TREATMENT GROUPS | SUM | MEAN | STD. DEV | VARIANCE | N |
|---|---|---|---|---|---|
| CONTROL GROUPS | 45 | 3,75 | 8,64 | 78,417 | 12 |
| PLACEBO 'PROGRAMME' | 2 | 0,08 | 9,40 | 89,350 | 13 |
| STUDY SKILLS TRAINING | -23 | -1,60 | 7,62 | 65,319 | 13 |
| SYS. DESENS.- METHOD A | -11 | 0,60 | 7,04 | 50,369 | 13 |
| SYS. DESENS.- METHOD B | -21 | -0,11 | 6,63 | 44,103 | 13 |

TABLE G.T4b DESCRIPTION OF POST-TREATMENT SCORES DERIVED FROM THE ACADEMIC PERFORMANCE MEASURE

| TREATMENT GROUPS | SUM | MEAN | STD. DEV | VARIANCE | N |
|---|---|---|---|---|---|
| CONTROL GROUPS | -15 | -1,25 | 5,63 | 32,550 | 12 |
| PLACEBO 'PROGRAMME' | -26 | -2,05 | 8,03 | 69,310 | 13 |
| STUDY SKILLS TRAINING | 42 | 3,32 | 7,27 | 64,555 | 13 |
| SYS. DESENS.- METHOD A | 51 | 3,98 | 5,36 | 28,919 | 13 |
| SYS. DESENS.- METHOD B | 75 | 5,97 | 5,76 | 33,260 | 13 |

TABLE G.T4c DESCRIPTION OF 6-MONTH FOLLOW-UP SCORES DERIVED FROM THE ACADEMIC PERFORMANCE MEASURE

| TREATMENT GROUPS | SUM | MEAN | STD. DEV | VARIANCE | N |
|---|---|---|---|---|---|
| CONTROL GROUPS | -26 | -2,17 | 5,35 | 28,967 | 12 |
| PLACEBO 'PROGRAMME' | -15 | -1,29 | 5,93 | 44,776 | 13 |
| STUDY SKILLS TRAINING | 71 | 5,61 | 8,19 | 79,303 | 13 |
| SYS. DESENS.- METHOD A | 42 | 3,31 | 5,75 | 36,353 | 13 |
| SYS. DESENS.- METHOD B | 32 | 2,43 | 4,41 | 19,638 | 13 |

TABLE G.T5 DESCRIPTION OF SCORES DERIVED ON THE TREATMENT EVALUATION QUESTIONNAIRE - THE CONFIDENCE INDEX

| TREATMENT GROUPS | SUM | MEAN | STD. DEV | VARIANCE | N |
|---|---|---|---|---|---|
| CONTROL GROUPS | DID NOT COMPLETE THIS SCHEDULE | | | | |
| PLACEBO 'PROGRAMME' | 356 | 27,41 | 5,42 | 30,105 | 13 |
| STUDY SKILLS TRAINING | 312 | 23,86 | 8,13 | 68,653 | 13 |
| SYS. DESENS.- METHOD A | 373 | 28,72 | 3,81 | 23,277 | 13 |
| SYS. DESENS.- METHOD B | 413 | 31,82 | 3,56 | 18,555 | 13 |

# APPENDIX H



SUBJECTS WHO INDIVIDUALLY SCORED THE HIGHEST

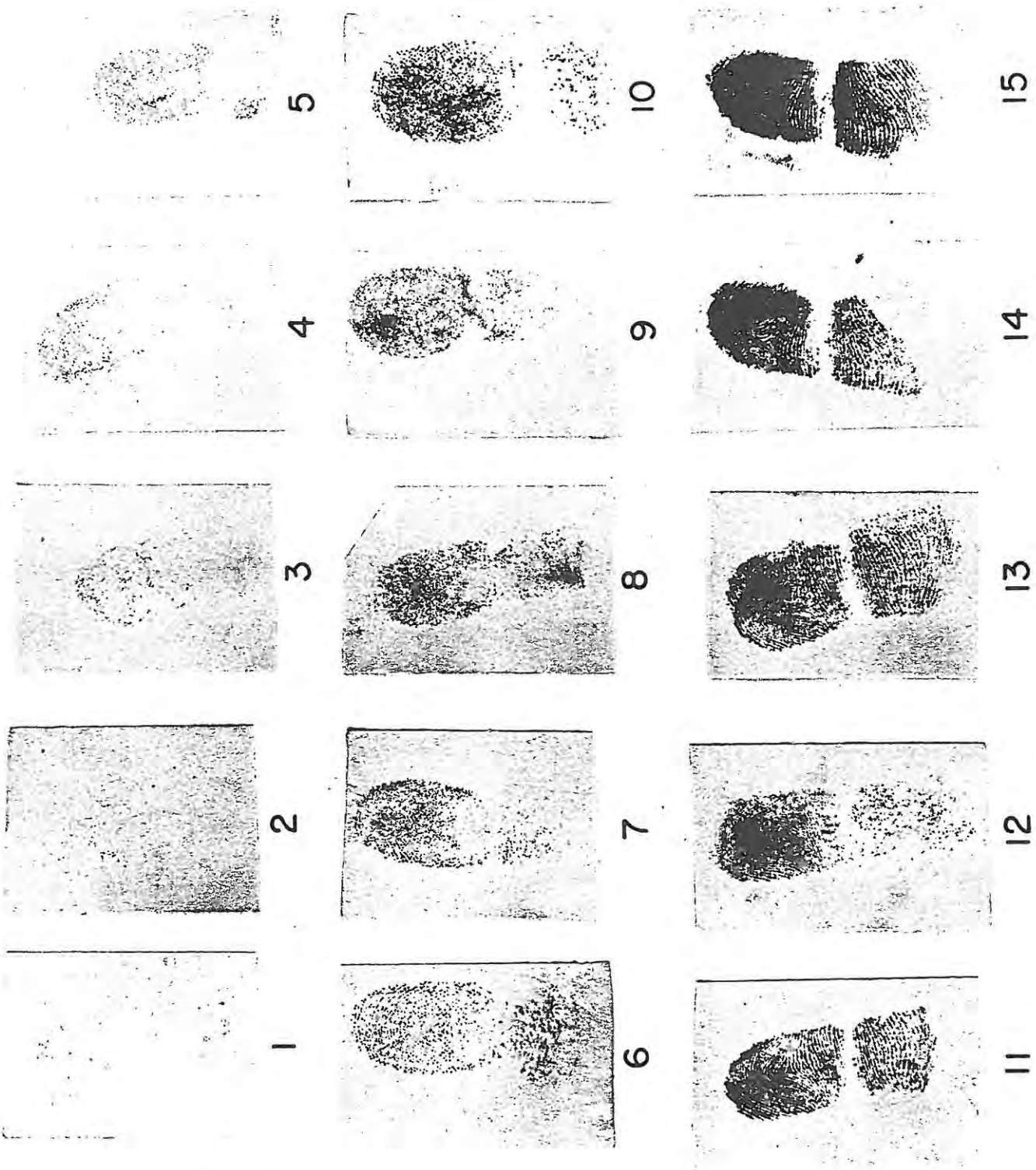
AND THE LOWEST ON THE CONFIDENCE INDEX

| ITEMS LISTED ON THE CONFIDENCE INDEX (DESCRIBED AS THE TREATMENT EVALUATION QUESTIONNAIRE) | TOP SCORER (S FROM SST) | LOWEST SCORER (S FROM SD-B) |
|---|---|---|
| (1) In the course of this treatment programme you were coached in the use of specific skills/abilities; how did you find the acquisition of such skills? (Difficult/Easy to acquire). | 5 | 2 |
| (2) In your opinion, how competently was the treatment programme presented to you by the Supervisor? (Not Very/Highly competently). | 6 | 3 |
| (3) To what extent did you experience the group sessions as 'enjoyable'? (Not at all/Highly enjoyable). | 6 | 1 |
| (4) Did you at any stage during or in-between sessions feel you were wasting your time doing the research programme? (Often/Never). | 7 | 3 |
| (5) Quite often, programmes designed to reduce the debilitative effects of anxiety resulting out of the exam situation, also enable the participant involved...to become socially more 'agreeable'...To what extent do you find this true of your own experiences? (Not at all-/Very True- of me). | 7 | 4 |
| (6) How durable (long-lasting) do you think the effects of the programme will be for you (given the skills/abilities you have now acquired) as far as future exam encounters are concerned? (Not very-/Very- Durable). | 7 | 4 |
| TOTALS ($\bar{x}$) | 6,3 | 2,8 |

# APPENDIX I



PHOTOCOPY OF THE FIFTEEN SPECIMEN PRINTS
USED IN THE FINGER SWEAT PRINT ASSESSMENT

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