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SYNERGISM -
A TREATMENT FOR THE REDUCTION OF SELF-PERCEIVED
STRESS AND ANXIETY

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SYNERGISM:

The doctrine that human energy co-operates with
Divine Grace in the work of healing.

(p. 1072 (Ed) E. Baker, The
New English Dictionary. London:
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ABSTRACT

SYNERGISM is a treatment for the reduction of self-perceived stress and anxiety.

SYNERGISM is a new technology for psychological intervention and does not rest on any previous technology. The rationale for the development of this new technique comprises the whole of the Literature Review of this thesis. SYNERGISM was developed on the basis of Patel's (1976) Savasan. No component analysis has been conducted to identify the critical variables in Savasan. Two reviews were conducted following the literature review which identified the critical variables, first in Savasan then in SYNERGISM.

Three experiments were conducted to examine the effects of SYNERGISM. It was hypothesised that Synergism would significantly reduce self-perceived stress. The first experiment established Cattell and Scheier's (1963) IPAT Anxiety Scale Questionnaire and its criterion score as a valid measure of self-perceived stress in a New Zealand student group. This Baseline Group consisted of 121 psychology students at Massey University. The second experiment then examined the effectiveness of Synergism to significantly reduce self-perceptions of stress in a group of 10 High Anxiety (Hi Anx) subjects, with a Control Group of 10 matching Hi Anx subjects. The statistical results, using analysis of variance (ANOVA) on IPAT-SAQ indicated significant reduction in self-perceived stress, as a result of SYNERGISM.

A third experiment was conducted using a SYNERGISM and a Placebo treatment condition with 10 subjects in each condi-

tion. Statistical analysis using ANOVA again demonstrated significant SYNERGISM treatment effects in reduction of self-perceived anxiety on the IPAT-SAQ measure.

Further detailed analysis using Shostrom's (1966) Personal Orientation Inventory proved a more complex study.

Two critical treatment variables in SYNERGISM are Heart Rate (HR) and Respiration Rate (RR). A great deal of attention is given these variables in the literature review. Analysis of HR/RR using a Self-Monitoring Schedule (SMS) demonstrated significant reductions in these variables. This was an important therapy finding.

Each experiment was conducted over a ten week period. Total elapsed time for the complete experiments was 24 weeks. The results established that SYNERGISM is an effective technology for the significant reduction of self-perceived stress.

It is evident that further studies are required to assess the efficacy of SYNERGISM as a new technology for psychological intervention using non-pharmacologic strategies.

DESCRIPTORS

ANS	Autonomic Nervous System
SR	Synergistic Relaxation
PMR	Progressive Muscle Relaxation
SD	Systematic Desensitisation
HR	Heart Rate
RR	Respiratory Response
EMG	Electromyograph
GSR	Galvanic Skin Response
Shavasan	Patel's technique (1976) (Savasan)
BP	Blood Pressure
Pranayam	} Breathing techniques
Ajap Ajap	
TM	Transcendental Meditation
MCR	Metronome Conditioning Relaxation
<u>in vivo</u>	Reality experience
PR	Pulse Rate
PTT	Pulse Transit Time
CCR	Cue Controlled Relaxation
SM	Self-Management
LOC	Locus of Control (I) Internal (E) External
C-A	Cue-Associated
S-C	Self-Control
SM	Self-Monitoring
CBM	Cognitive Behaviour Modification
CVD	Cardiovascular Disease
GAS	General Adaptation Syndrome (Selye, 1950)
Rr	Relaxation response
CNS	Central Nervous System
SNS	Sympathetic Nervous System
PNS	Parasympathetic Nervous System

CHAPTER 1

INTRODUCTION

- 1.1 General
- 1.2 Psychosomatic Illness
- 1.3 Psychotherapy
- 1.4 Control factors - Stress
- 1.5 Relaxation
- 1.6 Progressive Muscle Relaxation (PMR)
- 1.7 Systematic Desensitization (SD)
- 1.8 Savasan
- 1.9 Demystified - Self-Relaxation

CHAPTER 1

INTRODUCTION

1.1 General

The past decade has seen a proliferation of treatment and research interest in complex cognitive relaxation techniques, especially in the clinical areas covered by the content of this thesis. These areas include, cognitive behaviour change and self-control, (Goldfried and Merbaum, 1973; Thorenson and Mahoney, 1974; Meichenbaum, 1974; Goldfried and Davison, 1976; Morse and Watson, 1977), psychosomatic illness, (Hill, 1976) stress, (Seligman and Garver, 1975; Selye, 1976) stress and coping (Baude and Levine, 1978) and the current strategies objectively validated for the reduction of stress illness (e.g., hypertension) in the recent theses of Patel (1976) and Seer (1977). As can be seen this information is post-1970, and is extensive.

An analysis of stress and of the cue associated self-control (CA-SC) relaxation techniques which have been successful in the reduction of self-perceived stress, is critical to this thesis. It is not possible to review all the pertinent literature in each of these areas. A new model of stress is still being developed by Lazarus and Launier (1978) which may be broad enough to encompass the complex phenomena associated with stress. Stress in the context of this thesis is associated more with the medical and objective physiological

correlates of stress relating to hypertension (Harrell, 1980) and Cardio-Vascular Disease (CVD) (Buras, 1980). These determinants of stress are found to be more scientifically valid than the vague and often ambiguous psychological theories associated with psychoanalytic or personality variables. Relaxation techniques developed and tested along this paradigm have been eminently more successful in the reduction of actual stress than Progressive Muscle Relaxation (PMR) or Systematic Desensitization (SD) techniques (Blanchard and Ahles, 1979). CA-SC relaxation strategy was a central theme to Patel's (1976) thesis. Self-relaxation (Seer, 1977) was an attempt to demystify meditation.

The purpose of this thesis is to attempt to define and identify self-perceived stress as related to psychosomatic diseases, cardiovascular risk and anxiety and to develop an effective technique for the reduction of self-perceived stress. There is abundant evidence suggesting the influence of psychological factors in relation to stress and its relief. A general survey of psychotherapy (psychological intervention) reveals the commonality of procedures across most intervention modes and strategies. The over-riding aim of this analysis is to identify the key components of an effective relaxation technique from a review of the literature of relaxation.

It will be established that relaxation stands out as the major psychotherapeutic strategy. Recent developments in sophisticated biofeedback instrumentation and interest in the cognitive elements surrounding meditation has led towards the self-control strategies currently being researched.

This research is changing previously held concepts concerning relaxation (Davidson and Schwartz, 1976).

Research into hypertension is extensive (Harrell, 1980). This research is not covered in depth in this thesis. It is too substantive a task. It is pertinent to this thesis insofar as Patel's (1976) thesis and Seer's (1977) thesis, lends new direction to research into cognitive self-coping relaxation methods. Both theses dealt specifically with hypertension and the reduction of blood pressure (BP) using relaxation/meditation techniques. The reduction of BP in hypertension, and the concomitant reduction in stress is measured by objective criteria i.e., blood pressure is either lowered by relaxation, in which case the technique must be considered effective, or it is raised (an objective criteria of stress reaction). The most effective objectively evaluated technique to date has been Savasan (Datey, 1969). A number of detailed reviews attest to this (Jacobs et.al., 1977; Frankel et.al., 1978; Frumkin et.al., 1978; and Blanchard and Ahles, 1979).

This thesis uses as it's basic rationale for relaxation the psychophysiological correlates of stress reduction identified in the literature pertaining to the altered states of consciousness variously referred to as sleep, relaxation, meditation, hypnosis as well as the physiology of respiration and the neuro- and bio-chemical physiology of arousal. These correlates will be identified and discussed as they appear relevant throughout the literature review.

Insofar as this thesis rests on objective criteria for

the underlying rationale, it needs to be stated that the conceptual basis has a medical orientation. This has the advantage of scientific validation. Little reference is made to psychological constructs of personality. Use is made of self-report questionnaires as a means of behavioural assessment. These are dealt with, within an existential/experiential framework. The Maslowvian model of a self-potentializing, self-responsible, healthy human achieving peak experiences and developing B-values is preferred to the medical sickness model (Maslow, 1977).

The emphasis of this thesis is on non-pharmacological intervention. The inference is that this is the domain of the psychologist/psychotherapist. The optimum approach of psychotherapy aims towards a marriage of the two professions of psychology and medicine. Hence 'behavioural medicine' has been coined to refer to psychotherapy which is adjunctive to the medical practitioner and uses behavioural intervention strategies which focus on causal events earlier in the pro-
pylactic chain than drug therapy. Whilst a detailed account of behavioural medicine is not given, the influence of the medical/physiological model is pervasive throughout this thesis. The medical specialist is often the first to diagnose and/or treat the presenting problems referred to in this thesis. The physician must often take both initiative and priority in identification, treatment and in emergencies. Also, the medical practitioner is the only person trained to diagnose 'real' events such as ulcer, migraine, spinal/visceral damage, trauma, CVD and other such disorders.

Often, these disorders may have a psychophysiological

etiology, suggesting anxiety, stress, emotional disorders or neurotic behaviour. Short-term intervention and treatment of the presenting problem may require medical intervention in the form of drugs, surgery or other forms of strictly medical attention, to reduce the immediate and 'real' stress. The point of intervention of the psychologist is often a discretionary one (Brammer and Shostrom, 1977).

It is considered that the evaluation of the effectiveness of treatment whether medical or psychotherapeutic, should be addressed in terms of the following criteria. Treatment must be shown to lead to changes which are not only preferably statistically significant, but, and most important, must be capable of bringing about worthwhile and lasting improvements in a person's life. Quality of life therefore, becomes a key issue.

In Synergism the aim is not relaxation only. Synergism involves less actual counselling. It is an educationally based technique which leads to a self-responsible posture in adaptive coping and appropriate responding to actual life events in vivo. It preconditions life-style changes and influences radical changes in interpersonal behaviour. The key active components to be identified in the measurement of effectiveness of synergism must be related to attitude modification or cognitive restructuring.

This introduction will overview what are considered critical conceptual areas. The purpose is to indicate the problem and current attempts at its solution. It is felt psychotherapists (especially clinical psychologists) need to address themselves to a domain currently the subject of

intensive medical research. Most of the focus of the medical references given is directed to meditation as an adjunctive treatment or palliative for psychosomatic diseases. Synergism offers a 'demystified' research-oriented CA-SC relaxation technology.

In the following sub-sections an attempt will be made to define and identify the problem in terms of psychosomatic illness. The role of psychotherapy in the induction of relaxation for the alleviation of psychosomatic illness, and the consequent improvement not only in individual adjustment/coping skills but also in quality of life issues is emphasised. The control factors associated which influence the control of stress in psychosomatic illness will be briefly over-viewed. Often a reduction in the symptoms and more importantly a shift in the perceived locus of control takes place during relaxation training. A general survey of current relaxation methods and a summary of each major technique in current use by psychotherapists and medical practitioners is given. The underlying conceptual issues related to each is also briefly reviewed.

The logic of the framework of this Introduction is synergistic.¹ That is, it proceeds in a step-wise fashion from general principles, aims and objectives. These have been already identified as underlying the schema of this thesis. The reader then moves progressively and cumulatively from

¹ Synergists are muscles which eliminate unnecessary movement and act to coordinate the smoothness and efficiency of skeletal muscles. (Brooks, S.M., Basic Science and the Human Body, St. Louis: Mosby, 1975).

PMR through SD to Savasan and the most current use of successful CA-SC relaxation strategies, in the Self-Relaxing Training of Seer (1977).

The words Synergy, synergistic and synergism when used throughout this thesis, refer to a new technique - SYNERGISM which is considered by the author to convey the essence of the physiological basis for the use of this word. SYNERGISM is a new more sophisticated research oriented CA-SC relaxation technique. Each stepwise progressive part of the technique is a necessary pre-condition to the next phase.

1.2 Psychosomatic Illness

Alexander et.al., (1968) and the ideas promoted by their book, dominated research into psychosomatic illness for many years. They postulated that essential hypertension, peptic ulcers, asthma and a host of other "diseases" were mediated through psychological mechanisms. In their recommendations for treatment the authors described psychological constellations specific to each illness. Due to the psychiatric orientation, these doctors incorporated a psychoanalytic rationale into the treatment regimen. The hypothesis suggested specific psychological vulnerability to specific disease. This attractive but extreme view has not been validated (Lipowski, 1976).

Current research into Ischaemic heart disease (Burch, 1980) Hypertension (Harrel, 1980) and a recent symposium on hypertension (Perloff, 1977) are quite categoric about the intimate relationship between these illnesses and the functional/psychogenic mechanisms responsible. These illnesses

are held to be centrally responsible for the bulk of psychosomatic disorders. Others include vascular headaches, tension headaches, asthma, gastro-intestinal disorders and the hyperventilation syndrome. All except the latter are dealt with in detail in Chapter 2 (2:1 - Psychophysiologic disorders). The hyperventilation syndrome is dealt with in detail also in Chapter 2 (2:7 - Respiration). Anorexia Nervosa, Obesity, Epilepsy and other disorders which have identifiable psychogenic mechanisms are not specifically dealt with in detail although these and smoking or other "illness" models are successfully treated with behaviourally oriented treatment programmes. The purpose of the inclusion of illnesses in the review of literature is to indicate that in medically oriented illnesses such as hypertension and CVD the major non-pharmacological intervention technique is relaxation, coupled with self-monitoring, cue-associated self-control (CA-SC) procedures. Obrist (1974) and others have made it abundantly clear that all components of the cardiovascular system are very responsive to cognitive intervention.

Ostfeld (1973) asked the pertinent question "What is the payoff in hypertension research?" The analysis in the review of literature attempts to answer part of this question. The first part of any answer directed to Ostfeld's (1974) question quite obviously is the identification of the specific interacting variables between the neuro-, bio-chemical and physiological mechanisms which induce or reduce stress. These are dealt with where relevant, and constitute the basic rationale of Synergism. The interrelationship of these variables with psychogenic factors is also dealt with as relevant.

The section on psychophysiological disorders (Chapter 2 section 2:1) is primarily an analysis to identify the commonality factors from which a successful relaxation technique can be developed.

"Growing knowledge about the impact of psychosocial factors is likely to have a major role to play in the prevention of disease.... Increasingly we see the logic of devoting resources to the maintenance of health as well as the treatment of illness." (Hill, 1977, p.123)

1.3 Psychotherapy

There are a number of psychologically oriented intervention strategies which are available to serve a community (Wallen, Hauserman and Lavin, 1977). Three areas of intervention suggest themselves and seem to have been a traditional domain of the psychotherapist and counsellor until recently. Psychotherapy will be the most widely used term throughout this thesis. Where used it will also imply counselling techniques. The three intervention areas relate to:

- a) Psychophysiological disorders
- b) Stress - neurotic disorders
- c) Anxiety - social skills training

In each of these three areas most of the significant research referred to, as has already been indicated, is post-1970. The following pattern of intervention strategy will be shown to emerge from current procedures in detail in each area in Chapter 2.

- 1. Rationale (Cognitive restructuring)
- 2. Relaxation
- 3. Imagery and Fantasy

4. Self-coping Skills training
5. Cue-associated, self-control techniques (CA-SC)
6. "In vivo" generalization of self-coping strategies

This will be referred to as the "Six Stage Model" in this thesis. Each area will be identified separately and the significant disorders relating to each will be briefly reviewed. The purpose of the detailed review in Chapter 2 is to establish the primacy of relaxation as a major therapeutic intervention strategy in psychotherapy.

A basic assumption concerning the induction of relaxation during psychotherapy is that the regular practice of relaxation has a therapeutic effect. The effects of relaxation are complex, involving factors such as regular practice, placebo and mode specific responses. Each of these specific factors will be dealt with in subsequent sections of the literature review.

Psychotherapy is an overall rubric used to describe the general therapy area (Morse and Watson, 1977). The "Six Stage Model" identified above is a new post-1970 behaviour oriented cognitive therapy model.

Psychotherapy in the form of professional counselling, non-pharmacological intervention strategies or program evaluation, is essentially a long-term procedure. Its purpose is supportive and adjunctive to standard medical processes. In psychotherapy, a client-centred and holistic approach is often taken to attempt to reorient more healthy attitudes and to develop appropriate responding and adaptive coping skills. These intervention strategies may be non-pharmacological or

in conjunction with a particular medical regimen (Brammer and Shostrom, 1977).

It may appear less cost-effective to employ a psychotherapist, because these services are more time consuming. The teaching of appropriate responding and adaptive coping involves extensive use of relaxation, skills training, and could be in conjunction with other sophisticated procedures involving biofeedback and other cognitive oriented processes. In the long term, the alteration of inappropriate responding and the maladaptive behaviour patterns associated with this is considered cost effective in socio-cultural terms. Life style changes, and radical changes in interpersonal behaviour lead to the alleviation of the presenting problems to the individual and the immediate social milieu. In the long term, projects such as smoking reduction programmes, strategies in obesity intervention, and the reduction of CVD risk through implementation of relaxation programmes, must improve the quality of life in the community at large.

1.4 Control factors - Stress

There are three specific issues with regard to stress, self-perceived stress, and the control of stress to which this thesis will attempt to address itself. The three issues concern perceptions of self control, coping strategies and self-monitoring. Recent research indicates that there are many theoretical inadequacies and serious methodological weaknesses in much of the work in the areas of stress and coping (Rose and Levin, 1979).

There are also conceptual ambiguities. Selye (1936)

initially introduced the term STRESS to describe a physiological response pattern in animals. Since then the same label has been applied indiscriminately as a theoretical construct linking human emotions and behaviour. Whilst paying lip service to Selye's original concept, the conceptual jump from animal to human emotions and behaviour does not withstand close scrutiny (Miller, 1979). A new model of stress is desperately needed to account for the complex phenomena currently being observed. One is currently being attempted by Lazarus and Launier (1978).

It is only in this last decade that researchers and clinicians have begun to explicitly state that how people actually cope with stress is much more important than the frequency and severity of the stress episodes themselves (Roskies and Lazarus, 1980). This thesis will concern itself with specific factors arising from the research into the control of stress rather than attempt the almost impossible task of attempting to provide a rationale of stress. The three major stress control factors which emerge from the wealth of research literature concerning stress, its perception and its control will now be dealt with each in turn, i.e. self control, coping and self-monitoring.

Whether a person perceives self-control or admits that control is exercised by some external agency determines both the extent, duration and intensity of stress. This, at base, is Seligman's "Learned Helplessness" theory (1974). It has been criticized by Miller (1979) on the basis that the key variable is actually control or lack of it rather than learned helplessness. Research by clinical and social psy-

chologists into the correlates of stress determined by Seligman (1975) has validated his findings rather than the theoretical base. It is not intended in this thesis to become involved in the semantics of theoretical propositions e.g., helplessness versus control. Many theorists have moved from self-control to self-management. These terms are interchangeable in this thesis. The factor of perceived 'control' is argued as the critical variable in cognitive change and successful therapy.

Nemiah (1976) indicated that people who lack a sense of self-control are often the victims of some psychosomatic ailment, illness or disease. It shows that the inability to control aversive outcomes leads to reports of increased physical distress, and a greater degree of stress related symptoms, such as headache, stomach disorders and sweaty palms (Pennebaker et.al., 1977). Research by Seligman also linked excessive worry, feelings of helplessness and depression leading to CVD, to lack of perceived self-control of aversive stimuli (Seligman, 1975).

The last decade has witnessed a burgeoning of interest in the nature of self-control. There has been a plethora of books dealing with stressful problems such as phobias, insomnia, weight control and many others (Thorenson, 1978). Behavioural therapy literature dealing with self-control has increased dramatically (Karfer, 1977). Most self-control manuals instruct readers in SD (Glasgow and Rosen, 1978). The latter research was a comprehensive review of self-control manuals. It is this emphasis on SD which will be the focus of attention in Chapter 2.9 Self-Control.

Self-control procedures involving HR, BP and other physiological determinants will be dealt with under Chapter 2.11, Correlates. Concurrent with this dramatic increase in self-control has been the intensity of research interest in meditation. Self-control has been responsible for this significant amount of research into the subject of meditation. This is given specific attention in Chapter 2.6, Meditation. The interest and intensity of research into and results from this area is indicative of it's importance in psychotherapy.

Baude and Levine (1978) have written probably the most comprehensive book on stress and coping to date. It mustered an impressive twenty member international and interdisciplinary research team and had the cooperation of the Norwegian Army Parachute School for it's research into the psychobiology of stress and coping mechanisms, under real life stress conditions. The use of a parachuting situation to study real life stressors and coping mechanisms has precedent (Fenz and Epstein, 1967).

A number of significant findings have been made by Baude and Levine (1978). For a study of coping, an important factor was the differentiation in the arousal state which occurred when coping was either present or absent. Heart rate augmentation was a fast acting but short lasting response. This response specificity of the heart will be dealt with in Chapter 2.11, Correlates. It is also an important component of the relaxation response - Chapter 2.5, Relaxation. Under repeated exposure plasma variables showed a slower-rising but longer-lasting effect which was extremely sensitive to effects of repeated exposure. This cortico-

steroid and blood plasma response is not dealt with in this thesis, but is a phenomena of arousal which will be dealt with where relevant, to arousal.

Of most importance, however, was the emphasis given to subjective evaluation of stress, in contrast to objective ratings of performance. Long before performance was rated satisfactory by school standards, men who reported subjective coping ability actually showed decrements to hormonal arousal. The predictions of Lazarus and Launier's (1978) cognitive (self-control) model were confirmed. Levels of arousal are more dependant on self-perceptions of stress than upon the characteristics of the stress situation. Miller (1979) also found that subjects are actually willing to tolerate more pain when they have control, that loss of control was a vital factor in ability to tolerate stress, and that control reduces the impact of aversive events. Control and the ability to cope seem to be proportionally related events. The problem of coping however is a much more complex event than this simple model would seem to predict. In a more detailed study of coping processes Cohen and Lazarus (1973) have demonstrated that coping style is not an unchangeable process. The fact that a person has developed a particular coping style does not presume that the coping response to stress is invariate.

Coping style is a specific of the situation not an invariable disposition or trait. This area is a difficult one. What emerges from this field of research is 1) that the most successful 'copers' are those people who have a variety of coping responses to draw upon, 2) the perception of self-con-

trol seems to be an important factor in the ability to deal with stress and finally 3) the ability to perceive stress, the variety of available coping mechanisms and the perceived control of the stressor seem to interact so that tolerance to stress can be significantly increased.

Individuals often describe their somatic problems by reporting the frequency, intensity and duration of their self-perceived stress state. Four factors emerge from this self-monitoring process which become important in the self-control or self-management of stress anxiety and psychophysiological disorders. First, Leventhal (1975) has substantively documented that people's perceptions of the state of their psyche-soma determine the help they seek for alleviation of this perceived stress. Second, self-reports on the progress of "illness" by self-monitoring procedures become important cues to self-perceptions (Meichenbaum, 1975). Third, medical practitioners often view the perceptions of a symptom as reported by a patient, as exacerbators of the problem (Hill, 1977). Fourth, cognitive factors play a significant role in the genesis, maintenance and eradication of the psychophysiologic arousal states resulting from perceptions of stress (May, 1977). In fact Lazarus (1971) early pointed out that: "Nearly all instances of unhappiness are due to internal thoughts rather than external events."

Self-monitoring has recently become the cornerstone of self-control and self-management strategies (e.g. Mahoney and Mahoney, 1976). The self-report strategies which are central to self-monitoring procedures set the stage for objective perception of a problem. This is a function of aware-

ness discussed more fully in Chapter 2.6, Meditation. Awareness is the essential first ingredient to a successful program. Awareness precedes consciousness (Joseph, 1980). In the context of self-control this means that before a control program can be initiated, it must be preceded by an awareness which includes knowing and recognising. The provision of a rationale for "knowing" (Chapter 2.4, Rationale) and the in vivo practice of self-monitoring to develop an objective referent for this knowledge, are important pre-conditions to successful programming, or cognitive restructuring.

Several research studies have found that self-monitoring alone can increase or decrease behaviour (Ciminero et.al., 1977). In a recent study by Heckerman et.al., (1978) in a weight reduction program, it was found that the monitoring of weight was not as effective as monitoring intake. The shift in emphasis is towards self-responsibility and control of factors (i.e. intake rather than result) directly affecting performance. An important paper in this regard is the research article by Sperduto et.al., (1978). In this research it was demonstrated that the direction of changes resulting from in vivo self-monitoring and the monitoring of others is identical. When persons recorded positively valenced behaviours in another person, changes in the behaviour patterns of the observer also occurred. This is a similar finding in modeling research (Bandura, 1969). In the research by Sperduto et.al., (1978) it was suggested that a person may substantially increase desirable behaviour either through self-monitoring or observing appropriate behaviours in others. Attention is merely focussed on the behaviour to be achieved

and it's recording. Social valence can be an important 'external' mediator. In other research (Chapter 2.11, Correlates) it will be shown that self-monitoring of respiration (RR) and heart rate (HR) results in a decreased rate of responding - that is towards a hypometabolic (or relaxation) state.

Few researchers have put the following three key elements of stress control together as a practical therapeutic technique: 1) self-identify (locus of control or perception of self-control); 2) responsibility (direct intervention using an appropriate coping strategy); and 3) awareness (the regular in vivo application of self-monitoring). The reader of existential therapies (May 1966, Frankl, 1974) will immediately recognise the significance of these terms. Each has been identified above as critical determinants of behaviour and attitude modification, and are considered key components in relaxation/meditation techniques.

1.5 Relaxation

Relaxation technology is an important therapeutic intervention strategy. As a non-pharmacological self-control strategy it could be a major psycho-physiologic device for use by helping professionals. Relaxation technologies are capable of analysis into somatic, affective and cognitive mode-specific components (Davidson and Schwartz, 1976). Relaxation can include technologies of auto-suggestion, hypnotic induction, and breath regulation as well as various physiological tension-release methodologies. It "has never rigourously [been] defined " (Davidson and Schwartz, 1976, p.400). It was introduced as a significant form of therapy by Jacobson (circa, 1929) and as autogenic training by J.H. Shultz (1932). It suffered a decline as a psychotherapeutic technique until the introduction of Systematic Desensitization by Wolpe (1958). Patel's (1976) Savasan promises to be a similar breakthrough (Blanchard and Ahles, 1979). Relaxation produces effects which are claimed to operate antagonistically to inhibit anxiety, tension and similar pathologically oriented responses (Wolpe, 1958). Relaxation is receiving a great deal of contemporary and significant research attention due to its importance as a therapeutic intervention strategy (Patel 1973, 1975; Benson et.al., 1974; Davidson and Schwartz 1976; Beiman et.al., 1978; and Seers 1977). It needs to be noted that Jacobson, Wolpe, Datey, Patel, Benson and Seers are each medical doctors.

Various components of relaxation as a mode-specific relaxation have been identified by Jacobson (1974 c. 1929), but few have improved on his findings, dividing response

categories into somative and cognitive effects. Davidson and Schwartz (1976) suggest that none have "systematically investigated the differential consequences of these processes" (p.401).

1.6 Progressive Muscle Relaxation

Edmund Jacobson (1974) gave the first comprehensive treatment of a relaxation therapy in 1929. Jacobson's system is called Progressive Relaxation by him, but is more often referred to as progressive muscle relaxation (PMR). Jacobson's PMR provides the basis for many of the relaxation techniques currently in vogue. The critical component in PMR has not been unambiguously identified (Borkovec, et.al., 1978).

Jacobson was the first to postulate and prove a direct correlation between blood pressure and skeletal muscle tension reduction.

PMR involves primarily the somatic system. It is a technique developed to achieve discriminative control over gross skeletal muscle groups. The purpose of PMR is to reduce anxiety. Jacobson believes that anxiety and muscle relaxation are antagonistic. Although probably the most extensively used relaxation technique used today, few researchers or clinicians follow Jacobson's recommendation to continue training/treatment for up to 200 sessions. In a recent communication, Jacobson (1977) agreed 6-7 sessions were sufficient.

Paul (1969) has extensively researched PMR and has developed a reduction in the components originally recommended by Jacobson (c. 1929). The effectiveness of brief

training combined with Paul's (1969) modifications are well established. The major emphasis of this technique is on the focus of attention to somatic events.

The PMR technique requires the subject to be placed in a comfortable position in a quiet setting. The client is required to maintain a passive attitude. Instructions are given to systematically tense and relax specific muscle groups. Progression to each new muscle group is contingent upon complete relaxation in the immediate previous muscle group exercised. The technique, when correctly applied, leads to complete somatic relaxation.

Relaxation has recently become an important component in the treatment of successful programs in insomnia, phobias, sex therapies, smoking and weight reduction (Thorenson, 1980). It is often used in psychotherapy, hypnotism and counselling (Kazdin, 1976). It has also been used for the psychosomatically associated problems of cardio-vascular stress, asthma, stomach disorders, headaches, migraines and phobias (Hersen and Bellack, 1979). It is the major technique for the reduction of stress and anxiety. Relaxation is also used in assertion training and in the development of social and life skills training (Davidson and Schwartz, 1976).

1.7 Systematic Desensitization

It was not until the introduction of systematic desensitization (SD) by Wolpe (1958) that PMR was recognised as an important therapy component as listed above. Wolpe used an abbreviated form of this procedure, and developed a complex

anxiety reduction technique from it. Initially Wolpe (1958) called his technique reciprocal inhibition. This was based on the neurological hypothesis developed from Sherrington and Hull, on which his technique was based.

A detailed evaluation of SD was conducted by Kazdin (1976) who helped author a comprehensive critique of 150 reports on literally thousands of clients. He concluded: 1) there was little agreement regarding the specific active ingredients of SD, but there was 2) consensual validity about efficacy even though 3) there was a great deal of controversy surrounding conceptual issues. However, Wolpe's (1958) concept of reciprocal inhibition is no longer held to be valid (Kazdin, 1976). Probably no other therapeutic technique has received so much research attention as SD in recent years. Lang (1979) has made the most recent assault on Wolpe's (1958) theoretical exploration for the underlying process.

Five steps constitute the general pattern of SD technology (Garlington, 1979). The first consists of a set of instructions which structure the psychological set of the client by describing the underlying rationale for SD. The procedures which constitute the next four steps are also explained. The purpose of SD is described as a) to provide practice in learning to relax away tension and b) to provide a rehearsal framework for certain specific situations where c) a client is encouraged to practice the relaxation skills in vivo. These instructions develop a "set" of expectancies and demand characteristics.

Actual training in SD commences with the next step - relaxation. The procedure outlined by Paul (1966) is that

most commonly used. Clients are taught this modified and simplified PMR technique involving the tense-relax sequence of specific muscle groups at 5-7 second intervals for tension and 20-30 second intervals for relaxation. The relax/tense phase is explained as a somatic sensitivity programme, and a cue-associated technology for relaxation induction. These explanations provide clients with a scientific rationale.

The next step involves the construction of a hierarchy of responses. These consist of graded variations of anxiety-provoking situations selected and graded by the client. Goldfried (1971) modified the form of the hierarchy so that the items did not require a similarity dimension. Purists like Garlington (1979) maintain this dimension, consisting of 15-20 items arranged along a time/distance/similarity dimensions in an increasingly anxiety-provoking ascending order.

During the progress of this training, visualization exercises are conducted using a relax-anxious alternating emotive imagery technique. Again Goldfried (1971) modified this technique so that the anxiety image is retained whilst relaxation instructions are given. Goldfried maintained that this modification more accurately parallels in vivo situations.

In the standardized procedure Paul (1966) and Garlington (1979), the final step was desensitization proper. Relaxation is induced, pleasant emotive imagery is generated, until a specific level of relaxation is registered by the client raising a finger. Sensory induction may follow and finally the anxiety-provoking emotive imagery is evoked. Progression to the next graded hierarchy response does not proceed until in the following relaxation phase, a high level,

relaxed imagining is reported with concurrent somatic relaxation.

In the modified format, Goldfried (1971) the client is encouraged to use SD as self-control in vivo, for the reduction of anxiety. The self-control orientation has led to even further modifications of SD and numerous elaborations of the SD hypothesis such as extinction, habituation, operant conditioning, semantic conditioning, discrimination and covert conditioning (Ladouceur, 1978). This last researcher also stated "the mechanisms involved have not yet been clearly elucidated" (p.411).

In a comparison of traditional SD (Wolpe 1958, Paul, 1966) versus self-control SD (Goldfried, 1971) it was found that both treatments were equally effective, but were demonstrably better than the control group in the significant reduction of targeted and non-targeted anxiety. Deffenbacher et.al.'s (1979) explanation was that the greater attention to in vivo relaxation methodology which was used in the traditional mode (not normally given so much emphasis) may have been responsible for the equality of effectiveness with self-control SD. In the latter in vivo relaxation is particularly emphasised.

Paul's (1969b) study used Wolpe's (1958) abbreviated version of the Jacobson (1929) methodology. The results of this research indicated the superiority of SD technology over hypnotic induction techniques along four important dimensions: the reduction of a) heart rate (HR), b) respiratory rate (RR), c) muscle tension (EMG), and an increase in d) skin conductance using galvanic skin resistance (GSR).

An excellent and comprehensive review of the whole area of the psycho-biology of relaxation and related states, was conducted by Davidson and Schwartz (1976). These researchers draw attention to important components of relaxation technologies in terms of somatic and cognitive modalities, and add a new component proposed by Naranjo and Ornstein (1971), Ornstein (1972) and others, the attentional mode. Their research was dependant on their hypothesis of mode-specific relaxation. This theoretical concept is accepted. However, effective relaxation technologies incorporate all three modes, and do not negate the purely physical mode. The successful application of yoga techniques (Patel, 1976) validate this view. Most meditation technologies incorporate a multi-modal approach to relaxation (e.g., Satyananda, 1974).

1.8 Savasana

Psychotherapists and registered medical practitioners have used yoga (Datey et.al., 1969; Patel 1973, 1975; Patel and North 1975; Patel 1976; and Patel and Carruthers 1977), Transcendental Meditation (Benson et.al., 1974(a)(b), 1975 and 1977) and Buddhist breath meditation (Stone and deLeo 1976). Other therapists have used Zen meditation (Shapiro 1978), muscle relaxation (Shoemaker and Tasto 1975), metronome conditioned relaxation MCR (Brady et.al., 1974) and progressive relaxation (Beiman et.al., 1978). Many others have incorporated hypnotherapy (Hilgard 1965, Barber, 1969), implosive/flooding therapies (Marks 1972), imagery (Lang 1979), and other techniques as relaxation strategies to re-

duce BP in essential hypertensives. Almost all of this research is post-1970. Satyananda (1974) has printed exhaustive precise and detailed tape transcripts of deep relaxation and meditation technologies including visualization and fantasy.

Many behavioural, psychophysiological, and biofeedback or biofeedback assisted relaxation/meditation techniques have been used to reduce blood pressure in hypertensives, some with more success than others. The reduction of blood pressure is considered a new and important dimension added to the four psychophysiological categories isolated by Paul (1969b).

Jacobson's own research dealt with both normal and hypertensive subjects in 1931, but PMR was rarely applied for the reduction of BP even though a direct correlation between BP reduction and PMR was demonstrated by Jacobson at this early stage.

Shoemaker and Tasto (1975) were among the few researchers who used PMR in studies of BP reduction in hypertensives. Their research indicated clearly the superiority of PMR over what appeared to be more sophisticated biofeedback monitored only relaxation. Most reviews supported this contention, at that time.

Comparisons between various of the relaxation techniques and Savasan have been conducted by Jacob, et.al., (1977); Barr-Taylor et.al., (1977); Frumkin et.al., (1978) and Blanchard and Ahles (1979). In each review the critical variable has been blood pressure reduction in essential hypertension. In each case Patel's (1976) thesis on Savasan is

widely quoted and summaries of results indicate that it generated the most significant BP reductions. Its efficacy as a relaxation technology has been well established.

According to this evidence the most successful relaxation technology so far researched is Savasan (Blanchard & Ahles 1979). Savasan has proven a very effective technology but is little known, therefore little understood. In its current usage it is presented as a multiple component technology. The original Savasan technique provided a simple, single-component body posture which gives emphasis to decreased muscle tonus (Kaivalyadharm 1974). It is a sensitivity training posture which can induce awareness of actual physiologic and psychophysiological mechanisms which naturally occur in the body. This somatic sensitivity can then be conditioned as a self-monitoring device to develop awareness of the R.R.

The Relaxation Response (RR) (Benson 1974), induces a hypometabolic state characterized by a) changes in frequency of the galvanic skin response (GSR); b) changes in peripheral resistance involving blood pressure (BP); c) a decrease in respiratory rate; d) lowered oxygen consumption and e) decreased heart rate (HR).

Benson et.al., (1974), Patel (1976) and Seers (1977) have each established the efficacy of different meditation techniques for the reduction of blood pressure. Patel (1976) also reported lowering of cholesterol levels, whilst Keene (1980) is currently investigating the reduction of corticosteroids using meditation techniques. Each of these specific medical conditions are considered to be mechanisms respon-

sive to stress levels. In each case stress as measured by these parameters has been significantly reduced using meditation.

This thesis will critically review Relaxation. It will identify the key and consistently occurring components which appear in relaxation research. It will give a detailed analysis of Savasan and show how this relaxation technique differs essentially from others. From this analysis of relaxation and Savasan the technique of Synergism has been developed. This new technique - SYNERGISM, will be presented with sessional tape transcripts, along with its rationale. It's efficacy will be experimentally tested.

1.9 Demystified - Self-Relaxation

Benson (1974) was the first to attempt a demystification process when he identified four essential components of Transcendental Meditation. Beary et.al., (.974) also listed respiratory changes which were considered to elicit the hypometabolic changes brought about by the psychophysiologic technique to TM. These changes were decreased oxygen consumption, carbon dioxide production and a change in the respiratory rate. Evidence will be given in Section 2.7, Respiration which will give these changes in greater detail. Interestingly neither Benson nor Beary listed respiration as a key variable. The relationship between respiration and imagery is well documented (Mackson, 1979).

Patel's (1976) thesis takes full cognizance of the importance of imagery and respiration. Although she makes little attempt to demystify the actual technique, Patel does

provide a detailed neuro- and psychophysiological rationale underlying the technique, and pre-empts Davidson and Schwartz (1976) with her detailed coverage of mode-specific relaxation. In her instructions to patients Patel gave details of this underlying rationale in lectures, talks, slides and handouts.

The sole purpose of Seer's (1977) thesis seems to be spent in the demystification of TM. He went to great pains to explain this purpose and developed a self-relaxation model based on Benson's (1974) hypometabolic response system, but ignored extant data on respiration. He did however, like Patel (1976) include explicit instructions concerning attention to respiratory factors (Seer, 1977, p.66). These fairly explicit instructions result in passive monitoring of the breath. Imagery research (Jacobson, 1979) respiration research (Stone and deLeo, 1976) and self-monitoring research (Sperduto, et.al., 1978) all attest to the fact that passive self-monitoring is the most powerful determinant of respiratory BP and HR change. This in itself is a technique. It seems that each of the three researchers, (Benson, 1974; Patel, 1976; and Seer, 1977) have missed the critical influence that respiration can make on the relaxation response whilst each have acknowledged it's presence as a key component. Seer (1977, p.66) also uses imagery.

The purpose of Synergism is to take this demystification process even further, by identifying each of the key components operating among each of the successful relaxation technologies available, from PMR and SD through the variety of meditation techniques including the detailed and

sophisticated repertoire offered by the taped transcripts of Satyananda (1974). This Guru is first and foremost a technician. Unlike TM, about which Smith (1976) and Seer (1977) justifiably complain, Satyananda (1974) has exposed each of his techniques in detail, to be publicly scrutinized. The rationale offered may be 'oriental', but the techniques are full exposed to public view. The source of TM and many other oriental meditation techniques may be found among this rich source material.

To date the 'demystification' of TM has only resulted in identification of four components, and hasn't proceeded beyond those offered by Benson (1974). These are:

- a) A mental device
- b) A passive attitude
- c) Decreased muscle tonus
- d) Quiet environment

Each of these will be discussed in detail in Chapter 2.5, and a summary of these and others will be presented as relevant. Seemingly complex meditational techniques will be capable of analysis once the basic components of relaxation induction and relaxation response are understood.

CHAPTER 2

REVIEW OF LITERATURE

- 2.1 Psychophysiological Disorders
- 2.2 Stress and Neurosis
- 2.3 Anxiety and Social Skills
- 2.4 Rationale
- 2.5 Relaxation
- 2.6 Meditation and Awareness
- 2.7 Respiration
- 2.8 Emotional Imagery
- 2.9 Awareness of Heart Rate
- 2.10 Self-Control
- 2.11 The Relaxation Response
- 2.12 Placebo