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

BY  
KARL H. JACKSON

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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 prophylactic 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.<sup>1</sup> 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

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<sup>1</sup> 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 - Psychophysiological 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 invariable.

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 rigorously [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 (Kaivalydharm 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

## CHAPTER 2

REVIEW OF THE LITERATURE2.1 Psychophysiological Disorders

Psychophysiological disorders have been defined by the American Psychiatric Association's Diagnostic and Statistical Manual of mental disorders. These disorders are "characterised by physical symptoms that are caused by emotional factors and involve a single organ system, usually under autonomic nervous system innervation" (DSM II, 1968, p. 46). These disorders were at one time referred to as psychosomatic disorder. The most recent draft of DSM III carries no descriptor or label for either psychosomatic or psychophysiological disorders.

The etiology of psychophysiological disorders is complex, and any attempt to define is obviously difficult (Blanchard & Ahles, 1979). The reticence of the American Psychiatric Association to adopt clear guidelines for identification and definition is understandable. Nevertheless psychophysical disorders persist. The pathophysiology revealed in the consultation room is a real event. The reality of disease (e.g. CVD), disorder (e.g. essential hypertension), or trauma (e.g. organic or visceral injury such as ulcers) which may have some psychologically oriented etiology cannot be denied (Hill, 1976).

The past decade has seen major advances in the treatment of psychophysiological disorders. Most of the significant references are post-1970. A new field has developed for non-pharmacological intervention in the area referred to as behavioural medicine. The rapid development of sophisticated technology parallel to biofeedback research, has undoubtedly

led to this recent development. Most of the post-1970 controlled studies have emphasised the role of relaxation. Relaxation has been found as effective as biofeedback in the treatment of most psychophysiological disorders (Silver and Blanchard, 1978). "By far the most impressive work in the treatment of essential hypertension--and probably in the behavioural treatment of any psychophysiological disorder-- is that of Chandra Patel" (Blanchard and Ahles, 1979, p.523).

The range of psychophysiological disorders is by no means exhaustive. The treatment packages which appear most often in the literature deal with hypertension, tension/vascular headaches, asthma, and gastro-intestinal disorders.

Hypertension - There is sufficient weight of evidence to indicate that the consequences of continuous elevated BP is directly associated with cerebrovascular accidents, congestive heart failure, coronary heart disease and renal damage. Effective treatment dramatically reduces the risk of CVD complications. In most studies related to this disorder, the regular practice of relaxation has resulted in the reduction of blood pressure, in hypertensives. In some these BP reductions have been both significant and meaningful. Multi-faceted packages such as Patel and North (1975) combining relaxation and biofeedback, meditation, cue-associated self-control and cognitive restructuring have consistently produced statistically significant and clinically meaningful BP reductions.

Vascular headaches - Vascular (or migraine) headaches are an extremely prevalent disorder, and consist of recurrent episodes of headache varying widely in intensity, frequency and duration. All the controlled research involving

complex behavioural packages has been conducted by Mitchell and White, 1977. These packages have consisted of all six components:

- 1) Cognitive restructuring (and systematic desensitization)
- 2) Relaxation (using progressive relaxation)
- 3) Biofeedback assisted techniques
- 4) Skills training (assertive training)
- 5) Cue-associated self-control (problem solving)
- 6) "In vivo" generalization.

Mitchell has repeatedly demonstrated the potency of his package (Mitchell and White, 1977). His results seem to indicate that 100% of patients treated with this multiple design strategy, show substantial improvement. Two important results of Mitchell's work are that the combined package is better than the administration of the separate components, and that the package can be converted to a self-administered treatment package.

Tension headaches - These are the commonest form of headache. The etiology is complex and is currently in question (Epstein and Abel, 1977). Some exciting breakthroughs can be found in the recent work by Holroyd and Andrasik (1978). In this treatment package, a cognitive coping rationale was given connecting stress, perceptions and symptoms, and skills connecting environmental stressors (cue-associations) and responses (self-monitoring) were taught. Comparisons were made between four cognitive technologies:

- 1) Self-monitoring alone did not reduce headaches. The other three groups, 2) cognitive coping skills, 3) consis-

ting of 2) plus relaxation, and 4) only discussions of the rationale surrounding headache and its causes. All showed significant and identical reductions in headaches. For this particular research design relaxation (as taught by Holroyd) and specific cognitive coping skills training, added nothing therapeutic, although significant gains were made by each technique, which were maintained "in vivo" as cognitive self-coping strategies.

Asthma - Asthma may be caused by allergic hypersensitivity, or may result from psychological conflict. Often the etiology of asthma suggests an interaction of both. Psychological conflict may involve the use of asthma attacks to reinforce secondary gain or hyperactivity. Physiologically asthma involves respiratory pathology caused by restricted airway. It is experienced as laboured breathing and wheezing with accompanying tightness of the chest similar to the central chest pain associated with myocardial infarction. Most psychotherapeutic intervention is thus concerned with techniques to increase bronchodilation and thus improve respiration. Other techniques involve the rationale of asthma, the reduction of fear contingent upon an asthma attack, and techniques to relax the severe constriction of the chest. Measures for the validation and evaluation of research designs tend to grow in sophistication, and revolve around measures to total respiratory resistance (RR). Recent research using biofeedback training to enhance the respiratory function of asthmatic children involved a forced oscillation technique to measure TRR (Feldman, 1976). Knapp and Wells (1978) and Khan (1977)

have used biofeedback and various forms of contingency management (praise) to increase bronchiodilation in asthmatics. Four components can be continually identified in the treatment of asthmatics. 1) Cognitive restructuring involving verbal desensitization; 2) Relaxation using Jacobson's PMR, specific/differential relaxation (e.g. frontalis EMG), Biofeedback-assisted relaxation; 3) Biofeedback and 4) Skills training (assertiveness training). Many previous studies have been criticized for lack of adequate controls. Some of the most recent literature suggests a combined medico-psychological intervention which involve a multi-faceted treatment module including all six patterns of treatment (Hock et al., 1978).

Gastrointestinal disorders (G-I) - In their mild form the prevalence of G-I affects almost 25% of the adult population (Schwab et al., 1974). The two chief categories are ulcers and colitis. Estimates of the percentage of ulcers in the population, run as high as 1% and it is regarded as one of the classical psychophysiological disorders. Colitis is a vague more generalized condition which includes spastic colon, functional diarrhea, non-specific abdominal pain and cramps, constipation and often nausea. Another G-I disorder which can be extremely debilitating for older children, adults and geriatrics, is chronic fecal incontinence which results from faulty control of the external anal sphincter. In each of these conditions relief and sometimes curative effects have followed the six stage pattern already outlined.

In the treatment of psychophysical disorders, the pattern which emerges from an analysis of post-1970 specific and successful intervention strategies is consistent. Initial treatment following diagnosis is aimed at education. The person suffering the disorder is educated in the latest rationale concerning the specific disorder. This involves explaining the medical condition and known etiology, which should include explanations of the inappropriate responding mechanisms which appear to be at work. This phase is referred to as cognitive restructuring since it should include as much detail about the treatment module, the response system and self-control methods as possible. The result should be self-motivation to achieve high compliance with the treatment module. High on the priority of treatment is relaxation. The function of relaxation is so that the person learns the role of awareness, of physiological responses in visceral learning, and self-monitoring. Learning of a relaxation technique and specific visceral response mechanisms can be aided by biofeedback techniques. The use of relaxation and biofeedback in a combined package seems more appropriate.

The aim is to achieve awareness coupled with autonomic control. In some instances the next learning phase is associated with specific skills such as assertive training or breathing techniques. The key to the successful treatment of psychophysiological disorders seems to lie in the transfer of these learned skills to the real environment. This involves learning how to respond appropriately to environmental cues in a self-coping, self-monitoring, self-control fashion. In vivo generalization was a critical phase in most studies. New adaptive social skill repertoires are often the final criteria for the success of a treatment program. Once new adaptive responding skills are taught the likelihood of symptomatic arousal is minimized.

## 2.2 Stress and Neurosis

Stress is a complex subject. Roskies (1980) in her review of Ursin et.al. (1978) indicated that there is a chronic crisis in stress research due to the lack of clarity concerning the central concept of stress itself. No attempt will be made to conceptually define or discuss the concept of stress. It is intended to review a number of stress related problems. Essential hypertension is already briefly dealt with in Section 2.1, Psychophysiological Disorders. Under this label hypertension is clearly a resultant and diagnosed disorder. Treatment is within a psychological medicine paradigm with emphasis on the reduction of BP. As a stress related problem under Section 2.2 a wider perspective is permissible. Causative and therefore preventative factors are paramount and the vogue is preventative treatment rather than post-hoc. This difference in treatment strategy is the multi-modal emphasis.

A major stress concern is CVD, and a major resultant of modern stress, societal and environmental is neuroses. Both aspects are dealt with since they are the practical issues resulting from stress, and can lend themselves directly to psychological intervention strategies quite successfully. Control factors are central to treatment programmes, but this is dealt with in more detail in Section 2.10. Due to its centrality to treatment programmes it is nevertheless briefly dealt with in this section.

A number of successful treatment programmes are then given attention, followed by an all too brief section on pain management. The recent growth of self-control strategies in treatment has created a resurgence of psychological involvement in

what was primarily a medical domain. Pain is clearly stressful and this is the reason for its inclusion.

Whilst stress is difficult to conceptually define, it is understandable in terms of its correlates and treatment programmes. Some excellent and current reviews have given excellent attention to hypertension, (Harrell, 1980), CVD (Burch, 1980) and the neuroses e.g. depression (Whitehead, 1979), and psychosexual difficulties (Jehu, 1980). The correlates of each and the successful treatment programmes will be identified and similarities in programmes summarized. The purpose of this section is to identify the principal components of successful psychotherapy, and to develop from this a proposed intervention programme.

#### 2.2.1 Essential Hypertension

Five paradigms were offered by Harrell (1980) to describe the many physiologic and psychologic variables which are considered to interact to cause this condition. The condition itself is undeniably stress-related. Similarities have been found between the correlates of this condition and laboratory induced stress. In his detailed review of hypertension, Harrell (1980) found that the most difficult area to obtain definitive correlates from, was the physiological area. It is plagued by contrary evidence. In some cases for example, cardiac output can be normal with peripheral resistance elevated, whilst in other cases the reverse may apply. Often the only consistent parameter is BP. Physiological aberrations have been identified but these may be complicated by the mediating influence of neural events. Three physiologi-

cal determinants held central to the problem are the hypothalamus, the baroreceptors in the bifurcation of the carotid artery and the kidneys. Intervention in the form of diet control (especially salt intake), self-monitoring of BP and of other physiological variables, are two significant psychological strategies in the control of the physiological factors relating to this stress condition.

Two areas which fall directly in the path of psychological intervention are emotional dispositions, such as personality variables, locus of control (LOC) or repressed hostility and environmental variables. Very little conclusive evidence has emerged from these studies (Harrell, 1980) due to the equivocal nature of the data results. One area that has received a great deal of attention has been that of the Type A/Type B personality, which seems also related to LOC factors. A recent review of this literature by Glass (1977) seems to indicate that Type A's and Type B's definitely differ in predictable ways. His hypothesis seems to be sustained, that long-term environmentally induced efforts associated with centrally mediated activity often leads to the clinical diagnosis of hypertension and CHD/CVD. These efforts, identified as either active coping (high achievement oriented) or giving up (i.e. learned helplessness) occur most frequently and most intensely among Type A's, relative to Type B's. Glass (1977) clearly demonstrated the factors of environment and LOC as critical determinants in producing the Type A/Type B behavioural differences, identifying the behaviour-disease interaction. This is one of the few research areas which promises to produce identifiable personality characteristics productive of patho-

logical conditions. The Type A character can be dealt with using relaxation and social skills training. Issues such as quality of life and physiological hyper/hypo responsiveness can also be dealt with through the mechanisms of RR, BP and HR control.

Measures of plasma renin and the use of pharmacological blockades, though outside areas of non-pharmacological intervention, have nevertheless indicated the neural and physiological sites responsible for hypertension, as well as giving objective measures of psychological factors such as anxiety, hostility and stress. High BP levels seem to be consequent upon disassociation between cardiovascular functioning and metabolic requirements, caused by these factors, which is different to that caused by exercise stress. In animal studies CVD resulting from laboratory induced stress similar to that caused by hypertension was found to be different to exercise induced stress. This and other research cited by Harrell (1980) indicated quite conclusively that emotional stress is directly related to the physiological correlates of stress which include levels of plasma renin, BP, HR, RR, CVD and other organic damage.

Early evidence that the sympathetic nervous system (SNS) may be primarily responsible for hypertension has not been sustained. The SNS plays a complex role, during stress and during the anticipation of stress, but a number of other factors, such as peripheral vasomotor activity, genetic predisposition, autonomic lability, renal and baroreceptor dysfunctioning, and centrally determined mediational or CNS neural events all interact to render this complex issues even more

complex. Harrell (1980) and other researchers however, are adamant that psychological factors can be paramount not so much in etiology but certainly in treatment. These other physiological etc., factors may be predispositional, or even causative, but psychological intervention techniques which involve skills training in coping strategies are important in the treatment of hypertension.

In summary, both hypertension and stress are similar in at least three ways; 1) both often involve an increase in HR, BP and RR, with concomitant stress indices related to plasma renin; 2) both are accompanied by reductions in baroreceptor sensitivity; 3) both are subject to neural mediation. As stress and BP etc. elevations persist, organic damage occurs (especially CVD/CHD) and coping mechanisms (especially baroreceptor mechanisms) fail. The successful early recognition of Type A/Type B, LOC, or hostility characteristics using anxiety or personality scales suggests that early intervention may be possible using psychologic techniques. These techniques would involve training in self-control, relaxation monitoring and self-coping. The purpose would be the self-regulation of HR, BP, RR and education in stress control.

In this training in stress control, the two facets of in vivo and generalization have been found predominant. These have become key elements in treatment and maintenance in hypertensives (Patel, 1976; and Seer, 1977).

### 2.2.2 Cardiovascular Disease (CVD)

Psychophysiologicalists have long believed that the activities of the autonomic nervous system are determined to an important degree by neural processes which regulate autonomic responding. The nature of the specific regulatory functions is still in dispute. The responding patterns which emerge from a plethora of biofeedback research and sophisticated instrument research, have been complex. Some light has however, been shed on the biological mechanisms by which behavioural and cardiovascular processes interact (Obrist, 1974).

There is sufficient evidence to establish a correlation between the mediational effects of cognitive processes and the cardiac processes which regulate the general pattern of health in the physical body. The role of awareness of the physiological responses in visceral learning and in self-monitoring has also been well established. Various methodologies are available which emphasise the importance of mediation, awareness, and self-monitoring as means of further facilitating self-control. Autonomic control and self-awareness are not synonymous. The complex interrelationship of awareness and control is reflected in the current theories being proposed by researchers into relaxation (Davidson and Schwartz, 1976). The role of imagery and its rehabilitative effect or treatment role regarding HR and BP is still unclear (Lang, 1979).

What is clear in the etiology of CVD disorders, is that there is a combination of causative factors. These include genetic/constitutional vulnerability, organ response learning, stimulus/response control factors, emotional and personality

factors, diet and neuro-psychophysiological factors.

The concept of risk factors dominates most treatment paradigms concerning CVD (Burch, 1980). A person with an assessed risk factor profile or constellation has placed the psychosomatic system under considerable organic stress and is more likely to result in CVD and resultant organic damage. As with Hypertension, CVD is a complex domain masked by an overburden of contrary evidence. To establish a particular risk factor as primarily causative in etiology is extremely difficult. Burch (1980) presents a detailed and thorough unified theory referred to as an "Autoaggressive Disease Theory", with extensive justification and evidential support. It is not intended to give details of this theory, nor to entertain the mathematical speculations of the theory. There is sufficient weight of evidence to include age, hypercholesterolemia, hypertension, smoking, diabetes, weight ratios, exercise and genetic predisposition as risk factors. These risk factors help cause CVD by

- (a) precipitating a genetically predisposed person into exacerbation of CVD following a breakdown in control factors;
- (b) reduction in the efficiency of a person's control of CVD by critical disassociation between cardiovascular function and metabolic requirements and loss of sensitivity in either neural control or baroreceptor mechanisms leading to further exacerbation of CVD;
- (c) the result is organic stress which may lead to CVD.

The extensive review by Burch (1980) conflicts with the views of many experts in the field of CVD. Doubt is expres-

sed about the alleged toll of cigarette smoking and diet. He states that "only certain restricted types of evidence are able to distinguish between causal, converse causal and constitutional interpretations of positive associations between a risk factor and a disease"(1980, p.336), and that of these four types of epidemiological evidence none except the genetic, exert any significant causality. In brief, Burch (1980) summarizes his views by stating that the main precipitant of CVD has much more to do with the way each person lives, that is, he emphasises quality of life issues, and the exacerbatory sometimes pervasive influence of these risk factors.

Recent psychologists acknowledge the influence of the risk factors, and in the analysis of non-pharmacological treatments of insomnia, diabetes, duodenal ulcers, academic underachievement and drinking behaviour later in this same section some of these stress specific treatment programmes will be reviewed. Burch (1980) considered that acute mental stress exacerbates CVD, acting through the hypothalamus-pituitary-adrenal axis. Thus, as in hypertension, the evidence points to some CNS/neural mediation. There is little doubt from this weight of evidence that the incidence of CVD can be dramatically reduced by training in self-regulation relative to risk factors, such as smoking, diet and weight, self-coping to deal with emotional stress, such as academic underachievement or occupational factors, and the self-monitoring and control of HR, RR and BP. These and other factors relevant to quality of life and life-style are significant psychological determinants, in which skills training and education play a significant role. The fall in mortality rates from CVD since 1968 in the US and UK may be related to

the government sponsored educational/skills training programmes initiated in response to concern about CVD risk factors.

In CVD treatment programmes the aspect receiving at least equal importance with other strategies has been the in vivo and self-report aspect of the treatment and maintenance programme especially related to the perceived control of accumulated stressful life events (Stern et.al., 1980). A key issue related to CVD from this latter research, is that "perceptions of physical illness are not unalterable consequences of accumulated stressful life events" (1980, p.48). One wonders how "unalterable" diabetes and other complaints actually are. A weak manipulation e.g. three 10 minute sessions, can retard, reverse or prevent these false perceptions, and often leads to successful treatment.

In conclusion CVD treatment is a multi-modal treatment package in its most successful applications. Cognitive restructuring in the form of relearning and re-education, relaxation, biofeedback, skills training, cue-associated-self control and in vivo generalization are all key factors in a holistic treatment package to reduce CVD risk.

### 2.2.3 Neurosis

Used in its broadest sense, neurosis includes interpersonal and psychosexual difficulties, mild forms of depression and psychophysiological disorders (Gelder, 1979). The latter have already been dealt with in detail in Section 2.1 Psychophysiological Disorders. The narrower definition (Gelder, 1979) will be dealt with under Section 2.3, Anxiety and Social Skills. A brief review of depression and psychosexual

difficulties will suffice to indicate the types of interventions which have proven successful in the treatment of other forms of neurosis.

Depression: In the past few years, an increasing number of experimental studies have appeared indicating the efficacy of behavioural and cognitive behavioural approaches to the treatment of depression. These psychological treatments are different from psychoanalysis or psychologic programmes dealing with depression as a social/environmental deprivation state. The behavioural and cognitive-behavioural programmes emphasise four aspects relating to depression, a) it is a disorder, resulting from reduced positive reinforcement and b) is maintained modified or reinstated by a suitable manipulation of behaviour, and that c) "learned helplessness" or a person's negative self-concept constitute cognitive reinforcement for depression and d) treatment is directed towards demonstrating self-control or the correction of misconceptions. In a detailed review of depression Whitehead (1979) concluded that one of the unanswered questions is the nature of the critical elements in treatment. It is proposed that she actually answered this question in her review. It was clear that, as with hypertension and CVD, a combined education, coping and skills programme results in reduction in depressive syndrome. This programme endorses an emphasis on the etiology of depression and cognitive restructuring (education), the teaching of the self-monitoring and relaxation mechanisms involved (coping) and the imposition of practical techniques to re-orient cognitive strategies and ameliorate the actual living conditions (skills training e.g., interpersonal perception

and cues in marital discord situations). Whitehead's review gives ample evidence of treating neurosis in this way. She demonstrates clearly that the key is "unpleasant life experiences" (1979, p.498), and that psychotherapy which is supportive, here and now (existential) with emphasis on solving current problems, misconceptions and assisting in interpersonal relating, was more effective than others. This included one study cited by her where "The results were clear cut in favour of the psychological treatment" (1979, p.502), in which cognitive therapy was successful, compared to pharmacotherapy, in the treatment of depression.

Psychosexual difficulties: Much of previous research into this area has been on the physical impairment of sexual responses based on Masters and Johnson (1970). This is an arbitrary selection and definition of the problem readily admitted by Masters and Johnson (1970). Recent research has focussed more on what people themselves perceive as inadequate (Jehu, 1980). The emphasis is more on the psychology of sex rather than its physiology. Achievement-oriented and genitally-focussed perceptions of "normative" sexual behaviour has been replaced in contemporary treatment programmes by a three stage strategy. The first involves cognitive restructuring starting with an interview to define the client-centre appreciation of the problem. A rationale for licit behaviour is provided as well as pertinent anatomical instruction where considered necessary. The second phase may consist of home assignments involving indulgent, non-indulgent or fantasy programmes. The third phase is a training phase involving relaxation, biofeedback-augmented training in sexual stimu-

lation where necessary, fantasy and sometimes hypnosis. The key elements once again surface, using as major components, cognitive restructuring (rationale), sensitization using biofeedback and/or fantasy, (visualization and sensitivity) and relaxation. The "severe marital discord" syndrome which is readily apparent in many cited studies (Jehu, 1980) suggests skills training in interpersonal tension reduction.

#### 2.2.4 Control Factors

Control factors will receive detailed attention in Section 2.10, Self-Control (CA-SC). The key point is that relaxation methodology develops an experiential awareness of self-perceived control. Control factors when perceived in this way reduces the overall effects of stress (Miller, 1979). As already indicated in this section, perceptions of control even in high stress conditions, has a beneficial affect on physical health especially in an ascending feedback condition (Stern et.al., 1980). In this latter research, perceived control plays an important role in the understanding and treatment of psychosomatically related problems.

#### 2.2.5 Analysis of Other Treatment Programmes

Insomnia: In a detailed comparison of relaxation techniques with electrosleep therapy for chronic insomnia, clear cut statistically and clinically significant improvement was found with relaxation. Relaxation training had specific and beneficial effects on sleep latency, sleep efficiency, total sleep and self-perceptions of sleep (Coursey, et. al., 1980). These researchers noted that insomnia is a high arousal state,

and their subjects were primary insomniacs. These facts eliminated suggestions that placebo/expectancy effects may have accounted for the significant efficacy of relaxation. Their relaxation therapy consisted of two components. First was the syncopated rhythm effect (mantra-effect of TM/MCR) of EMG biofeedback from the frontalis muscle of the forehead. This was fed to the subject as transformed "clicks" whose frequency was EMG biofeedback determined. The second component was the autogenic training of Schultz and Luthe, with passive attention to heaviness and warmth in the extremities.

One of the most exciting developments in the psychotherapy of insomnia was a programme initiated by Mitchell and White (1977). A multi-faceted treatment programme was implemented in which relaxation was a central component. The focus of intervention was self-management; components evaluated included, separate and combined techniques of somatic and cognitive relaxation, and components using self-recording, self-monitoring, incremental SM training. The results demonstrated clearly the significance achieved by multi-modal cognitive techniques used in combination with somatic/cognitive relaxation techniques. SM strategies incorporating multiple variables was established as a viable therapy.

Diabetes Mellitus: An important factor with regard to rationale is that "the value of education programs is limited if they simply provide information" (Watts, 1980, p.172). The information must be reality-based, structured carefully and must be relevant to the treatment programme and doctor's instructions. Self-care and self-maintenance is emphasised with the successful treatment programmes, although the "dia-

betic for life" statement should be withdrawn and replaced with a more positive approach (1980, p.173). Diet and knowledge of risk factors (e.g. high risk - female over 40 and obese) could help considerably with compliance. Significantly emotional stress factors play an important role in this syndrome. Evidence suggests that the effects of emotional stress on metabolic states, and individual abilities to cope with emotion constitute the two dominant themes relating to emotional stress on metabolic states, and individual abilities to cope with emotion constitute the two dominant themes relating to emotional stress. In a most significant experiment cited by Watts (1980, p.177) clients were trained in detailed self-monitoring of insulin, diet and exercise. A strong point was made about incremental success, and the effect of this on perceived self-control. The efficacy of treatment strategies was related by Watts (1980) to existing methods of anxiety management, and the importance of relaxation.

Other treatments: Research indicates that antecedant stress is related to alcohol consumption. Relaxation was found as an effective procedure for reduction in alcohol consumption (Suib, 1979). In an experiment concerning academic underachievement it was demonstrated conclusively that early intervention for academic anxiety may be beneficial (Thompson et. al., 1980). The most significant treatment programme was self-control relaxation. This experiment used a PMR technique developed by Bernstein and Berkovec (1973). The conclusion by Thompson et.al., (1980) was that multiple strategies e.g. self-relaxation, self-control and skills training, were considered the most potent. Finally skills training, educa-

tion and cognitive restructuring followed by PMR and coping imagery, were key components of this successful treatment programme involving duodenal ulcers. The result was significantly decreased symptomatology for all subjects in the treatment programme (Brooks and Richardson, 1980).

#### 2.2.6 Pain

The experience of pain is not simple a function of physical damage. It is also a psychologically intense experience; "It is a multidetermined event with behavioural correlates and consequences emanating from the external social and physical environment" (Degood, 1979, p.501). The major factors associated with it can be dealt with psychologically in a large number of cases (Degood, 1979). Successful treatment involves the teaching of the rationale of pain, self-regulation strategies for the control of pain, general relaxation and skills-training. Both rationale and skills training are related to each specific physiopathology. Most programmes are concerned with the cognitive suppression of pain using visualization/imagery and fantasy to obtain pain suppression. Self-induced analgesia is a special skills programme which to be successful must pay detailed attention to the components conceptualized by Davidson and Schwartz (1976) i.e. attentional (cognitive) and physiological (somatic) self-reulation. It is suggested by this writer, that fixation with thoughts of pain, illness and death are strong emotional (affective) components. The programme outlined by Degood (1979) is worth noting briefly:

- a. Information exchange (rationale or "theoretical frame of reference")

- b. Initial interview (establishment of contract)
- c. Baseline physiological assessment
- d. Questionnaire and self-monitoring instructions
- e. Basic autogenic instructions
- f. Biofeedback and home practice instructions
- g. Enhancement of self-regulation skills - stress management - self induced analgesia

### 2.2.7 Summary

Stress in hypertension and CVD seems related to elevated levels of HR, BP, RR and plasma renin and other physiological correlates of stress. This situation is not reflected in the two neuroses reviewed. In fact, the reverse seems true. Both neuroses seem to suggest they may reflect arousal of the parasympathetic rather than sympathetic nervous systems. In each of the reviewed treatment categories stress is considered the active focus. In all cases the treatments are similar. The first phase involves education and the provision of a rationale for the reported event (hypertension, CVD or neurosis) as well as cognitive restructuring. Relaxation is a major component of any stress reduction programme. The correlates of HR, BP, RR and muscular tension are critical factors. It is proposed that initially the purpose of a relaxation programme should be restricted to development of the self-monitoring and control strategies to be implemented in the third phase. Even neurotic-based problems respond to these strategies (Jehu, 1980). Relaxation training is second phase, followed by actual skills training in the third phase. These self-management, self-monitoring and self-control skills may incorporate biofeedback-augmented trials. The fourth phase consists of home assign-

ments, in vivo and generalization training, developing towards the sixth phase - a maintenance and therapist-free model of protracted self-control in the post-treatment phase. All of this is suggested by the review conducted into the three major stress related areas of hypertension, CVD and neuroses. The fifth phase can be augmentive, supplementary or parallel to each phase, or included as a special phase teaching specific skills, e.g. study skills in the case of academic underachievement.

### 2.2.8 Primary Components of Successful Psychotherapy

(Schematic summary of Section 2.2)

1. Cognitive restructuring or rationale
  - a. reality based (Burch, 1980)
  - b. treatment based (Watts, 1980)
  - c. education oriented (All)
  - d. coverage of risk factors (Burch, 1980)
  - e. misconceptions/misperceptions (Whitehead, 1979)
2. Relaxation techniques (All, but specifically as shown)
  - a. self control relaxation (Rooks and Richardson, 1980)
  - b. PMR (Thompson et.al., 1980)
  - c. auto-suggestion (Coursey et al., 1980)
  - d. mediation (Coursey et.al., 1980)
  - e. cognitive/somatic dichotomy (Degood, 1979)
3. Self-management factors - HR - RR - BP (All)
  - a. monitoring
  - b. coping
  - c. control
4. Perceived control - shifting of LOC (Stern etl.al., 1980; Miller, 1979)
5. Quality of life and life style issues (Harrell, 1980; Burch, 1980 and Whitehead, 1979)

6. Use of coping imagery/visualization/fantasy (Thompson et. al., 1980 and Degood, 1979)
7. Need for maintenance strategy - in vivo (All)  
- generalization
8. Specific skills training e.g.
  - a. Interpersonal perception (Jehu, 1980)
  - b. Diet control (Watts, 1980)
  - c. Pain control (Degood, 1979)
9. Need for multiple strategies for more potent treatments (Thompson et.al., 1980)
10. Early intervention (Thompson et.al., 1980)
11. Incremental success feedback (Watts, 1980)

#### 2.2.9 Proposed Intervention Programme

This section suggests a phased training/intervention programme which follows this proposed sequence.

- Phase 1 - Rationale (see 1 and 5 above)
- Phase 2 - Relaxation training (see 2 and 6 above)
- Phase 3 - Self management factors (see 3 and 4 above)
- Phase 4 - Home assignments (see 7 above)
- Phase 5 - Specific skills programme (see 8 above)
- Phase 6 - Maintenance programme (see 7 and 9)

### 2.3 Anxiety and Social Skills

Like stress (Section 2.2) anxiety is a pervasive and complex subject. It is difficult to separate the concepts of fear and anxiety. Sherman (1972) used the terms synonymously. Foa and Chambless (1978) noted that anxiety is comprised of three imperfectly correlated components - subjective (verbal or written self-report), behavioural and physiological. Bandura (1977) states that performance based procedures are the most effective, in the treatment of anxiety. A pragmatic approach will therefore be taken. This section will deal with the experimental reductions in anxiety found in clinical journals. Little emphasis will be given to Rachman's excellent conceptual analyses contained in *Fear and Courage* (1978) or in *Emotional Processing* (1980). Both are considered essential to an understanding of the processes and underlying theoretical constructs of anxiety. The latter journal article does give excellent descriptors of anxiety and initiating factors.

This section is concerned with details of specific treatments and measuring devices. It will emphasise the successful treatments which have effected reductions in anxiety in anxiety neuroses and phobic anxiety states. This section will indicate the more successful instruments discriminating anxiety within populations and which are useful to discriminate not only across treatments but also therapeutic gains made during treatment. Anxiety as a concept or construct will not be dealt with. Attention will be given to processes of anxiety reduction and their discriminant analysis. Some attention will be given to skills training. Interpersonal and intrapsychic difficulties are assumed in much of the literature of anxiety

and deficit skills models are sometimes offered, dealing with assertion training (Cotter and Guerra, 1976), social anxiety (Hall and Goldberg, 1977), the use of SD to reduce anxiety (Goldfried, 1978), phobias (Gelder, 1979) and cognitive factors (May, 1977). There is also an increasing emphasis on the use of in vivo and real life exposure as a primary therapeutic factor in the reduction of anxiety (Sherman, 1972). Techniques which are multi-modal therapies incorporating SD, relaxation, coping strategies, vicarious modeling, cognitive strategies and in vivo techniques seem to be more successful than singular treatments (Weissberg, 1977).

### 2.3.1

Anxiety Neuroses: "Relaxation is the mainstay of symptomatic treatment of anxiety" (Gelder, 1979, p.481). The same author complained that a number of relaxation techniques have not been systematically compared with each other in the treatment of anxiety neuroses, nor have detailed comparisons been made between muscle relaxation methods (e.g. PMR and SD) or other aspects of mental control. This is not true. The reviews conducted in this chapter give substantive evidence of comparative data. Paul (1969) had not only early made the same criticism but had conducted extensive experimentation into comparative analysis. Currently a long term study into the effects of relaxation and anxiety has been conducted by Deffenbacher and Michaels (1980) following the initial experiment by Deffenbacher et.al., (1979). In the initial experiment two relaxation self-control techniques were compared. One technique involved cue-associated self-control (CA-SC) based on PMR, and a four-step model proposed earlier by Deffenbacher. The other relaxation technique consisted of modified

SD. Both techniques effectively reduced state and trait anxiety on measures other than STAI and IPAT, and also reduced the debilitating effects of test anxiety. Results also indicated the efficacy of SM strategies using relaxation techniques to cue coping skills generalizing to in vivo problems in other areas. Follow-up indicated stable results. In their long-term (12 months) follow up study, (Deffenbacher and Michaels, 1980) relaxation as an SM strategy showed maintenance of the reductions in the debilitating effects of anxiety over a protracted period. The CA-SC relaxation group showed marked gains in facilitating reductions in anxiety levels, and in objective evidence (grade point averages) compared to controls. Earlier, Deffenbacher and Parks (1979) had established the efficacy of CA-SC relaxation which made significant reductions in anxiety compared to traditional SD and controls.

A recent detailed review of anxiety management using a applied relaxation techniques was conducted by Hutchings et.al., (1980). Two relaxation techniques were compared both of which were almost identical. A self-control rationale, homework assignments, with subsequent applied instructional training in anxiety management. The fundamental difference was that in the anxiety management (AMT) contingency structured rehearsal using CA-SC relaxation was given at each subsequent session. In the applied relaxation contingency (ART) the CA-SC component was omitted. Training in ART consisted only of varied and elaborate relaxation instructions. The results demonstrated that both conditions AMT/ART were superior in effect to a relaxation only, placebo group, and

control group. Anxiety management using relaxation as a central component was an effective treatment leading to significant decreases in self-perceived stress and anxiety. This study extended previous findings by including cognitive coping in vivo as a confrontation tactic in dealing with stressful situations. Results indicated that the CA-SC AMT technique gave subjective less anxiety. Also overt maladaptive behaviours were significantly reduced indicating cognitive-behaviour modification. CA-SC AMT was significantly better than relaxation only and placebo on all measures. CA-SC relaxation was considered a key component. Again it appears that multi-modal therapies are significantly more effective.

Now and again, in a detailed research and review of literature, a journal article is noted almost by accident which seems to be a highly significant article not referred to in other reviews. Sherman and Plummer (1973) and Brady (1974) were two such, and a third, Miller and Bornstein (1977) is offered. In this latter experiment, eighty subjects were allocated to four different relaxation conditions each of which were also paired with music as a separate condition. These included 1) PMR, 2) a relaxation technique called Intermediate Relaxation (IR) using PMR and cognitive imagery techniques, 3) Mental Relaxation (MR) using cognitive imagery only, and finally, 4) a self-relaxation (SR) which was used as a control and was a sitting quietly only relaxation.

The results demonstrated clearly that a brief relaxation training session (only 30 minutes), results in significant decreases in anxiety measures which included STAI. All

subjects considered that the techniques they were given as moderately effective and a useful technology for the reduction in coping with anxiety. The conditions in which music was added, did not add to the overall effectiveness of relaxation techniques over a single session. This experiment seems to justify the Synergism hypothesis that taken separately, each component of a multi-faceted technique e.g. PMR + SR + MR are equally effective. Further, that the additive value of the various techniques and their sequential effects makes multi-modal therapies more efficacious (Lazarus, 1976).

Relaxation has been found an effective strategy in dealing with phobic anxiety states such as phobic thoughts, speech anxiety, test anxiety and specific phobic states such as acrophobia, agoraphobia, and animal, insect or snake phobias.

### 2.3.2

Phobic anxiety states: The treatment of phobic disorders has changed dramatically in the last decade. Early treatment of phobias used to include lengthy psychoanalysis, or sometimes nine months of weekly one-hour sessions of SD. These phobias included fear phobias with snakes, spiders and other insects, animals etc., social phobias and impairments to social skills such as speech anxiety. One particular phobia will be dealt with which indicates the usefulness of relaxation. Current techniques dealing with phobic anxiety states involve modeling, covert reinforcement, SD flooding and graduated exposure using in vivo, vicarious or symbolic techniques. These often also use relaxation.

Agoraphobia: This tends to be a female dominated phobia related to open spaces. The syndrome often involves a degree

of psychosexual or marital difficulties and/or depression. Marks has conducted extensive research into phobic fears for over a decade - 1971-1978, and the SD, exposure and flooding techniques available for treatment of these problems. From his experiments he has concluded that the essential element was exposure to the phobic object, and that exposure to real phobic stimuli was better than imagery or visualization techniques. This led him to also conclude and demonstrate that low level exposure as used in SD, or high level exposure as in flooding or implosion is not as effective as real-life exposure.

Mathews et.al., (1977) used anxiety management techniques focussing on cognitive strategies. He has suggested that the most effective results are obtained with multi-modal techniques which incorporates all these developments, a) practice of phobic situations using imagery and in vivo techniques, b) in vivo exposure to phobic stimuli and c) relaxation techniques to reduce self-perceived anxiety in the presence of the phobic stimulus whether imaginal or in vivo. Gelder (1979) makes the important observation that significant reductions in phobic anxiety were obtained without the necessity to resort to behavioural contracting or assertiveness training, with an average therapist contact time of between 2.1 and 2.4 hours. The emphasis in the new multi-modal is on the shifting of responsibility from therapist to client. Practice reality therapy (in vivo) and client persistence is emphasised.

Since the introduction of SD as a treatment for phobias results have been equivocal. A large number of studies are available concerning treatment for phobias. Many of these

studies have involved modification of mild fears in experimental settings with volunteer students. Concern has been expressed that analogue studies may not be relevant to in vivo, especially in acute/severe cases (Mathews, 1978). Equivocal results are often attributed to placebo or so-called non-specific factors. Many reviewers (e.g. Kazdin and Wilcoxon, 1976) conclude that subjects' expectancies (non-specific factors) account for much of the change that takes place during therapy. This is contested

"unlike other fears agoraphobia fails to respond to a plausible non-specific treatment procedure that omits systematic exposure to fear relevant scenes" (Mathews, 1978, p.393).

In the conclusion to his study Mathews (1978) suggested that sufficient evidence exists among phobias, to caution the generalization of techniques across phobic anxiety types or populations. Real life phobic situations are often more severe forms than those treated in analogue studies. This evidence suggests that the search for a simplistic intervention strategy to treat all classes of phobias has failed. Treatment strategies need to be multi-modal or else phobic specific. Key features of any phobic treatment strategy need to include exposure, in vivo real life situations/objects and coping skills. Relaxation and imagery seem to be central components to coping skill techniques.

Measures of anxiety: Grimm (1980) conducted a review of evidence for cue controlled relaxation, in which he analysed a number of group designs. In Tables 1 and 2 (1980, pp.286-287) he listed a number of relevant studies and the self-report measures used. These included:

TAS	Test Anxiety Scale: Sarason (1957)
S-R	Inventory of anxiousness: Endler, Hunt and Rosenstein (1962)
STAI	State-Trait Anxiety Inventory: Speilberger Gorsuch and Lushene (1970)
TMAS	Taylor Manifest Anxiety Scale: Bendig (1956)
STABS	Suinn Test Anxiety Behaviour Scale: Suinn (1969)
SUDS	Subjective units of disturbance in Cotler and Guerra (1976)

Goldfried et.al., (1978) used a similar group of measures to reduce anxiety through cognitive restructuring, and SD.

These measuring instruments used to discriminate various aspects of anxiety seem to be the most widely used current instruments in addition to the IPAT, ASQ (Cattell and Scheier, 1963). According to Buros (1970) "the IPAT Anxiety Scale has a sounder conceptual base than other current instruments of its type" (1970, p.761). A personal examination of much of the literature into relaxation, and anxiety reduction seems to indicate the equivalent usage rates of the IPAT, ASQ and STAI as sensitive indices of initial stress levels, and the discriminant effect on these levels of various forms of relaxation meditation, hypnosis and altered states of consciousness.

Specific detailed scores will be cited since these will be relevant to the thesis Discussion (Chapter 7).

### 2.3.3

State-Trait Anxiety Inventory (STAI) (Speilberger, Gorsuch and Lushene, 1970): Hutchings et.al., (1980) conducted a research programmed which is of significance to this thesis. They dealt with the problem of chronic general anxiety. As indicated by them, these persons experience anxiety in a variety of

settings making it difficult to determine specific antecedents for their emotional state.

Approximately 800 students enrolled in general psychology at the University of Kansas completed a battery of screening measures which included a short form of the TMAS. Students scoring in the upper 15% were invited to attend a pretest session conducted five to seven days after screening. Apparently 70 students (8.75%) met the criteria of chronic general anxiety but some dropped out for various reasons. They were all initially randomly assigned to five experimental conditions each of 10 or 14 subjects of which four were further subdivided into one of two treatment groups of 5 or 7 subjects. The total experimental period was continued for six weeks.

Each treatment session lasted 75 minutes and were conducted in a group therapy room in the department's Psychological Clinic. Each session was introduced by its rationale followed by a 40 minute audio-taped presentation of different relaxation strategies across the four experimental groups. Subjects were instructed to practice relaxation at home twice daily and were given daily, take home behavioural-self report assignments. Unfortunately only post-test results were shown.

Results - STAI only (Hutchings et.al., 1980, p.186)

	N = 58				
	Control (Untreated)	Anxiety Management Training AMT	Applied Relaxation Training ART	Relaxation Only	Placebo
TRAIT Score	67.4	57.9	61.8	63.2	63.9
STATE Score	53.7	38.7	42.2	45.4	46.6

For the purpose of this section the method of screening and selection, general treatment procedures and final STAI scores are of great interest. The time period for expected significant change from treatment of six weekly sessions was also of great interest.

Ollendick and Murphy (1977) had earlier used the STAI to examine changes in subjective feelings of distress following five weekly sessions over three conditions. Their results were sub-divided into two general categories determined as Internal (I) and External (E) using Rotter's (1966) I/E Locus of Control Scale.

Results STAI only, Ollendick and Murphy (1977, p.225)

N = 36

	Internals		Externals	
	Pre	Post	Pre	Post
TRAIT Score	38.89	No change	48.83	No change
STATE Score	34.72	26.49	42.17	26.19

These scores are interesting when compared to those of Hutchings et.al., (1980). In the latter experiment the subjects were (N=36) undergraduate female students at Indiana State University who received course credits for participation, selected from a research pool of 250 female undergraduates on the basis of Rotter's I-E Scale. Discriminating between extremes (internals 6.17; externals 15.00) on the I-E Score shows a significant difference between pre-test conditions, not reflected in post-test conditions on STAI-State scores. Subjects were standardized for sex (female only), age (mean age = 20). These result support Phares (1976)

contention that externals generate high levels of state and trait anxiety compared to internals.

These scores were also "normal" scores compared to the previous results, which were selected on high anxiety criteria. What is interesting is that only the AMT/ART conditions reduced State anxiety to the pre-test "normal" scores shown above.

Goldfried and Goldfried (1977) selected 42 speech anxiety adults from a community group who volunteered to participate in a programme of therapy focussing on anxiety reduction in public speaking situations. These subjects responded to newspaper advertisements. They were screened by having to score highly (35 or more) on the S-R Inventory of Anxiousness speech items, and equivalently (16 or more) on a confidence as a speaker scale. These screening effects would classify these subjects within the high anxiety protocols of Hutchings et.al., (1980). This experiment demonstrated clearly the efficacy of CA-SC relaxation compared to SD and Habituation by exposure techniques in treating phobic anxiety states. Significant improvement occurred across all three therapeutic procedures used, but the target relevant condition (CA-SC) led to greater gains.

Results STAI only, Goldfried and Goldfried (1977,  
pp. 128-129) N = 42

	TRAIT	STATE	
Pretest scores all groups	58.23	45.26	
Final Post-test scores			
(CA-SC) Target relevant	35.07	37.00	n = 14
(SD) Target irrelevant	45.71	41.93	n = 14
(Habit.) Prolonged exposure	41.79	41.76	n = 14

## 2.3.4

IPAT: Anxiety Scale Questionnaire (ASQ) (Cattell and Scheier, 1963): This is a 40-item objective self-administrable questionnaire for the assessment of general free anxiety level. It is the product of methodologically and clinically sophisticated large scale factor-analytic research. Cattell and Scheier (1963) developed this scale out of 2000 items from five primary scales of the 16PF. Cattell had noted that anxiety appears to be of two types a) State anxiety - attributable to stressful external (environmental) events, and b) Trait anxiety - that which exists chronically as a dimension of personality or temperament. The scale is divided into 2 x 20 item sub-scales which yield separate "overt" and "covert" anxiety scores based on the State-Trait dimensions determined by Cattell's factor analytic method. The total score based on all 40 items is labelled "total anxiety".

"The IPAT Anxiety Scale's impressive systematic research background commends it for use as an overall measure. No competing test can compete in this crucial regard. For a quick measure of anxiety level in literate adolescents and adults for screening purposes, it has no peer" (Cohen, 1970).

An early use of the IPAT-ASQ was in the excellent study of relaxation as a behavioural self-management skill by Sherman and Plummer (1973). Subjects were volunteer university psychology students (juniors and seniors). Unfortunately no pre-post test raw scores were given. Since they were volunteers it could be assumed some self-perceptions of anxiety may have been present, though no firm assumptions can be made. The results indicated significant sex differences as well as reductions in anxiety indicating relaxation effect. Males

(n = 9) with IPAT ASQ score difference 4.11 and females (n = 12) with IPAT ASQ score difference of 3.00. Sex differences have been found in raw scores, which STEN factors control for (Cattell and Scheier, 1963).

In assessing the effect of chronic anxiety level upon self-control of HR, Cox and McGuinness (1977) used the IPAT ASQ in a more discriminating fashion. They selected ten subjects from a population sample of 90 non-psychology students on the basis of high anxiety (Hi Anx) and low anxiety (Lo Anx). These were discriminated on the basis Hi Anx = Sten 8-10 and LoAnx = STEN 1-3 (Cattell and Sheier, 1963). In their findings, the results demonstrated clear HR responding differences between the two groups.

Deffenbacher and Parks (1979) in a comparison of traditional and self control SD selected 28 introductory psychology or sociology students from a population sample of 525 students. The basis of the discrimination was a Test Anxiety Scale developed by Sarason in which they a) scored >25, b) indicated interest, c) volunteered, and d) completed the pre-treatment assessment. These researchers used the IPAR ASQ as a non-targeted anxiety assessment device as a pre-post measure.

Results - IPAT ASQ only (Deffenbacher and Parks, 1979  
p. 95

	Traditional SD (n = 9)	Self-Control SD ( n = 9)	Wait-list Control (n = 10)
Pre-treatment	38.67	41.22	40.40
Post-treatment	32.86	29.80	43.60
Follow up	34.64	28.28	42.18

This data is significant to this thesis. Treatment groups were of the same order of grouping ( $n = 10$ ), and the IPAT ASQ was selected as a measurement instrument for screening, for a non-treatment control group and for measuring significance in reduction/non-reduction of non-targeted anxiety. In the experiment cited here traditional and self-control SD produced significant reductions on the IPAT ASQ compared to controls, and self-control SD reported significantly less anxiety than the traditional SD group.

Of the three anxiety measures used, the other two - Wolpe's Fear Inventory, and Sarason's Test Anxiety Scale, Cattell and Scheier's IPAT ASQ seems to be more sensitive as a discriminant between therapy groups using relaxation. It also seems to be a sensitive instrument to chronologically determined differences in anxiety levels. The IPAT correlates highly with the TMAS (Buros, 1970, p.760). It justifies Cattell's contention that it is "probably the most effective available brief questionnaire instrument for supplementary clinical diagnosis and giving an objective measure for research purposes". It correlates highly at about 0.80 with the STAI and is simpler to administer and score (Cattell and Scheier, 1963).

#### 2.3.5

Social Skills: The major credit for the current development of social skills training is generally given to Wolpe (1958) for his development of SD, and to Lazarus (Wolpe and Lazarus, 1966). Throughout the 1950's and 1960's the emphasis was on the specific characteristics of social competence (Smith, 1965). Currently there are still no agreed definitions of social skills (Eisler, 1977).

Recently emphasis has shifted to the treatment of self-perceptions concerning anxiety and social skills deficiencies. It is considered that many of the equivocal findings result from a short-term treatment perspective, and an over-emphasis on analogue studies (Heimberg et.al., 1977). Interpersonal problems are multi-dimensional and represent complex socio-psychological phenomena. They rarely respond in a simple way to a single technique. Broad spectrum therapy approaches are considered the most suitable for anxiety reduction. In general, the literature has supported a multi-modal approach (Lazarus, 1976). These include behavioural rehearsal, SD, relaxation, cognitive restructuring, modeling and specific skills training such as assertion training, study skills, and speech and interview training programmes. However, anxiety reduction is only one psychologic intervention area.

In a cross disciplinary survey of research into various kinds of illnesses, CVD - hypertension - renal, and cancer account for 66% of all causes of death. Respiratory diseases and non-specific accidents are the next most lethal (Hull, 1977). What is also clear from this survey is that these chronic problems are strongly influenced by life-style, quality of life and socio-psychologic skills associated with interpersonal interaction and intrapsychic factors. Psychological intervention in the form of preventative treatment is an important treatment area.

"Unlike the infectious diseases, where the aspect of life style at issues was hygiene, the chronic diseases are the result of a broader spectrum of causes, namely social habits, social conditions, social arrangements and social relations" (Hull, 1977, p.137).

As already indicated in this section many of the neuroses have a complex interpersonal/intrapsychic base. Agoraphobia seems to have a sexual or marital discord base. Psychosexual difficulties are another such domain. Both seem to respond quicker and more effectively to behavioural treatments. Pain, death expectancy (e.g. cancer), depression and other chronic disorders also respond more successfully to multi-modal strategies.

Section 2.1 and 2.2 have already established the efficacy of multi-modal treatment packages as non-pharmacological intervention strategies for chronic problems and disorders. The emphasis on treatment is not only on reduction of the prevailing or presenting symptoms, but also long-term changes to life conditions. This involves cognitive restructuring as part of the skills training processes, as well as the specific skills training in areas already referred to.

Shostrom (1966) developed a device to measure the therapeutic influence of skills intervention techniques which train a person to be more fully functioning, and live a more enriched life. Synergism involves multi-modal therapies which develop self-actualizing values and the life skill strategies which are effective in enriching quality of life. The recognition of life satisfaction and quality of life issues are an important part of treatment. Subjective and statistical indicators are often at variance (Soper, 1980).

#### 2.3.6

#### The Personal Orientation Inventory - POI (Shostrom, 1966)

The POI is based on the concept of self-actualization and is therefore demonstrably different to the Cattell IPAT

ASQ. The instrument differentiates significantly between self-actualized and non-self-actualized individuals (Goldman and Olczak, 1980).

Most important it has been used as a discriminant tool between pre- and post-therapy sessions in psychotherapy (Shostrom, 1964). It is intended to use the POI to determine therapeutic progress in self-actualization terms consequent upon the treatment programme as a pre- and post research analysis. It is considered that the POI is probably the most valid personality test available to measure the outcomes of therapeutic strategies which involve reduction of tension/BP and self-coping strategies (Paritzky and Magoon, 1979).

### 2.3.7

#### Behavioural Inventory Battery (Hersen and Bellack, 1976)

In contrast to the psychodynamic emphasis (motives, needs, drives, defences) the behavioural approach to assessment places emphasis on what a person "does" in specific behavioural situations. The behavioural inventory battery has four functions:

1. identification of maladaptive behaviour/s patterns
2. self-monitoring of specific responses
3. application of therapy skills
4. self-monitoring of coping strategies

For these four functions, structured assessment instruments are to be used

- a. by the therapist, to initiate the programme
- b. by the client, in a self report/monitoring style
- c. by client and therapist for the purpose of evaluation.

There are two important considerations to be held in mind

when self-report measures are considered:

First, that the client's self-reports are classified as behaviours in themselves and constitute an important adjunct to therapy;

Second, that self-reports are no more unreliable or invalid than other tests with the possible exception of well calibrated electro-mechanical instruments.

## 2.4 Rationale

As already indicated, stress is a pervasive phenomena in contemporary society. The adverse effects of social stress on physical and mental health are well documented throughout this thesis. An important aspect of stress emphasised also throughout this thesis is that an individual's perception of events as threatening is frequently a distorted view of reality as so aptly demonstrated by Lazarus (1966). Inappropriate coping strategies, loss of personal effectiveness and lack of personality integration are often the result of this cognitive distortion of reality.

Meichenbaum (1974), Mahoney and Mahoney (1976), Coates and Thorenson (1977), and many others have been pioneers in this burgeoning area of cognitive behaviour modification, self-help and self-control technology. The major emphasis as shown previously has been in the reduction of perceptions of stress and anxiety and the provision of alternative coping skills, as well as education of the individual towards a change in quality of life issues. Meichenbaum (1974) and Lazarus before him (1966), have long advocated the promise of cognitive restructuring using a multi-modal approach combining relaxation techniques and social skills training.

A recent research article (Yorde and Witmer, 1980) states: "a search of the literature revealed no such programme as Meichenbaum recommends"... (p.76). This is patently incorrect. They refer to Meichenbaum's (1974) suggestion of explicitly teaching non-clinical populations the diverse techniques of altering attributions and self-labels, imagery rehearsal, shifting attention, distractions, self-instruc-

tions and relaxation. The self-management psychology series of books produced under the general editorship of Thorenson (1977 - 1980) is a good example of addressing non-clinical groups to these intervention techniques.

These books spend a great deal of attention in providing the underlying rationale and in educating non-clinical groups in the techniques and methodology of cognitive behaviour modification. Two recent theses also attest to this approach. The lengthy thesis of Patel (1976) has a chapter (Chapter 9) devoted entirely to the "therapist as teacher" approach. She gives explicit details of the precise instructions given to clients, talks about the necessity to establish the conditions of learning with the client and gives transcripts of all her homework assignments. The more recent thesis of Seer (1977) does not extend to this detail, but he does state categorically the importance of rationale. It took three pilot schemes to convince Seer (1977) of the motivational and therapeutic importance of providing a rationale which he then reinforced with weekly sessions.

The detailed studies of meditation groups, conversion groups and cultist organisations contained in the American Behavioural Scientist (July/August, 1977, Vol 20, No. 6) solidly attest to the pervasive and binding influence of rationale.

Lofland and Stark (1965) after extensive study of a small eclectic religious group called "Divine Precepts", outlined seven factors the accumulation of which were considered necessary to initiate and then maintain conversion. This model is considered to be one of the most thorough

available (Richardson and Stewart, 1977). The first was self perception of long-term tension, strain, deprivation or frustration. The second was the possession by the stimulus group, of a religious rhetoric (rationale) and problem solving perspective (technique). The remainder dealt with the interactional factors perceived by Lofland and Stark (1965) as moving a person along a continuum from 'conversion syndrome' susceptibility to total conversion. Interestingly, ideological (rationale) factors remain the key to the remaining five processes. In detailed research into the Revival Charismatic Movement and the Divine Light Mission, this author found that initiation into some of these movements was preceded by personalized small group sessions extending over many weeks in which performance was vetted until congruence was obtained between the perceived behaviour of the initiate and the behaviour perceived by the group to warrant initiation. Much of this "programming", involved acceptance of a specific religious rhetoric and perspective which became a rationale for the cognitive restructuring of thought and behaviour. The parallel between these more extreme conversion systems, and the rationale seen as necessary to maintain a therapy interface is clear.

Seer (1977) comments that many of these groups and organisations e.g., TM depend for motivation, commitment and conversion on weekly if not daily reinforcement sessions involving the rationale of the movement (The Science of Creative Intelligence - Bloomfield et.al., 1975). As Sargent (1956) can attest, there is nothing neither sinister nor new in this. It has however, tended to be overlooked in the

quest for objectivity. The behaviourists now entering these cognitive domains are reinforcing the obvious. The provision maintenance and reinforcement of a rationale in therapy is central to therapy as much as training in the rationale of 'behaviourism' is central to a specific therapeutic perspective. The converted, once the rationale is accepted as integral to the process, often fail to recognise the rationale. This can be observed in every therapeutic strategy. Psychoanalysts are imbued with the rationale of Freud, as much as behaviourists with that of Skinner and Bandura. In therapeutic intervention involving both these strategies success depends as much on conversion to the rationale as much as it may depend on technique.

The case for a rationale for intervention techniques using relaxation as the major therapeutic component has been advocated but has rarely been integrated across all intervention domains, and within technologies. Paul (1969) in his investigation of hypnosis and relaxation, identified the procedures for the induction of relaxation and noted how similar they were to the induction processes of hypnotism.

Briefly:

- a) the situation is defined (either relaxation or hypnosis)
- b) the person/client is instructed to close the eyes
- c) suggestions of relaxation are then given
- d) instructions are given either
  - as motivational agents
  - as cognitive restructuring techniques
  - as imagery/fantasy
  - as admonitions for self instruction

- e) suggestions are then given about repeated
  - induction
  - generalization

Paul (1969) pointed out the major difference between relaxation and hypnosis was that relaxation became a learned self-control coping skill that could be generalized to in vivo. The difference in emphasis was that training is aimed at the focus of attention on the internal mediational variables. Hypnosis was identified as different. Paul (1969) was clear that hypnosis was not a self-control coping skill in this same model. It did not normally aim to develop the same awareness attenuation skill. In most applications it developed a dependent situation, whereas relaxation develops independence and emphasises personal integrity. Paul (1969) also found that relaxation training procedures led to significantly greater reductions in heart rate and tonic muscle tension than hypnotism.

Therapists who read the "Pauline doctrine" of Paul (1969) can choose to accept or reject these statements on the basis of their knowledge/ignorance of the processes of both hypnotism and/or relaxation. Paul (1969) has provided an attractive rationale for advocates of relaxation as opposed to hypnotism. The academic arguments for and against are irrelevant. Once Paul's posture is accepted (as by this author), it becomes a teaching rationale. In the experience of this author, clients do express concern that hypnotism may be involved. The "scientific" rationale provided by Paul (1969) is useful and tension reducing.

The rationale provided by Patel (1976) was based on evi-

dence to hand at that time. She provided her clients with lectures, slides and reinforcement handouts, to explain the rationale of stress and it's reduction in "scientific" terms. This "demystified" the process by taking away the mystique of the esoteric and replacing it with the mystique of science. Whether one agrees with the efficacy of one versus the other again is irrelevant. The process involved is the basic cognitively acceptable premises offered by a plausible rationale. This author prefers the scientific mode, but it is important to recognise the process, which may equally validate other modes. The process is the rationale (Sargent, 1956).

Seer (1977) provides a problem, seen often in therapy. It is not enough to demystify. The rationale provides the cognitive skeleton on which the therapy is dependent. The "outstanding finding" of Yorde and Witmer (1980) was that "only those groups that received the lecture portion of the treatment showed improvement on virtually all of the measures of stress" (p.85). The latter research is of interest to this thesis and the detailed findings will be reviewed in the Discussion chapter of this thesis.

Suffice at this point to state that this was a parallel research project with a normal population of fifty people, solicited from a not specifically student community to which 50 persons replied and from which no one was eliminated. The project involved a five week period (six in this thesis) divided into sub-groups of ten ( $N = 10$  for experimental groups). The results demonstrated the importance of rationale as a key therapeutic variable. They also demonstrated the efficacy of multiple-package treatment modules.

For the purpose of this thesis, although not mentioned earlier, an important study outlining a Three Arousal Model of arousal is that of Fowles (1980). As far as this author can determine this has not so far been incorporated into any of the traditional relaxation models. In the context of the present thesis it will be discussed later in detail, but is mentioned at this point because this model forms the substance of the rationale to be used in the design of Synergism. Another important paper is considered to be that of Stilson et.al., (1980). There is no doubt in the author's mind that early training as a behavioural psychologist has predisposed towards a scientific rationale, explainable in psychophysiological terms. The influence of the medical model and research into successful relaxation strategies dealing with the objective phenomena of hypertension has also influenced the attraction of psychophysiological models.

Selye himself has set the precedent for combining an interest in the esoteric meditation systems (TM) and the neuro-psycho-bio-physiological approach to the rationale. In the foreward to the book on TM by Bloomfield et.al., (1975), Selye explains that the physiologic effects of the hypometabolic response recorded in the practice of TM, are opposite in action, to the mechanisms which are activated in order to respond to stress. Selye in this foreward stated the author's rationale.

"As a psychological approach to coping with the unpleasant aspects of the stress of Life, TM does not conflict with my own personal views. My goal is a code of ethics based on natural biological laws derived from the study of defense reactions during stress. Like TM, my code neither depends on nor con-

tradicts any extant religion philosophy or political conviction. Where TM uses pure awareness as the means to secure it's intended benefits, I offer guidelines for physiologically justifiable behaviour in the pursuit of happiness and security." (p.xi)

However, this thesis does not rest on Selye's rationale of stress, nor does it draw on TM for it's technology. The purpose of the analysis of the review of literature in this chapter is to form an operational definition and framework of key components in successful relaxation. This information is used to determine the key components of a successful relaxation technique (Synergism). The latest research in the related fields of stress, anxiety and arousal are then drawn upon to provide a rationale for the mechanisms identified as key components. Research into the areas of stress and arousal help to identify the problem domain in which this therapeutic strategy can be seen to be desirable as a non-pharmacological intervention. All of this research helps to reinforce, justify and lend theoretical and empirical structure to the rationale.

## 2.5 Relaxation

The purpose of this analysis is to identify the essential elements which commonly recur in successful relaxation strategies. Various researchers at different times have, reviewed the relaxation literature and have identified some of the constantly recurring themes in the rationale, methodology and induction procedures of relaxation. Others have identified the physiological correlates which seem to determine states of relaxation and meditation. A review of the

literature of successful relaxation will be the purpose of this section. A summary of the key factors which determine a successful relaxation strategy will conclude this section. The physiological correlates of relaxation and meditation will be dealt with in section 2.11 - Correlates.

Under the general rubric of relaxation fall a diverse group of technologies both ancient/modern, secular/religious and these range experientially along a whole continuum of experience from relaxation and day dreaming to meditation and esoteric and emotive imagery. The non-pharmacological techniques of relaxation can be considered as self-induced altered states of consciousness (Frumkin et.al., 1978). Although Paul (1969) found hypnosis to aid in the development of relaxation, self-induction in response to instructions containing suggestive material concerning relaxation, is the normal induction technique which leads to self-generated relaxation behaviour.

There are many purposes for which relaxation techniques have been successfully employed in therapy. As already indicated in the introduction, relaxation has been used for the reduction of anxiety, stress and phobic reactions (Wolpe, in Morse and Watson 1977). Jacobson (c. 1929) early used PMR to reduce blood pressure. Blood pressure reduction has been the aim of many relaxation, hypnosis and meditation strategies, more notably those of Patel (1976) and Seer (1977). It has been used as an adjunctive treatment as in SD (Marks, 1972) autogenic training (Luthe 1963), hypnotic induction (Paul, 1969) and as a therapy by itself (Jacobson 1970). The major relaxation therapies will be analysed in

chronological sequence.

### 2.5.1 Progressive Muscle Relaxation (PMR):

Jacobson was the first to conduct extensive research into relaxation as a technology, and is currently still in the process of investigating the neuromuscular and ocular activity which accompanies relaxation (Jacobson, 1977). He maintains that his experiments have indicated conclusively that mental activity is an activity which engages the involvement of the whole body.

Despite this life-long interest in relaxation by Jacobson it was not until the advent of SD (Wolpe, 1958) that interest in relaxation and rest as a form of therapy became the subject of serious research. Jacobson (c. 1929) considered that there were two mode-specific behaviours elicited by relaxation -

- a) somatic effects (respiration, heart rate, muscular tension)
- b) cognitive effects (which he included as mental and emotional)

Jacobson seems to have made a fundamental error in his research by concluding that when the skeletal muscles are totally relaxed thoughts and feelings are impossible to generate. The subjective reports of cognitive and emotive imagery by meditators is too extensive to be ignored. In a study concerning EEG patterns in experienced meditators, Woolfolk (1975) found faster EEG rhythms, which became more prominent and increased in amplitude during meditation. All subjects in meditation display considerable alpha activity during rest/relaxation, and this has become a characteristic

of the initial meditation state. Almost all forms of meditation demand as a pre-requisite, deep physical relaxation or "sleep of the body" with parallel excitation/arousal of mind. Almost all also rely heavily on imagery (Satyananda, 1974).

### 2.5.2 Systematic Desensitization (SD)

There seem to be serious flaws in the rationale provided by Jacobson. There is no dispute as to the efficacy of PMR, especially since it provides the basic module of Wolpe's (1958) SD, a widely acknowledged technique in which a modified version of Jacobson's PMR is used. Unfortunately the rationale of reciprocal inhibition presented by Wolpe (1958) is also no longer valid (Kazdin 1976). Two recent attempts to provide a rationale for relaxation have been provided by Davidson and Schwartz (1976) and Lang (1979). Again, there is no dispute concerning the efficacy of the relaxation component in SD. In this technique the key component is the simultaneous exposure of the anxiety-provoking stimulus with the state of relaxation. The ability to relax skeletal musculature and at the same time not only generate cognitive events but also generate emotive imagery which normally evokes an anxiety response is a further rejection of Jacobson's hypothesis. There is not total concurrence between skeletal muscle activity and mental activity. SD research, meditation research and other psychobiological research using drugs (e.g. curare) make it clear that complete muscle relaxation is absolutely compatible with anxiety and other cognitive events such as emotive imagery and covert reinforcement (Mahoney and Mahoney, 1976). Jacob-

son's (c. 1929) early research suggesting that relaxation involves a cognitive and a somatic component still appears to remain relevant.

### 2.5.3 Mode Specificity and Hemispheric Lateralization:

There is a great deal of anecdotal and empirical evidence to suggest that relaxation techniques are mode specific between the various somatic affective and cognitive states (Davidson and Schwartz, 1976b). Thus it is possible to be somatically relaxed whilst, despite an attitudinal desire to be relaxed, cognitive processes continue unabated. It is also possible, by attitudinal set, to suffer intense somatic distress whilst eliciting a cognitively calm response. "Attention has only recently been focussed on this point" (Tarler-Benolo, 1978). The factors of differentiation and psychobiologic mode specificity between relaxation techniques is of immense importance, and Tarler-Benolo (1978, p.733) suggests that this area requires careful scientific research.

Jacobson (1977) is now suggesting that both the cognitive and the somatic components are merely dimensions of each other. For the purpose of analysis of relaxation his earlier distinctions are still useful. According to Davidson and Schwartz (1976) in their excellent presentation of a psychobiologic theory of relaxation, few researchers have paid sufficient attention to the distinction between cognitive and somatic mode-specific relaxation or to the differential effects of these modes. These researchers also identify a third element which interacts with the cognitive and somatic modes. Ornstein (1972) was one of the first researchers to draw recognition to the attentional components

involved in mental processes. In this thesis this attentional component is also referred to as Awareness (see Section 2.9, Self Control). The continuum of this attentional mode moves from active focus (concentration, attention or self-generated imagery) to passive receptivity (opening up, pure awareness, just "being" and some forms of passive sensory awareness). This attentional mode also receives greater emphasis in Section 2.6, Meditation and Awareness.

The three mode-specific relaxation techniques identified in the research conducted by Davidson and Schwartz (1976) are important components for the purpose of this thesis. According to them most relaxation methodologies do not always give equal emphasis to the three components, a) somatic, b) cognitive, and c) attentional. Most research has assumed that all relaxation techniques are essentially similar.

In addition to giving a mode-specific rationale to relaxation, Davidson and Schwartz (1976) also presented some evidence suggesting hemispheric differentiation as a process which they considered helped to rationalize the cognitive and somatic contributions to anxiety. This new rationale was considered by them to have resolved the many seemingly anomalous findings in relaxation research. They provided a model, matching specific relaxation techniques to particular anxiety patterns on the basis of mode-specificity and hemispheric lateralization. Their evidence suggests that relaxation, as a self-regulatory behaviour, can inhibit anxiety in a specific mode. This voluntary inhibition not only may reduce unwanted activity in the specific mode but may also reduce unwanted activity in other modes.

#### 2.5.4 Cognitive Relaxation:

Prior to this research, the state of relaxation had largely been determined on the basis of muscle relaxation only. Drawing on current psychophysiological and electrophysiological evidence concerning afferented primates (Cohn, 1972), somatic relaxation is more precisely defined when peripheral muscle activity and reduced efferent motor commands result. Davidson and Schwartz (1976) point out that this is an important distinction between self-induced relaxation and drug induced relaxation. Relaxation drugs often act at the periphery only. This suggests that a clear distinction seems to exist between cognitive and somatic relaxation. The critical variable in SD therapy according to Rachman (1967) is the "sense of calmness". From his research it appears that neither mode is dependant on the other. If both occur simultaneously relaxation is more profound.

There is a lack of understanding shown by the proposed rationale surrounding the classification of techniques along the attenuation continuum Active - Passive, as listed by Davidson and Schwartz (1976, table 15, p. 414). Much of their hypothesis will be critically examined in other section on meditation, self-monitoring and self-regulation. One key factor which emerges clearly from the literature regarding this continuum, is that in attempting to alter somatic processes, the self-generation of internal instructions (active, direct cognitive control) is not as effective as passive awareness of somatic processes (self-monitoring). Luthe (1963) using autogenic training and Paul (1969) using hypnosis, PMR and SD have both reached the same conclusion.

This fact is of paramount importance where reduction in the tension of peripheral musculature and reduction in other relaxation response mechanisms is desired (e.g. BP, HR, BR).

In this newly researched domain of cognitive relaxation, the research in emotive imagery predominates. A rationale for cognitive relaxation which seems to have more objective scientific validation has been proposed by Lang (1979). Most psychophysiological research in this area deals with sympathetic arousal rather than sympathetic inhibition and parasympathetic arousal (relaxation). However, emotive imagery is both pertinent and relevant to successful relaxation/meditation technologies.

#### 2.5.5 Demystified Relaxation (Seer, 1977)

TM (Transcendental Meditation) is not the only meditational technique to make exaggerated claims about the healthful benefits accruing from a specific meditational technique. Such claims for inner peace are the hallmark of most esoteric systems. Because it has made claims to scientific validation it probably has drawn a great deal of attention to itself. One of the earliest pioneers in the scientific validation of TM also acknowledged the efficacy of other relaxation procedures to effect similar changes. Benson (1974) however, was one of the first to identify some of the key components of the relaxation response. These components will receive greater attention in Section 2.11, Correlates, but the essential components listed by Beary et.al., (1974) are still widely quoted as though they constitute the whole of the relaxation response. These components briefly are: 1) A

mental device, 2) A passive attitude, 3) Decreased muscle tonus and 4) A quiet environment. Literature reviews already widely quoted (e.g. Frumkin et.al., 1978) have indicated a paucity of evidence to support the claims of TM compared to other relaxation techniques e.g. Savasan (Patel, 1976).

One of the advantages of TM is the stepwise (synergistic) model on which the technique rests. It is easily taught, appears to consist of a simple four-step module and is therefore easily learned. Seer (1977) outlined a Self-Relaxation Training module based on TM experience. His purpose was to "develop an unobjectionable, demystified version of TM which I called self-relaxation (Seer, 1977, p.39). An important factor in the pilot studies conducted by Seer (1977) was the recognition of the need for a detailed rationale. The details of Seer's (1977) 'demystified' technique were based exclusively on the relaxation response identified first by Benson (1974). Details of this technique and the rationale are given in Appendix .

The results from research by Smith (1976) and Seer (1977) seem to indicate that the TM mental device (mantra) is not an essential ingredient in relaxation. These studies offer no credence for the power of expectation which is the powerful operative element in placebo studies. (Kazdin and Wilcoxon, 1976). Their results do not necessarily demonstrate that mantra is not essential. Smith's study rather suggests that the key element is sonorous repetition. The Brady et.al., study is a classical and effective example of 'demystified' sonority.

#### 2.5.6. MCR (Brady et.al., 1974)

This is a most important study. Due to the error in Jacob et.al., (1977) in recording the results of this study it is possible that the significance of this study may escape notice. The study was also dealing with hypertension and the reduction of BP. All diastolic BP's recorded by Brady et.al., were "4th phase". Most hypertension studies incorporate "5th phase" which may make these studies less significant than the Brady study. He also incorporated strict methodological requirements which were absent in the Seer (1977) study. Instructions for MCR were taped and the relaxation technique consisted of two components. The first was PMR with instructions timed to be coincident with MCR. MCR consisted of a metronome set at 60 beats per minute. This would be sufficient to inculcate the sounds which are resonant with the heart beat (average 60 beats/min) to meet the demands of Schwartz (1974), quoted but not referenced in Seer (1977).

The results were in fact highly significant even when the difference in Korotokoff phase recording is not taken into account. The achieved "4th phase" mean for all four subjects resulted in a diastolic lowering of blood pressure by 17.85 points mmHg. Brady et.al., (1974) deserves closer scrutiny. The blood pressure recordings were non-sessional. They were taken in a double-blind condition up to 19 hours after a session. These were in fact in vivo recordings. Diastolic in vivo recordings are rarely incorporated into relaxation research because they are the most difficult to change. When they are, more often than not they are "5th phase".

It is my contention that the Brady et.al., (1974) study is one of the most significant contributions to relaxation research. It demonstrates the efficacy of the critical factor recognised by Smith (1976) and Seer (1977) of attention to rhythmically induced sound. Brady et.al., are to be commended for their conservative claims (only 10-11 mmHG diastolic) and their meticulous attention to design. Their study unfortunately highlights the reality issues at stake in "significant findings". Their attention to strict scientific method, and conservative claims assures them of scant attention.

Their conservative results were only over clients 3 and 4. Actually the study commenced after a baseline asymptote was established after 2-4 weeks "acclimatization" to the testing situation. BP was monitored over this period and these results were not taken into account until a baseline asymptote was reached. Most researchers give a starting BP without the rigour of asymptote baseline over such an extended period. For the two clients (3 and 4) the diastolic reduction overall was actually 22.85mmHg, which is phenomenal. When all 4 subjects were taken into account the mean reduced this to 14.45mmHg. When further reductions were made due to baseline the results were 10-11mmHg.

The point of this discussion remains. The Brady et.al., (1974) study resulted in 10-11mmHg reduction to DIASTOLIC BP. This is a significant result (Patel, 1976). On closer scrutiny and when compared to experimental conditions in similar BP experiments, the "conservative" figure is significant making the actual reductions significant. The key

variable seemed to be MCR.

### 2.5.7 Summary

The purpose of this analysis was to identify the essential elements which commonly occur among successful relaxation strategies. A summary of these findings follows:

1. Self-induced altered state of consciousness: This has been used by Frumkin et.al., (1978) to designate relaxation from other therapist induced states such as hypnotism and autogenic training. This distinction is useful though it's accuracy has been argued (Gibson, 1979).
2. Mode-specific induction: Davidson and Schwartz (1976) claim that some of the anomolous findings can be explained by this. The lesson is that a successful relaxation technology would need to include both modes.
3. Awareness: This is referred to as 'attentional' by Ornstein (1971). In fact other research on Meditation will expand this concept and indicate its central import. It is part of the attentional component of passive attitude. This passivity is one part of the awareness continuum (Ornstein 1976).
4. Cognitive relaxation: The superiority of meditation-type or self-relaxation training (Seer, 1977 modified TM) indicates that this is a novel and fairly recent phenomena. The incredible burgeoning of books concerning self-help, self-control and self-management has not given credence to cognitive relaxation techniques,

except as lip-service. The majority of self-help manuals still use SD procedures based on PMR. Two recent books by Coates and Thorenson (1977) and Rosen (1977) are still advertising PMR in the Paul (1969) format.

5. Passive attitude: This was first identified by Benson (1974) as a major component of relaxation. Research has indicated that it remains a key component (Patel, 1976; Smith, 1976; and Seer, 1977). Other research will indicate this as a critical component in successful relaxation strategy. If the purpose of this attitude is to monitor responses, it is questionable whether this attitude constitutes in itself a response.
6. Relaxation Response (Rr): First proposed by Benson (1974) and researched by Smith (1976) and Seer (1977), all authors have mixed inductive procedures with actual physiological changes which identify the relaxation response.
  - a. Relaxation Induction. This is proposed as the environmental and cue conditions which enhance the relaxation response (Rr). Two cue conditions have so far been identified: -
    - (1) A quiet environment. Most self-help books giving relaxation instructions insist on the selection of a quiet environment. Other 'cues' could be semi-darkness, warm room, gentle music, loose comfortable clothing, a body cover, seating or lying-down comfort etc.

- (2) Passive attitude. It is considered that this is more correctly an induction procedure.
- (3) Posture. Most TM handbooks and meditation manuals (even Seer, 1977) insist on a sitting posture. Savasan (Patel, 1976) is a more significant technique yet is performed as a recumbant posture. Most meditation techniques are consistent in their demand that the "correct" posture is critical. Savasan is taught in a specific way (Kavailyadharna 1974). This is not made clear in Patel's thesis (1976).
- (4) Rationale. Almost all self-help manuals concern themselves with the specific rationale of a specific malaise (Coates and Thorenson 1977). This was given priority in Patel's (1976) thesis, and a great deal of her thesis deals with the neuro- and psychophysiological rationale. The importance of a clear rationale was exemplified in Seer's (1977) thesis. It is the subject of Section 2.4, Rationale. It is given an important place in the development of Synergistic Relaxation.
- b. Relaxation response (Rr). Full details of a proposed eight stage Rr will be given in Section 2.11, Correlates. The Rr is considered to mean specific physiological correlates, some of which have already been identified. Altogether eight will

be identified for the purpose of the SYNERGISM technique. Those already identified are:

- (1) Reduced muscle tonus
- (2) Changes in the rate of somatic functions, e.g., HR, BP, RR.

7. Synergism: Seer (1977) suggests that the 'power' of TM and of his own self-relaxing training, lies in the methodology of TM devoid of it's mystique. He is one of the first researchers to suggest that relaxation can follow an effective format, the power of which is derived from the sequencing of events, and the specifics of a technology.

Synergism goes further by outlining a procedure for the development of an increasing state which then develops the meditation aspects of consciousness productive to therapy.

8. Soporific induction: Based on the results of Brady et. al's., (1974) research, Smith (1976), and the S Relax/NS Relax results of Seer (1977) it seems reasonable to propose that a key element in relaxation is the regular neurological stimulation created as in MCR or in sound mantra or by any other regularly patterned device, (e.g. music) which sedates the nervous system by a regular frequency of stimulus input. This soporific effect on the nervous system will be discussed as relevant elsewhere.
9. Mental device: Mantra is only one mental device. Others will be categorised in Section 2.6, Meditation.

## 2.6 Meditation

The scientific study of meditation is fraught with many difficulties and reveals many inconsistencies. It also has many meanings (Brown, 1977). Meditation is defined as a reflective state (Eysenck et.al., 1975). It is considered to be a universal human experience, by which a person becomes aware of the deepest self. Cognitive affective and somatic faculties are involved. In the definition offered by Eysenck et. al., (1975, pp.640-643), despite the contention that meditation is a universal human experience the cultural bias persists. Somehow, Western Meditation (contemplative) is different to Eastern meditation ("a typical religious exercise" p.642). This inconsistency plagues much of the "scientific" research into meditation. The seemingly unique posture of the yogi, the claims of paranormal powers and self-volitional autonomic control, has generated intensive research into meditation. The popularity and claims of Transcendental Meditation (TM) have not helped (Bloomfield et.al., 1976). It's popularity has forced scientific attention. Its claims of uniqueness are not valid.

All the severe methodological and evaluative problems of introspective research which caused scientific inquiry to turn away from subjective data, are present in meditation research. Often the bias of the "objective" scientist precludes and pervades the substance of the research. It is both necessary and ethical to unequivocally state one's own bias before entering this domain.

The bias of this writer appears in more detail throughout

this thesis and in the specific chapter on Synergism. In brief terms, meditation is viewed as both process content and experience. In terms of experience it is conceived as part of the total continuum of conscious experience which starts from a comatose non-aware state and ends in a peak experience, such as an ecstatic or esoteric transcendence or death. In terms of content, meditation may be a means of achieving a deep subjective transcendental or spiritual experience, a method of self-healing, or a process of attaining any of the well attested claims to paranormal or volitional self-control powers. It may also be a delusional state.

The difference between the Synergistic approach to meditation and other esoteric systems is that the pre-requisite condition is "demystified" relaxation. The process is one of gradually deepening relaxation and a developing awareness of the continuum of experience from generalized external awareness to the internal subjective state. The subjective experience of the internal meditative state is often determined by the verbal set (Woolfolk, 1975). Expectancies can occlude the experience. The subjective experience is often clouded by esoteric rhetoric. This does not deny the validity of the experience. What it does do is make scientific examination difficult.

For this reason, an attempt will be made to deal briefly with this topic. No attempt will be made to provide a rationale. Meditation is considered important only insofar as the fact that the various authors and researchers of this domain have attempted to map the internal stream of consciousness (Singer, 1975). Life is an endless effort at organising ex-

periences and matching them to the available "map" (Kahneman, 1973). Meditation is viewed by the writer as an integrative act when adaptive reality and consensual validation are held central issues.

In the concluding remarks to the extensive review of imagery by Singer (1975) the statement is made that "the tools to tackle many of the subtle facets of human experience labelled variously as altered states of consciousness, transcendental experiences and mystical elevations" are being developed. It is maintained that research to date suggests a continuum of consciousness rather than some discrete and differentiated altered states.

Biofeedback and the associated arsenal of electronic technology (including digital temperature control, EEG, EMG, ECG etc) have helped stimulate intense research into meditation. This research tends to demonstrate that psychologically and physiologically the meditative state is NOT differentiated from that of sleep as suggested by Gelhorn et.al., (1972). They do state there is "a remarkable parallelism between the state of Yoga ecstasy and that of REM sleep and dreaming" (p.403). A detailed study of sleep reveals even greater parallelism (Oswald, 1974). These writers state meditation is also discernible from hypnosis. Paul (1969) is not so sure. The subtle difference between hypnosis and SD relaxation (modified PMR) is not so clear. Although Paul (1969) found advantages among physiological correlates favouring relaxation compared to hypnosis, this may have been due to vested interest and bias. What is clear is that these two stages are analogous. In his book Barber (1969) makes the following point:

"With other variables held constant or counter-balanced subjects are more prone to exhibit hypnotic behaviours when they have received repeated suggestions of relaxation, drowsiness and sleep. This finding is open to more than one interpretation" (p.231).

Despite evidence which suggests no alpha - EEG - hypnotizability correlation (Dumas, 1977) this writer holds a similar posture. Barber (1969) suggests that hypnosis is one aspect of a way to induce an altered perception which results in the manifestations accorded to hypnosis. Without going into further detail, this suggestion is supported.

Throughout the literature, physiological correlates of the altered states of consciousness, variously entitled relaxation, hypnosis meditation, drug, dietary or sensory deprivation states which induce mystical or anomalous experiences, all bear some resemblance (Woolfolk, 1975).

In one of the most significant experiments to date Morse et.al., (1977) found that training in TM or hypnosis did not lead to a greater ability to relax than the absence of training. They demonstrated fairly conclusively that there were no significant differences between relaxation hypnosis and meditation. Further, they found that the most successful applications of hypnosis and meditation were found when relaxation preceded either hypnosis or meditation. Order effect (e.g., relaxation first) was a significant variable in these techniques. Morse et.al., (1977) also found that there were no significant differences in the mental measures between the various techniques. This experiment seems to justify and validate the emphasis on relaxation rather than meditation.

The subjects in the Morse et.al., study were given a simple instruction "Close your eyes and relax, do not meditate, do not use hypnosis" (1977, p.308). Another TM-type demystified technique was used by West (1979). These instructions were a little more detailed. There was a similarity in responses, monitored using electronic apparatus and subjective reports, between this group and TM groups. Real and artificial mantras did not seem to show differential effects. What West (1979) seemed to fail to appreciate was that his technique in fact constituted a relaxation therapy. Had this posture been accepted then he would not have found the generalizability of relaxation outside the meditation state so difficult to rationalize, although he did argue that meditation quality is gauged according to relaxation (West, 1979, p.225).

Three experiments (Morse et.al., 1977, Seer, 1977 and West, 1979) each indicate the primary importance of deep relaxation, and the fact that this state seems to precede effective meditation (Morse et.al., 1977) if not prove more psychophysiologically beneficial compared to exoteric systems of meditation (Seer, 1977; and West, 1979). Whilst this view is not necessarily upheld by this writer, the fact remains that "on the surface" at least, the correlates of these various states appear similar.

What tends to be overlooked in some of these "laboratory" studies are the long-term values and quality of life issues concomittant with a) group solidarity; b) guru charisma; c) escstatic or mystical transcendental experience; d) cathartic resolution of developmental/emotional crises and other on-going mental/spiritual events (Buckley and Galanter, 1979). "Labora-

tory" experiences only will be considered in this section. The profusion of data relating to mystical and charismatic healing experiences would involve too much space.

There are five specific research areas which are given detailed attention in most literature reviews concerning meditation, 1) electrocortical activity; 2) electrodermal activity; 3) respiration; 4) cardiovascular responses, and 5) verbal sets and expectancy (Gellhorn and Kiely, 1972; Woolfolk, 1975; Morse, et.al., 1977; Schwartz et.al., 1978; and West, 1979). All other areas except electrocortical activity are given detailed attention elsewhere in this thesis.

Much of the research into psychosomatic disorders, stress and anxiety uses electrodermal activity as a physiological measure of stress, or of anxiety reduction. A detailed study of meditation and electrodermal responding found little significance when compared to a control group in an elegant experiment (Aukett, 1975). Separate and detailed attention is given concerning respiration (Section 2.7) cardiovascular responses (Section 2.9) and verbal sets and expectancy (Section 2.4). Psychophysiologicaly the borderline between relaxation and meditation is an esoteric and often semantic one.

#### Electrocortical activity:

Electrocortical activity is one way to attempt to objectivize the subjective experience of meditation. TM research was fortuitous in that it opened the way for a flood of research into meditative states. TM itself has been "phased out" as a unique and serious research topic and is being replaced by "demystified" relaxation (Seer, 1977; West, 1979).

It is hoped that Synergism will help to even further objectiv-ize this complex field. The difficulties inherent in highly esoteric vocabulary and mystical disciplines (Woolfolk, 1975) can be circumvented by establishing critical criteria as a pre-requisite to the meditation experience. Deep relaxation is one such pre-requisite. Other criteria pre-requisite to meditation, are best spelled out in Taimni (1975) and Satyananda (1974). The phenomenon of meditation bears close scrutiny. It has great therapeutic potential, and can be of greater psychological significance (Foreword and Introduction, Bloomfield et.al., 1976).

Much emphasis was given to electrocortical activity in early research into meditation. Most of this research was connected to the incidence of alpha activity (Woolfolk, 1975). Many investigators have reported marked intensification of alpha waves which spread from the occipital area to the central and frontal area with theta waves in the frontal area. Normally, alpha waves are prominent in the occipital area only in resting subjects with their eyes closed, while theta waves are absent in adults during a waking state. During mental activity or alertness the EEG shows small amplitude fast, beta-type irregular waves (Bloomfield et.al., 1976).

Banquet (1973) confirmed the findings of earlier TM.research in a controlled experiment and stated that predominant alpha waves in the EEG are perhaps not unique to the meditators, but what is unique in them is their ability to maintain these alpha waves after the end of meditation with their eyes open; the diffusion of large amplitude alpha waves to the anterior region; no alpha blocking to the flash and click

stimuli during meditation; transient blocking of theta frequency to click stimuli but spontaneous reappearance within a few seconds; beta frequencies during deep meditation to show regular rhythmicity; absence or decrease of EEG reaction to stimulation even if the subject perceives external and internal stimuli (interpreted as persistence of the alert state) allowing him to, say, memorize statements and answer questions (Green and Green, 1978). These EEG records from meditators have been taken as an evidence of the meditative state to be a separate major state of consciousness (Bloomfield et.al., 1976). This may be an over-simplified view and further studies would be needed to clarify the issue.

Orne and Paskewitz (1974) concluded their experiments by suggesting that their data demonstrates

"that it is possible for the subjects to report the experience of apprehension of fear as well as manifesting the autonomic concomitants of such experiences without associated changes in alpha density" (p.460).

Plotkin and Cohen (1976) have demonstrated that some people experience alpha as unpleasant. Also chronic and acute anxiety can be experienced at the same time as alpha EEG.

TM literature (Bloomfield et.al., 1976) was only one source which extolled the virtue of the alpha EEG state. This later research does not invalidate the alpha experience. What it does indicate is the need for caution. Rather than being indicative of poor validity, this apparently conflicting data may be suggestive of

"reflecting meaningful patterns of physiological processes that are associated with particular behavioural and experiential states" (Schwartz et.al., 1978, p.323).

From all the physiological changes that occur, it would seem that meditation represents a state with generalised decrease in sympathetic nervous system activity and perhaps also an increase in parasympathetic activity. Benson et.al., (1974) have termed this integrated hypothalamic response "a relaxation response". The results of investigation into electrocortical activity does not allow such a simple answer. Results with primary psychopaths show differentiated arousal systems compared to others (Blackburn, 1979). Hemispheric specialization offers another method of understanding relaxation and meditation in electrocortical terms (Davidson and Schwartz, 1976, Bennett and Trinder, 1977). These areas are interesting to this thesis insofar as they suggest biofeedback augmented relaxation using some of the sophisticated technology available. A recent article (Frost et.al., 1978) suggests that alpha biofeedback training is not effective for teaching persons to reduce high levels of arousal.

One treatment area involving EEG studies and a high arousal state is insomnia. In a current study, Coursey et.al., (1980) electrosleep and autogenic training were compared. Electrosleep utilizes low current intracranial electrical stimulation. The relaxation training was far more effective, had a specific effect on sleep latency, sleep efficiency, total sleep and perceptions and judgements concerning sleep.

Schwartz et.al., (1978) questioned the notion of a generalized relaxation response as a complete description of the nature of relaxation. So does this writer. They suggest

"Just as recent psychophysiological research has challenged the adequacy of concepts of general arousal, so to in the clinical domain,

conceptions of undifferentiated relaxation and anxiety are incomplete" (1978, pp.326-327).

#### Electrodermal activity:

Only a brief mention will be made of this area. Electrodermal responding is one of the most extensively used indices of level of arousal in man (Gellhorn and Kiely, 1972; Aukett, 1975; Morse et. al., 1977; and West, 1979). It is thought to be consequent upon pre-secretory activity in the sweat glands. It has been found that habituation of GSR to stimuli was less rapid, and spontaneous skin conductance fluctuations were more frequent in high arousal states than in states perceived as now-stressful.

Orme-Johnson (1973) found that habituation of GSR occurs faster in meditators than in controls, meditators make fewer spontaneous GSR's than controls, and this led to a general hypothesis that spontaneous skin conductance levels (SCL's) would decrease in subjects learning and practising meditation. This hypothesis did not appear to be sustained by Aukett (1975).

Morse et.al., (1977) conducted a detailed analysis of SCL's and found them to decrease with stressful stimuli and increase with relaxing stimuli.

West (1979) in contrast, found SCL's decreased significantly greater during relaxation when a longitudinal study was conducted. A review by West (1979) indicated that SCL was not correlated necessarily with GSR (spontaneous) or with habituation.

These researchers found that baseline SCL's were highly variable, relatively constant over time and may or may not be affected by training. The findings by Morse et.al., (1977)

seemed to indicate either 1) people who take up meditation and hypnosis are more stressed than those who do not, or 2) training causes a decrease in skin resistance.

A further hypothesis, suggested by HR research (Section 2.9) seems to indicate that training in imagery, HR control, and relaxation (all interrelated variables in any relaxation programme) tends to increase autonomic lability. Longitudinal training in self-control conditions not only enhances this lability but also leads to a significant increase in both responding to stimuli and self-control of autonomic variables.

This paradoxical finding, the frequency of criticism about poor methodology using sophisticated electronic gadgets, the complexity not only of technology but also of correlates of autonomic responses, all contributed to a decision not to include electronics except as a biofeedback-augmented self-relaxation strategy.

This brief review should be sufficient to establish that the correlates of meditation, though intensely interesting and extensively researched are by no means clear. The area suffers from many methodological, evaluative and semantic problems, not the least of which is a phenomena often experienced by this writer. In the esoteric domain of meditation many objective researchers have a specific bias (which they deny) which affects the experimental paradigm. Often esoteric disciples are either resistant to objectivity, or overly anxious to establish the efficacy of a particular dogma. TM research suggests the same fate as Marihuana research. The pro's are equally as effusive as the con's. Another problem is the phenomenology of the meditation experience itself. No

attempt has been made to actively review this domain by this writer, due to its complexity.

This review has attempted to establish that there is a stream of consciousness which is a continuum of awareness rather than discrete differentiated modules labelled variously as sleep, normal waking, relaxation, meditation, hypnosis, drug/pain or deprived states and many other halucogenic or altered states. Some of this continuum of awareness can be monitored using electrocortical activity to objectivize the specific state being experienced. The results demonstrate that subjective states are complex. Relaxation does not lend itself to the simple hypometabolic state postulated by Benson (1974). It is suggested by this writer that a more detailed understanding of meditation can be achieved by a study of the correlates of sleep (Oswald, 1974) the correlates of meditation (Taimni, 1975), and the process of meditation (Satyananda, 1974). In addition, recent literature concerning stress, anxiety and hemispheric lateralization attempts to bring science into the domain of the occult and mystic, sometimes not too successfully.

The detailed attention given in this thesis to the correlates of relaxation tends to be justified by the ability to research the domain of relaxation hampered only by research bias and vested interest in PMR, SD or demystified relaxation. It is considered by this writer that the problems inherent in the esoteric literature and research concerning meditation almost defy competent analysis until the correlates, determinants and variables of relaxation have been defined rigourously. This will then allow the formulation of baseline data which

will further allow a more objective evaluation of meditative states. It is the writer's experience that the determinants of what constitutes good meditation and effective meditators have not been sufficiently examined to allow for scientific objectivization.

The extant criteria for a "good meditator" seem to be membership of some cult or organisation e.g. TM or Divine Light Mission. This writer considers this is not a valid criteria. The esoteric doctrines are quite explicit (e.g. Taimni, 1975) that deep relaxation and withdrawal of senses (Pratyhara) are essential pre-requisites for techniques of contemplation, meditation or transcendental experience. The correlates of sleep and deep relaxation are important determinants upon which the criteria of "excellence" in meditation can validly be placed. It is emphasised that relaxation becomes a process by which meditation can be induced. The experience of meditation itself, for this writer, has not been validly researched except in some of the research by Greene and Greene (1978), or at Kaivalyadharm - a yoga research College from which this writer "graduated", or experientially in places such as Bihar School of Yoga, Bihar where this writer is a Swami of the order of Sivananda Saraswati (Rishikesh, India). The writer was initiated into this order by Paramhansa Satyananda. Other places in India where this writer has "graduated" have been Baghivan Rajneesh, Poona; Yogendra Institute - Santa Cruz, Bombay; Gitananda, Pondicherry; Sarvodaya Buddhist Centre, Ceylon; as well as meditation centres in Nepal, research schools in Delhi and Hyderabad and extensive practice in meditation itself.

The areas of meditation and behavioural self-control as strategies for rehabilitation and in applied clinical problems have already been suggested as important and clinically useful (Shapiro and Zifferblatt, 1976). It is still maintained however, that research into the clinical effectiveness of meditation will be more productive when the procedures of relaxation technology are better understood, and given more scientifically objective attention in terms of correlates, determinants, variables and procedures.

## 2.7 Respiration

The relationship between mental health and respiration has been the subject of much conjecture and extensive research for a long time. Current researchers in respiration ascribe modern research to various initiators. Davies and Nielson (1966) acknowledge Ludwig in 1847, Skarbek (1970) suggest John Percival in 1840 whilst Damas Mora et.al., (1977) suggest Wundt in 1919. C.J. Jung and Peterson (1907) conducted an early psychophysical investigation into respiration. In 1908, Halls Dally conducted a similar enquiry into the physiological mechanisms of respiration. Sutherland et.al, (1938) wrote about the respiratory "fingerprint" of nervous states. These are included to establish that there has been a long modern research history into the relationship between mental health and respiration. Breath is also intimately related to esoteric and meditational disciplines. The psychotherapeutic efficacy of breath related esoteric disciplines has a lengthy and ancient history. It is recorded as prana (Hindu), mana

(Egyptian), chi (Chinese), ka (Polynesian) and psyche (Greek), in these ancient esoteric traditions.

It is not intended to give a chronological or historical development of this research. It has been demonstrated that respiration research is extensive, has been conducted over a long period, and is a valid subject of investigation, whether as a psychophysiological (Skarbek, 1970) psychosomatic (Lum, 1975, Hill, 1977) physiological (Rodarte and Hyatt, 1973; Levenson, 1979), or esoteric discipline (Shapiro and Zifferblatt, 1976). An assumption implicit in this review is that the basic mechanisms and anatomy of respiration available in anatomy and physiology text books are already known (Brooks, 1975).

The review seems to indicate that much of the research has involved identifying the effects and correlates of respiration. Few have identified the components which are effective therapeutic techniques or relaxation strategies, yet respiration and its control is central to many of the esoteric disciplines which generate self-control. In itself respiration is a complex process which lends itself readily to voluntary control. In the search for effective self-control strategies, respiration seems to have been largely overlooked. Successful strategies in BP reduction (Patel, 1976) and pain reduction (Jones and Evans, 1980) seem to have used respiration as a minor technique, as an augmented strategy (Latimer, 1977) have used respiration as a focussing meditative technique (Shapiro, 1978) or as a phenomenological technique of body awareness - demystified (Christiansen, 1963).

The purpose of this review is:

- 2.7.1 to establish the RR effect (low HR/RR parallelism)
- 2.7.2 to determine therapeutic factors related to RR control
- 2.7.3 to identify some major respiratory related problems and treatment
- 2.7.4 to establish respiratory efficiency as a preferred outcome of the RR effect

It is intended to establish respiration as a central and major component in an effective relaxation strategy. The RR effect is a major correlate of both relaxation and meditation.

#### 2.7.1 The RR Effect (HR/RR Parallelism)

McCanne and Sandman (1976) considered that an important area for further research was the precise nature of the RR/HR relationship. Timmons et.al., (1972) had earlier demonstrated that spontaneous changes in consciousness (e.g. sleep, relaxed wakefulness and meditation) are accompanied by specific respiratory patterns. Vacillation was found between abdominal dominant, thoracic dominant, and an equality of thoracic to abdominal patterns. Their research suggested that the self-manipulation of these patterns might be useful as a means of voluntarily altering consciousness. The meditative disciplines acknowledge this fact (Satyananda, 1974). Timmons et.al., (1972) also indicated EEG patterns significantly related to respiratory patterns. Some of these patterns and states of consciousness have been directly related to HR in Section 2.9 (Control of HR). This validated the research by Goldie and Green (1961).

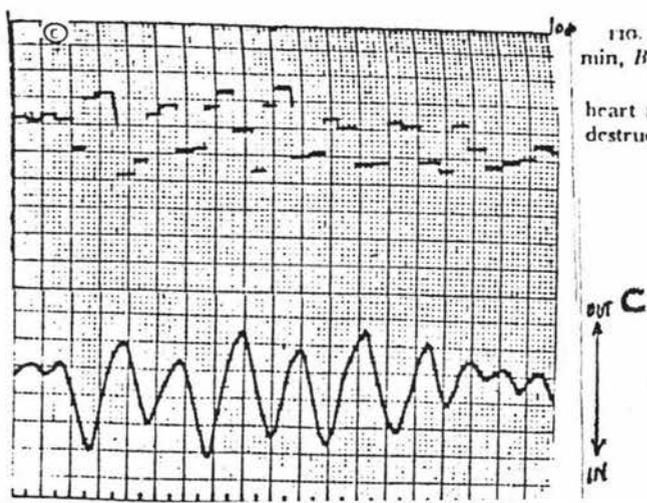
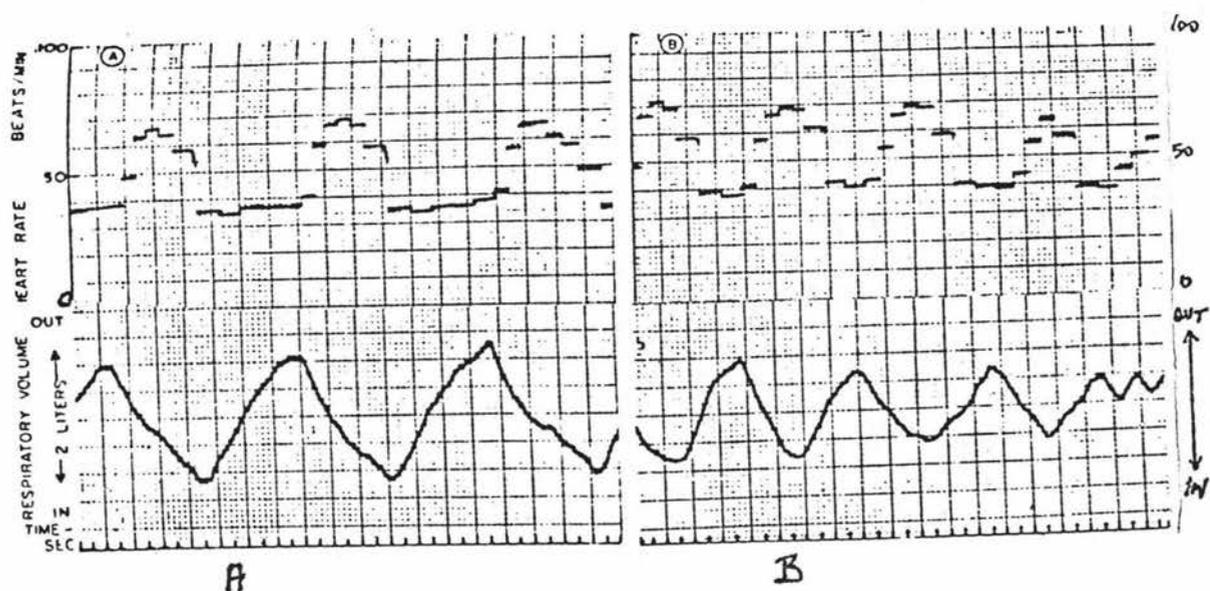
The most direct relationship between HR and RR established

early in research was that of respiratory sinus arrhythmia (Clynes, 1960). Cardiac acceleration is normally associated with inspiration and cardiac deceleration with expiration. As stated by Clynes (1960) this relationship is not immutable. The mechanisms which determine these normal respiratory responses interact in a complex way involving the respiratory centre, vasomotor and HR control centres, baro- and chemoreceptors in the carotid sinus and aortic arch, stretch receptors involved in inhalation and expiration, and hemodynamic  $\text{CO}_2/\text{O}_2$  receptors. Three parameters of rate and depth and volume in respiration were revealed as important to investigation of the sinus arrhythmia effects noted by Clynes (1960). Expiration had little or no effect on HR under normal resting conditions, except at low RR's. A clear parallelism exists at low respiration rates.

The experiment by Davies and Neilson (1967) is considered a most significant one for the purpose of this thesis, yet these investigators seem to hardly notice the vital data contained in their experiment. They state that "Expiration has little or no effect on the heart rate" (1967, p.952), and less than four lines later state that at low RR a clear rise and fall of HR is observed as a parallel phenomena. In addition the phase lag between HR and RR whilst  $180^\circ$  out of phase at normal (i.e. 16-20 RR/min) is minimal at low RR (i.e. 4RR/min). These results demonstrate quite clearly that at low RR, HR is synchronous and parallels RR, and that the HR separation between inspiration and expiration is actually less at low RR. In addition the mean HR is significantly lower at low RR.

For the purpose of HR control this information is incred-

ibly important. Meditation-type respiration reduced RR to one breath per minute and lower under voluntary control. This respiration pattern will be developed further in a discussion of parameters of breath (i.e. rate depth and volume). The evidence from Davies and Neilson (1967) demonstrates clearly that a reduction in RR leads directly to low HR. Awareness of HR on expiration (lowest ebb point of HR) and self-monitoring of this effect will lead to a significant reduction in HR. The parallel and concomittant effects of RR and HR can be induced by relaxation/meditation procedures and of themselves, a low RR of 1-4/min and HR mean of 50 b.p.m. are correlates of the hypometabolic response postulated by Beary et.al., (1974) and Benson (1974). The results of low RR/HR parallelism are considered to be of such importance that they are reproduced from the original herein:



110. g. Effect on the heart rate of different breathing frequencies: A, 4 breaths/min, B, 8 breaths/min, C, 16 breaths/min. As respiratory frequency increases, the heart rate transients due to inspiration come closer together and at 16 breaths/min destructive interference takes place.

It can readily be seen that the regularity of HR on expiration, and its protracted nature, will enhance the ability to engage in self-monitoring this event with greater facility than any attempt to monitor the more irregular, uneven and vacillatory nature of HR on inhalation. Sinus arrhythmia is an inhalatory event, which was shown to produce biphasic fluctuation in HR of 15.9b.p.m. mean amplitude. The point that "destructive interference" takes place between RR and HR at 15 RR/min is highly significant.

In a physiological evaluation of meditation hypnosis and relaxation conducted by Morse et.al., (1977), the RR across all conditions ranged from a low of 13.5RR/min in (SM) "simple word" meditation, to 17.5 RR/min in an "alert" (A) and hetero-hypnosis task type (HT) conditions a mean of 15-16 RR/min. In her thesis on imagery and respiratory activity, June Jackson (1979) had a mean breathing span of 3.81 (N=17) which generates a mean of 14-15 RR/min. The excellent study by McCanne and Iennarella (1980) of HR/RR events ranged in the relaxation condition between 15-18 RR/min and in the anxiety condition between 17-19 RR/min.

In their "respiratory finger-print" study, Sutherland et. al., (1938) were excited by their spirometric pictures which revealed irregular breathing patterns in neurotic and psychotic patients. Many researchers at this time concluded that patterns of irregular and bizarre respiration were indicative of neurotic and psychosomatic disturbance (Christie, 1935; Wittkower, 1934; and Paterson, 1935). Lamb et.al., (1958) made an interesting and significant conclusion that

"Perhaps it would be better to advise hyper-ventilators merely to count their respiration,

consciously regulating the rate to a fixed number (perhaps 10) per minute while keeping their breathing shallow: (1958, p.571).

These investigators were conducting research into fatalities in aircraft following high altitude respiratory irregularities. Their conclusion was that a deep breath, and holding, to control for hyperventilation was considered the cause of fatality. The normal admonition to an angry person to take a deep breath and count to ten is considered to have similar drastic effects. Inhalation increases HR (Davies and Neilson, 1967) which in anger is already elevated. Holding exacerbates an already physiologically potent situation.

As a recent validation of all this research, Skarbek, conducted a psychophysiological study of breathing behaviour. After treating 101 patients in a large acute admission unit attached to a mental hospital over a 4-8 week period their resting breathing rate (RBR) ranged from 16.7 RR/min (personality disturbance) to 19.4 RR/min (depression). The conclusion by Skarbek was "improvement in patient's conditions was significantly associated with a decrease in RBR, estimated as 3.40 units" (1970, p.638).

A more recent study by Christoph et.al., (1978) took 18 subjects and used an experimental design similar to the TM procedures of Beary et.al., (1974) and Benson (1974). During training in relaxation breathing was reduced from a mean of 16.04 RR/min to 13.25RR/min an overall reduction of 2.8RR/min. Whilst this experiment did not support the "Hypometabolic Response" proposed by Benson (1974) and his colleagues, a concomitant and parallel HR reduction of 2.2 b.p.m. was demonstrated clearly by Christoph et.al., (1978).

In summary, the evidence for HR/RR parallelism has been well established (Levenson, 1979). These results also validated earlier studies by the same author.

"Considering that these studies involved different subject populations, different laboratories and different experimental procedures, it seems safe to say that these patterns of cardiac and respiratory activity are reliable" (1979, p.372).

It is felt that the later experiment by McCanne and Iennarella (1980) more accurately reflects the actual situation. These researchers found that HR changes paralleled RR change, and that this clearly validated earlier experiments with similar results. However, and equally as clearly, this experiment also found that these two modalities HR and RR exhibited considerable independence from each other. Examination of individual results indicated that the postulated parallel changes whilst statistically correct were not consistent. In some individual cases they seemed to act reciprocally. During a relaxation phase some individuals experienced a decelerating HR and a reciprocally opposed increasing RR. These findings are consistent with Davies and Neilson (1967), and could also account for the reticence of Jones and Johnson (1980) to discuss HR/RR parallelism. The use of imagery can confound data where the breath is not under control.

A note of warning is entered by McCanne and Iennarella (1980) that

"It seems likely that the changes in respiratory rate which paralleled the heart rate results occurred in part because of the instructions the subjects were given" (1980, p.27).

It is postulated that "instructions" given as a rationale on the basis of the Davies and Neilson (1967) study, with RR and respiratory control held as central issues to achieve a

parallel and significant HR/RR reduction will result in further reductions to both and a more effective relaxation technology.

### 2.7.2 RR Control Factors and Therapy

A number of factors suggest themselves which are considered to be extremely important therapeutic factors related to the issue of RR control. It seems that many experimenters conducting comparative research in HR/RR parallelism, RR and HR control have not been aware of these findings (e.g. Jones and Johnson, 1980):

1. Significant HR/RR relationships are established at low RR (below 8RR/min) which can lead to a high degree of HR control (Davies and Neilson, 1967).
2. Destructive interference between HR/RR occur at 16 RR/min (Davies and Neilson, 1967).
3. Most subjects (including hypnosis and meditation) appear to breathe at about 14-20 RR/min (Morse et. al., 1977; McCanne and Iennarella, 1980).
4. Reductions of 4 RR/min can radically alter not only psychosomatic functioning but especially influence HR/RR parallelism (Skarbek, 1970).
5. No operational criteria appears to exist to determine who or what constitutes a meditator. The most often viewed criteria seems to reside in membership of some cult or esoteric group (Beary et.al., 1974; Shapiro and Zifferblatt, 1976; Morse et.al., 1977).
6. Psychotics and neurotics appear to function at a mean

18.9 RR/min, and these conditions are significantly reduced by a lowering of RR by 3.40 RR/min (Skarbak, 1970).

7. The conscious regulation of the RR of hypertensives to a suggested fixed number (10 RR/min) may be a significant therapeutic strategy (Lamb et.al., 1958).

It is postulated that sinus arrhythmia could be an important mediating variable in HR control. It is definitely established that it is an important mediator of cardiac activity (Clynes, 1960; Davies and Neilson, 1967). Imagery repetition causes small but significant reductions in RR (Jones and Johnson, 1980). "Tense" instructions led to high levels of irregular breathing patterns in the same experiment.

A variable often not considered by researchers in this domain of HR/RR dependency, is the fact that HR is significantly correlated with objective measures of attitude, and the amount of previous exposure (practice effect). These variables were demonstrated to have significant effects on relaxation and its HR/RR correlates (Christoph et.al., 1978).

These facts demonstrate the interdependence of HR, RR, imagery, instructions, attitude and skills training.

### 2.7.3 Respiratory Problems and Treatment

There are a number of respiratory related problems which can be significantly influenced by the RR control factors already prescribed. It is not intended to review the specifics of each problem. The purpose of this section is to

briefly identify the characteristics of a number of respiratory related problems and point to possible mitigating and treatment factors.

Hyperventilation syndrome: The medical profession has been slow to recognise the potency and insidiousness of this pathological condition (Hill, 1977). Details presented by Lum (1975) demonstrate clearly that this syndrome is widespread, rarely diagnosed effectively as hyperventilation syndrome, and yet can be held directly responsible for severe organ damage leading to failure (e.g. CVD). The problems identified by Lum (1975) are clear. Many patients are dubbed "anxiety state", "it's only your nerves", are shunted from doctor to doctor and often suffer from "fruitless operations on the abdomen, the spine ... and diagnoses like epilepsy and cardiac infarction..." (1975, p.377). The syndrome is irreverent to social class, and often initial treatment is pharmacological in the shape of a tranquillizer. The symptoms are largely or entirely related to overbreathing.

"Time does not allow a discussion of the details of treatment, beyond saying that we try to make patients aware of their disordered breathing habits and convert to a slow diaphragmatic type of breathing" (Lum, 1975, p.383).

Neither Lum (1975), nor Hill (1977), refer to the information given in Lamb et.al., (1958) who recommended that hypertensives reduce their RR to 10 RR/min, Davies and Neilson (1967) whose slow HR/RR parallelism is considered a major finding, Skarbek (1970) who found significant clinical improvement with RR reduction of almost 4 RR/min, and Christoph et.al., (1978) who found that relaxation was improved with HR/RR parallel reductions of almost three units each (mean decreases in SD were 2.7 RR/min and 2.8 HR b.p.m.).

Despite their neglect of this data both Lum (1975) and Hill (1977) are in agreement with therapy regimens. "Therapy is directed to training in general relaxation and diaphragmatic breathing" (Hill, 1977, p.115).

Hill (1977) goes further by stating that chronic hyper-ventilators may require a considerable period of time for the CNS to habituate to the biochemical disturbances which accompany acute hypocapnia. Further information regarding these problems and therapy specific factors in voluntary RR control are available in Heath and Irwin (1968), Hughes et.al., (1968), Remmers et.al., (1973), Rodarte and Hyatt (1973) and Gautier et.al., (1973). Voluntary RR control should not be undertaken as suggested by Shapiro and Zifferblatt (1976) without some knowledge of the factors involved. What the latter writers fail to realize is that the RR controls instituted under esoteric strictures are normally conducted under the very controlled conditions of an ashram or monastery. Indiscriminate voluntary RR control could lead to other problems as detailed in the journals listed.

Asthma: There is sufficient medical/psychosomatic evidence to establish the psychological and respiratory correlates of asthma (Hill, 1977). The effects of stress (Cohen et.al., 1975) attention (Cheung and Proges, 1977) and imagery (Jones and Johnson, 1980) on respiration establish the clear interactive effects between these key RR variables. HR/RR control via vagal and brain stem mechanisms can be voluntarily induced by CNS/RR mediators.

"The hypothesized mechanism for modulating this relationship might be the degree of cognitive activity and by inference the degree of cortical involvement in the attentional task" (Cheung and Proges, 1977).

Blood Pressure, BP: Beary et.al., (1974) and Benson (1974) demonstrated clearly the low HR/RR parallel relationship termed the hypometabolic state which resulted in a reduction in BP. These writers, although identifying RR, did not include this as one of the four major components listed as the hypothesized hypometabolic state. To investigate this further Christoph et.al., replicated the Benson study (1978). They demonstrated clearly the low HR/RR parallel relationship which is postulated as a major criterion correlate of the relaxation state. They also identified attitude, skills training and initial baseline physiological correlates as three factors which have a major influence on this postulate.

Stephoe (1977) showed a positive relationship between blood pressure (BP) heart rate and respiration. Krislt and Engel (1975) had earlier shown a similar correlation between BP and respiration in their excellently controlled long-term study. The results of an operant conditioning study by Goldman and Lee (1978) on the effect of mediators of BP (systolic) indicated that respiration as an autonomic feedback device was superior in the training of systolic BP control, compared to the other feedback methods used. Respiration served as an effective mediator of BP changes. In this study muscle activity feedback resulted in poor BP mediational control, in comparison to respiration which was considered a potent mediator.

Stone and De Leo (1976) used a Buddhist meditation technique involving subvocal counting of the breath. This technique was practiced twice daily for 10-15 minutes. The results clearly demonstrated the clear relationship between RR, BP, HR

and other biochemical correlates during relaxation centred on RR control.

#### 2.7.4 Respiratory Efficiency

Jackson's (1979) investigation into imagery and respiration demonstrated clearly the inverse relationship between rate and amplitude of respiration. As rate decreases amplitude increases to a significant degree. The study by Goldman and Lee (1978) revealed similarly significant findings. A point-serial correlational analysis indicated that as respiration decreased, respiration volume increased and BP fell.

These are important facts, and form part of this justification for the inclusion of a respiration phase in the proposed Synergistic techniques. These facts indicate that as respiration rate is reduced there is a concomittant increase in respiratory efficiency. This in itself is an important therapeutic point. Respiratory efficiency affects CO<sub>2</sub> tension, as well as visceral tone in abdominal and interthoracic organs, and the muscle tone of the organs of respiration, notably the diaphragm. Respiratory efficiency is a vital link in cardiac efficiency.

Respiratory studies in meditation states have reported decreases in respiratory rate, increase in tidal volume (Hiral, 1974) and general increase in the therapeutic concomittants of the relaxation response (Benson, et.al., 1974). Most psychology researchers attribute the therapeutic value of this relaxation response to meditation of various forms.

A great deal of medical research into hypercapnia would soon indicate that the psychophysiological respiratory mechan-

isms at work: 1) CO<sub>2</sub> tension, 2) effects of breath holding, 3) tidal volume and 4) other physiological effects at work during "meditation" are well known. The "orientalism" preferred by researchers such as Shapiro and Zifferblatt, can have a detrimental effect on the general scientific community. The therapeutic value and dangers of these factors are well established in the already referenced articles in the journal Respiration Physiology, and other research relevant to this specific topic.

#### 2.7.5 Summary

Psychological research seems to have avoided this issue of RR control as a central component in HR control and relaxation. In a controlled study Orwin, et.al., (1975) indicated that a simple respiration strategy was sufficient to indicate the efficacy of respiration strategies in physiological relief from tension and phobias. The RR effect (low HR/RR parallelism) indicated increased therapeutic efficiency using augmented respiratory techniques.

It is not the purpose to suggest that oriental techniques should not be used. Rather that the psychotherapist with knowledge of the sophisticated repertoire of techniques available in the oriental traditions, stands at a cultural interface. The therapist is responsible to apply this knowledge in the most communicative way in the area of maximum therapeutic gain. It is considered that the ethical therapist will not introduce alien (oriental) concepts and philosophies as a rationale for an effective strategy. A responsibility remains to establish the effective components of this technology within the relevant semantic and esoteric Kulture Kampf.

Respiration is a central theme in the oriental religious philosophies, as also among Roman Catholic Orthodox and Hebraic traditions, in the seminary or retreat context. For some reason, much of recent psychology research in this area has been dominated by the orient rather than the occident.

Respiratory controls are central to many traditions favouring changes in consciousness. These effects tend to produce reinforcement schedules which are capitalized (in a constructive/therapeutic way) by the various traditions.

Research in respiration strategies to obtain visceral afferent feedback, and autonomic shaping controls represent an appropriate and rewarding avenue of research in BP management, HR control and effective relaxation technology.

The respiration strategies to be used in this research are simple, capable of generalization to natural settings, self-coping and will rely for measurement on non-sophisticated self-report technology. The techniques are culture specific to the Western occidental tradition within a scientific/medical rationale.

## 2.8 Emotional Imagery

The psychophysiological study of emotional imagery has a long history. Considerable literature has been devoted in psychology to the place of mental imagery in general cognitive processes. The emphasis on imagery in therapeutic techniques which seem diverse (e.g. Jacobson, 1929; Wolpe 1958, and Lang, 1979) suggest that imagery is a noteworthy factor. Paivio (1971) suggests that it may be a critical factor in clinical practice.

The study of somato-visceral patterns in emotion has been a dominant theme in psychophysiological research. From experiments concerning stressors by Lacey (1959) and subsequent research by Graham et.al., (1960), Graham developed a theory of psychosomatic disease in which specific functional disorders were held to be the consequence of attitude mediated response patterns.

Schachter (1960) also presented data showing that fear and anger situations provoke varying spectra of muscular and cardiovascular responses in people. Like Graham, Schachter believed that patterns of physiological response in emotion played an important role in the etiology of specific organic dysfunctions.

The area of imagery research is significant for the imagery therapies based on Wolpe, (1958) and Marks (1972), and more particularly on the meditation-type relaxation methodologies (Shapiro, 1978), as well as the current spate of self-control therapies (Thorenson, 1980). Imagery research establishes a firm foundation for the technological develop-

ment of these therapies (Lang et.al., 1980).

In the therapeutic setting, emotional responding is prompted through verbal mediation. Most psychotherapies depend on the medium of language and the client's cognitive processing of problem situations to accomplish a therapeutic effect. Results of experiments using scripted, emotionally stimulative experiences, indicate an increase in heart rate and systolic blood pressure concurrent with the intensity of the emotional experience (Weerts and Roberts, 1976). In this experiment 34 subjects were selected from a pool of over 350 college students. Less than seventeen students actually participated, representing a special sub sample of a population with a specific capacity to generate strong emotional reactions to a verbal prompt. This ability to generate an emotional response on instruction is an important individual difference characteristic.

Jacobson (1929, in Jacobson, 1974) was an early experimenter in this area. He found evidence that specific muscles were contracted during imagination. He used this evidence to develop PMR in which he used relaxation techniques to differentially relax specific gross musculature. Jacobson also found different patterns of efferent activity dependent upon verbal instructions. Subsequent investigators have found that "active" images do not always generate more efferent activity than "passive" ones. This does not reduce the importance of Jacobson's evidence. His original work suggested that the presence and pattern of somatic activity is strongly influenced by the verbal instructions.

Wolpe's (1959) SD techniques uses verbal prompts to evoke intense fear or phobic scenes. Following from this research, Grossberg and Wilson (1968) studied physiological responses to imagined fear. Compared to neutral stimuli, the fear imaginings resulted in significant imagery vividness and heart rate increases during imagery. In many other similar experiments results consistently report significantly greater sympathetic activation during imagined fear scenes compared to neutral scenes. Heart rate and fear ratings have also been found to be covariable. For example Marks (1972), in examining responses of phobic patients found more significant changes in heart rate and GSR with imagining of phobic compared to neutral stimuli.

This evidence suggests that instructions in emotional imagining result in a physiological stress response similar to that activated in actual external stress stimuli. These effects are not found in all subjects. Significant data is obtained in all cases, however, from good visualisers or highly suggestive (i.e. good hypnotic) subjects. Training has improved their physiological response and reported concurrent vividness of imagery (Lang, 1979).

Imagery therapies rarely emphasis this training aspect, yet the efficacy of these therapies depend on specific attention to imagery. Each client is literally asked to rehearse in the mind the imagery treatment. The imaginal field becomes the phenomenal field of action of both therapist and client.

The behaviourally oriented therapies use the paradigm

of behaviour change to "scientifically" validate each therapy. This assumes that behaviour change is accomplished through the generation of new responses to stimuli. Habit patterns such as phobias or anxieties evoked by the same stimuli are changed by confronting the person with the provoking stimulus. The person cognitively rehearses new behaviours. Systematic Desensitization progressively rehearses the client in relaxation, which is considered to reciprocally inhibit the phobic or anxiety response (Wolpe, 1958). In Flooding or Implosion Therapy (Marks, 1972) the purpose is to use imagery to "overload" the nervous system and thereby bring about some kind of cathartic release. These behaviourally oriented underlying rationales still need to be substantiated.

Lang (1979) suggests that when imagery therapies fail it is because of the false assumptions upon which these therapies are based. Lang suggests that phobias, anxieties and fears are part of a "fear prototype" in the brain.

The patient is the victim of the brain's software, running in a self-defeating loop, processing a variety of different external stimuli as if they provided the same life threatening information, and prompting as output the same incapacitating behaviour. (Lang, 1979, p. 509)

The view Lang presents is that rather than depend on some simple exposure mechanism, the therapist should attempt to change or interfere with the software programme. A new "prototype" needs to be developed which can be subsequently modified by the client into a more functional format.

From experiments conducted by Lang and other co-workers, the efficacy of treatment is significantly enhanced by a pro-

gramme of response training, in self-reported image vividness and experience. Persons who do not respond or respond to a minor degree with imagery therapy only process the verbal response propositions of the image structure presented by the therapist. Once a person is response trained then cardiac and breathing rates were found to covary with the intensity of stimulus imagery, with a smaller increase in muscle tension. The main determinant of success in therapy is not so much the content of the script so much as the training to respond physiologically to the script. The response structure to the script is more important than the content of the script.

Untrained phobic subjects are relatively unresponsive when imaging a phobic stimulus content, which ordinarily may provoke strong somato-visceral responses in the actual confrontation situation. For imagery therapy to become effective, these subjects often need to be response trained in imagery vividness and associated feeling experiences. Such training dramatically increases the necessary covariant physiological activity. "Training appears to act like an amplifier..." As a direct result of training there is concordance between the report of self-perceived stress and physiological response to the therapist script stimulus. Average subjects can, through training, generate physiological response patterns consonant with their emotional response to the thematic content of the script.

Research in emotional imagery conducted by Jacobson (1929), Wolpe (1958), Marks (1972) and Lang (1979), suggests that it is the cognitive structure which controls the specific

patterns of physiological emotional and behavioural responding. This led to the proposition by Schacter (1960) and Graham et.al., (1960), that cognitively controlled patterns of arousal and the covariant physiological responses were related to the etiology of pathologic organ dysfunctions. The mediating effects of cognitive events leading to functional disease led to research into psychosomatic problems.

Although it was acknowledged that wide individual differences existed leading to good/bad imagers, experiments by Lang (1979) indicate that training can improve the physiologic responses of average responders. This psychological set significantly enhances therapy. Lang postulated a brain "prototype", which could be "reprogrammed" towards more adaptive overt responding. Significant behaviour change occurs when the new "brain prototype" is sensitized to alter the existing cognitive and programmatic motor events.

In another experiment, significant to this thesis Nemiah et.al., (1976) reported that people suffering from psychosomatic problems often have an inability to localize affects in their bodies. They also appear unable to be aware of the common automatic somatic reactions which accompany the experience of feeling. This characteristic is called Alexithymia.

Synergism initially concentrates on the development of a generalized awareness of common automatic somatic reactions (body awareness and relaxation response). It uses cognitive/imaginal techniques with cue associated "in vivo" self-monitoring. In later sessions it becomes specific with regard

to body awareness, breath awareness, visualization enhancement and training to reduce the blocking effect of Alexithymia. Centering the awareness in the body (rotation of consciousness) and on the somatic processes (relaxation response and awareness training) changes the normal phenomenal field of the Alexythmic, and therefore changes the mediating influence of dysfunctional cognitive events.

In most extant imagery therapies, the concentration is on the phobia, anxiety or stress provoking events. In Synergism little attempt is made to evoke such imagery. Instead, the initial emphasis is to establish a referent of 1) deep relaxation, 2) body awareness, 3) breath awareness, 4) direct positive statements (resolve), 5) visualization and imagery training and 6) the self-monitoring of "in vivo" experiences. Later sessions involve limited group discussion within an existential and self-actualizing framework. The purpose is for each person to significantly alter the dysfunctional attitudes/responses which are self-perceived during "in vivo" experiences. The need and direction of desirable change must be self-determined.

The purpose of most meditation techniques, therapy procedures and psychotherapeutic interactions is to help the client gain a degree of self-control. This implies a significant covert control element in cognition. Instructional control over covert acts is demonstrated when the pattern of visceral and somatomuscular activity can be made consonant with the conceptual content and organisation of the referent script. If this can be achieved, self-control is

evidenced. Emotional imagery training, Lang et.al., (1980) provides a scientifically established path to access and modify the image structures in the brain. Lang (1979) defines the proposition approach to imagery. Lang et.al., (1980) shows how the propositional organisation of both the dysfunctional image and subsequent images could be changed using feedback loops through verbal output, to the image in the brain.

At the end of each Synergistic Relaxation programme, clients are asked to produce retrospective scenarios of self-perceived significant imagery. According to Lang et.al., (1980) this helps to change each subject's image processing programme and the response information structure. This significantly increases image vividness and imagery experience, both of which enhance the therapy programme.

## 2.9 Awareness of Heart Rate (HR)

Obrist et.al., (1974) have summarized contemporary experimental work on the interaction effects noted by many researchers in cardiovascular psychophysiology. This area is complex, often seems to be contradictory and does not lend itself easily to a simple conceptual understanding. The issues are complex, the instruments used in experiments are necessarily extremely sophisticated and the semantics of heart research difficult for the non-specialist to determine.

A number of key issues pertinent to relaxation research seem to be emerging from the plethora of research data concerning cardiovascular psychophysiology. As sophistication in technology and experimental methodology improves the issues become even more complex. Early intuitions concerning the relationship between mediating influences and cardio-somatic coupling seem to become valid as the variables compounding the complexity of this relationship are identified. For the superficial researcher, evidence can often be found to justify any conceptual stance. Closer scrutiny will more often than not reveal the most frustrating aspect of cardiac research. For each 'critical' experiment which has established a specific relationship, there is often an equally 'critical' and elegant experiment which seems to indicate the opposite.

Electronic experimental and technological sophistication is constantly amending previously cherished issues. Methodological issues still however plague the area of HR control and are central to the problem of equivocal findings.

Eight areas will be dealt with, in what are considered

to be the key areas pertinent to relaxation research. These areas cannot be dealt with exhaustively. In each case an attempt has been made to review the most current literature available. The missive by Obrist et.al., (1974) stands as a central core of reference for most of the literature concerning cardiovascular psychophysiology. The majority of significant works refer to this reference at some point. The eight areas to be reviewed are: 1) cardiovascular control mechanisms, 2) imagery, 3) locus of control, 4) individual differences, 5) autonomic and cardiac perception, 5) stress and anxiety effects, 7) cardio-somatic coupling, and 8) skills training.

#### 2.9.1 Cardiovascular control mechanisms

The cardiovascular system does not lend itself to cause-effect models. Four major mechanisms have been identified (Engel, 1971): a) cardiodynamic, b) hemodynamic, c) neurogenic and d) psychologic. Pharmacologic/humoral mechanisms are not discussed except where relevant. It would be impossible to give a detailed review of these mechanisms. Some familiarity with the details of cardiovascular control mechanisms must be assumed. Emphasis will only be given to what are considered to be key points relevant to relaxation research.

Cardio dynamics is primarily concerned with the mechanisms which initiate, maintain and regulate the pumping action of the heart. There are two ways in which this occurs. The first is concerned with neuro-electronic specificity or chronotropic action. This governs HR. The second is con-

cerned with the contractile properties of the heart and is referred to as inotropic action. Both are neurogenically controlled by both parasympathetic and sympathetic vagal action (Forsyth, 1974). Results of intensive research into the specificity of the three HR control sites, sino-atrial (SA) node, atrio-ventricular (AV) node and the ventricle itself, implicate mediational control through the efferent pathway of the vagus nerve (Engel, 1971). This major nerve system is a parasympathetic pathway. Hypertensives generally elicit a stereotyped pattern of sympathetic outflow which maintains HR or BP increases although the maximum tendency is BP increase. Lang (1974) has suggested that psychogenic dysfunctions may result from inappropriate visceral learning. There are a number of yogic techniques which use imagery, breath control, body posture and somatic/visceral manipulations to initiate sensitivity and later control of the efferent outflow of the vagus nerve (Satyananda 1974) to induce deep states of relaxation or meditation.

In his presidential address to the Psychophysiological Society (Engel, 1971) he commented that very little research had been conducted into hemodynamics. He referred particularly to the interactive mechanisms of respiratory and somatic mediation of HR control, and cardiac learning. Engel, nevertheless emphasised that "hemodynamic adjustments are one major mechanism by which these effects will influence cardiac function" (p.168). He was also convinced that the presence of specificity indicated to exist in the hemodynamic system suggests the possibility of cardiovascular control through the retraining of inappropriately learned responses. The most

powerful rapidly acting homeostatic mechanism in the cardiovascular system is the carotid baroreceptor reflex (Forsyth, 1974). The carotid baroreceptor is located at the bifurcation of the carotid artery (approximately where the jaw joins the neck and just below the ear). This baroreceptor reflex is particularly sensitive to stretch and distortion. Slow head-rolling exercises and passive stretching of the neck have long been held to induce  $\alpha$  EEG states and relaxation.

The early findings that in humans, the production of  $\alpha$  EEG was associated with a pleasant quasi-meditational state of consciousness have not been substantiated. Other research like that by Lotkin and Cohen (1976), has indicated that some people can experience alpha as unpleasant, and that chronic and acute anxiety are not incompatible with the production of high alpha. However, the physiological effect of simple exercises can be seen to activate the carotid baroreceptor reflex and to a change in HR. The carotid body is also located at the bifurcation of the carotid artery. Again visualization and imagery with emphasis at this junction, combined with breath regulation, must affect the carotid body which is a powerful chemoreceptor homeostatic mechanism responsive to  $O_2/CO_2$  levels in the hemodynamic system. The conscious manipulation of the carotid body and reflex systems must change HR.

Three factors identified by Engel (1971) are pertinent at this stage. First, the physiological mechanisms underlying operant conditioning of HR are different for slow HR and for the acceleration of HR. Second, the hemodynamic mechanisms in the learning of HR control are different early in training

to those late in training. Third, under sustained stress, HR and cardiac outputs return to prestress levels after the initial stress response, but BP often remains elevated and total peripheral resistance increases. Normally there is little change in total peripheral resistance. Neurogenic sympathetic stimulation maintains an integrated pattern of overall vascular resistance changes (Forsyth, 1974). These factors have important implications in relaxation. They account for individual differences in responding as well as explaining the reported dissonance between perceptions of cognitive relaxation in face of evidence of elevated BP. Specificity of somatic awareness becomes an important mediating influence which according to Nemiah (1976) is absent in persons suffering psychosomatically.

Both Engel (1971) and Forsyth (1974) admit that the central nervous system (CNS) mechanisms which regulate cardiac control are virtually unknown. Recent behavioural research suggests that some aspects of the autonomic effects of CNS mediation of HR control may have been learned. Shapiro (1977) has shown that normal persons can learn to modulate their blood pressure. Goldstein et.al., (1977) have also demonstrated that normal men and women can learn to attenuate their HR responses during submaximal treadmill exercises if given feedback. Those changes to HR and BP were maintained in the absence of feedback, suggesting the increased efficiency of the biofeedback-augmented model offered by Patel (1976). These findings establish that HR/BP control is a learned skill which can be retained. These findings are important. They suggest that exercise tolerance, pain control and stress/

anxiety reduction are all by-products of centrally mediated HR control. Engel (1971) drew some inference from research to indicate that there is some relationship between slow EEG waves in relaxation and arousal EEG states in excitation. A great deal of research was initiated by this finding, and has proven unequivocal (Frost et.al., 1978). Some of this will be referenced later where relevant.

The evidence presented by Forsyth (1974) was more pertinent. He found that the influence of baroreceptors (e.g. carotid body, aortic arch etc) produces more profound effects on HR/BP control than lesions at critical neurological sites e.g., bilateral transection of the carotid sinus, aortic nerves and terminations of afferent baroreceptor nerves at the level of the obex.

A great deal could be written about the psychologic effects on heart rate. An admirably practical approach was taken by Roth et.al., (1976) which hopefully might develop a worthwhile pattern for future research. HR in this experiment, was monitored in vivo over a 24 hour period using a portable electrocardiographic tape recorder (N = 33). There were a number of predictable complications to this study. It is difficult to distinguish physiological effects related to different emotions. The HR as an activity measure is complex (Engels, 1971). Sex differences due to physiology and psychology are also complex. Nevertheless there were some significant correlations revealing direct psychological effects on HR. One finding was that for men in particular, an overall anxious mood is characterized by an inability to relax even when work activities are over. It was found that the corre-

lations between psychological and HR variables for women were completely different. Women had significantly high HR's related to feelings of depression and interpersonal sensitivity. The latter was with respect to negative feelings of helplessness vide the Seligman (1975) model. Other factors which affected HR were meals, changes in posture, environmental temperature, circadian rhythms and physical activity (Roth et.al., 1976, p.185).

An interesting finding in respect to the interaction of sleep, psychological mood and physical activity is that prolonged and strenuous exercise in the evening can produce an elevation in HR that persists even into the third hour of sleep (Hauri, 1968). For studies into hypertension an important finding is that anxiety maintains elevated HR and prevents its normal recovery to base line HR, even after HR has been elevated by exercise which is then terminated (Duncan et.al., 1951). Psychological factors are pervasive and complex but undoubtedly have an effect on HR. Findings of other research categorically affirm the interrelationship of mood states, physical activity and HR (Kupfer et.al., 1974). The in vivo experiment by Roth et.al., (1976) helped to establish the effect of these variables in a more practical setting. In most cases research tends to investigate negative aspects affecting HR. It seems primarily concerned with what initiates, maintains and regulates aversive conditions leading to stress, anxiety and hypertension/CVD.

Relaxation/meditation technology uses this same information which then forms the rationale for the promotion of HR control using psychologically oriented techniques of aver-

sive symptomology. The psychological reduction of anxiety can be seen to result in significant and in toto beneficial reductions to HR. Forsyth (1974, p. 25) indicated that there are many critical unanswered questions in the psychological domain of HR control. Areas researched include stress as defined by quality of life (Flanagan, 1978) and life stress issues (Sarason et.al., 1978), unique personality characteristics due to predisposition (Type A versus Type B) or genetics, and finally animal data concerning responses to specific stressors. These areas have produced results which clearly implicate psychological influence. The data is still unclear. For example, Glass has found that the Type A/Type B paradigm does not withstand close scrutiny (Glass, 1977). The results of animal studies are often not transferable to humans (Obrist, 1974). What Glass (1977) has established is a clearer understanding of the complex interrelationship among the psychological variables which mitigate or exacerbate the behaviour-disease relationship, as specifically related to CVD and HR control.

### 2.9.2 Imagery

One of the most dramatic and early records of HR change due to a cognitive strategy was that of Luria (1968) who related how his subject was able to increase his HR from a baseline of 70-72 bpm to 80-96bpm, by imagining 'running after a train'. Carroll, et.al., (1979) are significant among recent researchers into this imagery/HR domain. Their research indicated that 18 out of a total of 24 subjects used visual imagery to control HR, and other voluntarily

induced cardiac manipulations. For the acceleration of HR, their results confirmed earlier findings by Bell and Schwartz (1975) and Carrol (1977) that differences between the success rates of subjects is largely the result of the potency of vivid imagery. Carroll et.al., (1979) actually found that ratings of imagery vividness were predictors of HR control. High vividness of imagery subjects were superior in HR control to low vividness subjects. All this research points to the direct correlation between imagery, especially of anxiety provoking events in HR acceleration control. Very little research has been conducted into reduction of HR using imagery. None of these research papers reveal the nature of the imagery components or the process of imagery. Nor can assumptions be made other than the fact that imagery accelerates HR. Some researchers have used this as evidence of an assumption that imagery accelerates HR. Until aspects of imagery related to reduction of HR are cited, this assumption is tenuous. Imagery as a route to voluntary control of HR has however been firmly established. It's efficacy as a central mediating factor of some significance was established in Section 2.8, Imagery.

The phenomenon of mental imagery has received recent and growing attention due to recognition of imagery as central to therapies associated with SD, flooding and hypnosis. It's relevance and similarity to actual emotional experience has prompted some research to link imagery to traditional theories of emotion. This has led to theories of image valence (Lang, 1979). Jones and Johnson (1978) were able to extend Luria's (1968) finding by demonstrating that imagery which involved imagination of high motor activity elicited large cardiac re-

sponses regardless of image valence. Their experiments also demonstrated that differential responding to imagery appeared to be restricted to cardiac respiratory and somatic systems. Their results suggest that image valence and imagined activity level are both important dimensions of imagery. Autonomic responding seems to be dependant on these two dimensions.

Jones and Johnson (1980) identified four dimensions of responding patterns which are a significant advance on previous research.

a. Activity/Passivity dimension: Their experimental results demonstrated that this was the most important determinant of physiological involvement, although little research was conducted into the "passive" dimension.

b. Hi/Lo activity dimension: Mental imagery containing high or low levels of activity is differentiated and specific to one or the other. e.g. Hi activity produces marked cardiac acceleration of the order of 7 bpm within 4 seconds of image onset. Lo activity images are associated with smaller cardiac responses of the same general shape and latency. This suggests that the motor intensity of the image is an important determinant.

c. Thinking versus imagery dimension: Imagery, in contrast to thinking elicits large magnitudes biphasic cardiac responding. With thinking, during stimulus repetition, cardiac responding habituated quickly and was minimal after the fourth repetition. Cardiac activity during imagery proved resistant to habituation, and even after ten repetitions differential responding was still apparent. Habituation effects were the most evident in subjects given "tense" in-

structions.

d. Physiological dimension: The results indicate a variety of physiological changes which occur during imagery. Simple motor tensing and imagery were found to be similar. This is a significant finding for Synergism. The results of these experiments demonstrated that the somatic mediation of the cardiac response is still open to question. The effect of relaxation instructions in the tense/relax PMR-type format resulted in an accentuated cardiac response. This is predictive although Jones and Johnson (1980) found this difficult to rationalize. What this finding implies is that imagery related to the PMR sequence affecting muscle groups and specific somato/visceral body-parts will achieve similar complex interactive global responses in respiration, HR, BP and EEG to actual PMR. Also the specific physiological state in turn modifies important image characteristics. To attend to "relax" instructions is not as effective as an image only or passive attention (witness) attitude. "Cognitive" relaxation of body parts would appear to be as effective or perhaps more so than actual PMR in some subjects.

Other physiological concomittants of imagery relate to

1) an interesting finding that electrodermal activity is not particularly responsive in imagery, suggestive of dermal-cognitive uncoupling during imagery;

2) Hi-activity imagery showed higher frontalis tension levels suggesting that frontalis tension reduction may be associated with lo-activity imagery;

3) image valence and intensity is related to facial musculature which is highly responsive to imagery which sug-

gests that facial relax/tense cues can be subtle indicators of the actual physiological state along a relax-tense continuum.

4) image valence, content and sensory modes are related to hemispheric assymetry, suggesting that an effective imagery technique will incorporate conditions which may develop relaxation by activating each hemisphere;

5) eye closure results in reduced EMG activity during imagery.

As a final comment Jones and Johnson (1980) state that "imagery elicits complex global responding in autonomic somatic and central systems: (p.357). It is interesting to note that even the most recent imagery research is still intent on investigating the arousal mode. Very little research has seemingly been conducted into the use of relaxation-specific imagery to reduce HR and other cardiovascular mechanisms, although all the research suggests this to be productive.

### 2.9.3 Locus of Control (LOC)

Rotter (1966) developed an expectancy model for internal versus external locus of control. Briefly this refers to an individual's perception of reinforcing events. Internally oriented persons view reinforcing events as being contingent on one's own behaviour. An externally oriented person's behaviour is dependent on events which are viewed as beyond one's own control. Ray and Lamb (1974) demonstrated that external LOC's were better at HR slowing and that internal LOC's were better at HR acceleration. Other research (Gatchel, 1975) gave equivocal results showing a reversal in the pre-

vious research. This has sown some confusion. The anomaly can be resolved by reference to Ornstein's (1971) attentional mode. The phenomena being observed may be the ability to shift the focus of attention from an external to an internal mode, and vice versa. While LOC data permit no easy interpretation: (Carroll, 1979), Carroll does suggest the possibility already mentioned that each different attentional mode results in divergent consequences for HR.

Most research has been conducted using laboratory conditions. Bell and Schwartz (1975) reported that self-monitored HR control (an aspect of internal LOC) taken outside the laboratory was not predicted by HR changes observed during voluntary HR control sessions in the laboratory condition. They observed that although the in vivo sessions may bracket similar changes the laboratory was not predictive of in vivo HR changes. They suggested that the laboratory condition may in fact be a contaminant in some of the equivocal results obtained.

There appears to be a strong case to assume that instructional set and attentional mode can be powerful interacting variables affecting much of HR control research. Both these effects determine the LOC mode.

#### 2.9.4 Individual differences

The constraints imposed by biological processes have been suggested as reality issues which lead to individual differences in HR response. A number of variables have been proposed. A review of the literature reveals one critical

variable which seems to be predictive of good HR control, i.e. autonomic lability.

Bell and Schwartz (1975) have demonstrated a relationship between cardiovascular lability and learned HR control. McFarland and Campbell (1976) have conducted experiments into HR reactivity. Results indicated that better HR control seems to occur with autonomic lability. In a significant experiment into blood pressure lability, Lott and Gatchel (1978) assessed the relationship between BP lability and HR control. These two parameters appear to be interlocked. BP influences HR and vice versa. Complex neural and neural hormonal homeostatic mechanisms control BP. Since BP and HR seem intimately related the same control mechanisms may also constrain HR. The assumption made by these investigators was that poorly regulated BP should provide the opportunity for a greater variance in HR than well regulated homeostatically sensitive processes. Normal high-labile rather than labile hypertensives were the subjects in this design. The criterion of a cold-pressor test was selected to identify hi versus lo reactivity. Evidence was offered that these labile blood pressure persons (cold-pressor hyperreactors) would be predictive of cardiovascular risk but that these individuals were also capable of greater voluntary HR change. A relationship was shown to exist between labile BP, good HR control, and cold-pressor hyperreactivity. This was one of the few experiments to examine HR decrease in any depth.

Lott and Gatchel (1978) established that cold-pressor hyperreactors were superior to lo-reactors in performing a HR decrease task. An important finding was the reciprocal

relationship between HR and BP on this task i.e. BP rose as HR decreased. Measures of calf blood flow suggested the presence of peripheral vasodilation, thus cardiac function changes involving an increase in stroke volume must have occurred. These were in fact measured. The lo-reactor group contrasted these results. The blood pressure of this group seemed to be mediated by different control mechanisms. It was suggested that the rigor of phasic blood pressure regulation in lo-reactors, acts as a constraint for voluntary HR decreases.

The HR increase performances of both groups did not differ significantly. However, different mechanisms were identified to operate even in this paradigm. The cold pressor hyperreactors used peripheral vasoconstriction and cardio-augmentation (HR and stroke volume were positively correlated). These were not observed in lo-reactors. The hi-reactor changes suggested  $\alpha$ -sympathetic response was operating as a control mechanism.

This experiment is considered a significant one. It has demonstrated the positive relationship between autonomic lability and learned HR control, identified some of the actual mechanisms which differentiate on the basis of individual responding mechanisms, and seems to validate the view that psychogenic dysfunctions arise from a labile autonomic system that has somehow resulted in inappropriate visceral learning. On the basis of this paradigm it is possible to justify the use of learning techniques to correct the maladaptive physiological responding to stimulus conditions which lead to a chronic systemic dysfunction. Also that the best candidates

may be the most chronic sufferers. For the purpose of this thesis some exciting research has been conducted into HR control and trait anxiety, vide sub-section 2.9.6.

This experiment has also demonstrated that there are characteristically different individual response patterns. The critical individual differences seem to be between persons with a labile autonomic system and those with a homeostatically balanced phasic blood pressure regulation pattern. The greater magnitude of HR change and HR control is demonstrated by the labile autonomic systems.

Various researchers have suggested other variables based on a biological perspective of individual differences. McCanne and Sandman (1975) suggested resting HR-level which was considered to be constrained by floor and ceiling limits. Little conclusive data exists concerning resting HR-level, although Carroll (1979) has suggested that the more variable the resting HR-level the more the acquisition of HR control is facilitated. This lends further credence to the autonomic lability model. Cardiac reactivity, investigated by Gatchell (1974) also reiterates the same theme. Lang et.al (1975) found better HR control learning in young college students than in older males. They also found that older males with no history of CVD were better than a similar cohort with a history of CVD. McCanne and Iennarella (1980) and Heselgrave et.al., (1979) suggest much of this seemingly equivocal research is contaminated by inappropriately applied statistical procedures, poor methodology, instructional set, habituation and skills training.

### 2.9.5 Awareness of HR

Implicit in much of the foregoing research into HR control is the assumption that control pre-supposes awareness or some process related to autonomic and cardiac perception. Brener (1974) has postulated that a necessary pre-requisite for HR control is the central monitoring/awareness process. This is one of the most explicit statements made so far (Carroll, 1979). Awareness is given more detailed attention in Section 2.6., Meditation and Awareness. It is included in this sub-section to emphasise it's significance as a major mediating determinant of HR control. Awareness is not to be confused with self-report measures such as the 21-item Bergman and Johnson (1971) Autonomic Perception Questionnaire.

It is felt that much of the problem which plagues unequivocal research findings in this area of cardiac perception and it's effect on HR control, is due to a lack of understanding of the operational definition of awareness in respect to cardiac perception. There is substantive evidence indicating the effectiveness of self-monitoring and passivity as key components of awareness. In HR research the effort to identify awareness through self-report measures such as the APQ, have been doomed to failure.

Carroll (1979) presents equivocal data and attempts to establish a rationale for the contradictory results. This research suggests that the APQ actually taps concern about HR rather than perceptions of control. It's high correlation with Taylor's Manifest Anxiety Scale confirms this (Blankstein, 1975). In the summary to his presentation of

equivocal findings concerning cardiac perception and its posited effect on HR control, Carroll (1979) concluded that the findings were sufficiently evocative to merit further investigation. He indicated the disappointing results from a review of this literature are predictive because of the methodological difficulties which had been reviewed in detail in a previous paper (Carroll, 1977). It is maintained that the conduct of many of the experiments indicates a paucity of understanding of the mechanisms and substances of awareness. Many experimenters expected significant results over three to four sessions only, with little or no discriminative training using validated awareness techniques, e.g. relaxation training.

#### 2.9.6 Stress and Anxiety effects on HR

The summary by Carroll (1979) on the relationship between trait anxiety and HR control, is a poor one. Some key references are omitted which are extremely relevant. His conclusion that this relationship primarily reflects a relationship between cardiac control and autonomic lability (i.e. cardiac variability and reactivity) is considered to be valid.

The effects of fear/anxiety are well documented (Rachman, 1978). What arises from this research is that it too, is plagued by seemingly contradictory data, most of which reveals imperfect coupling between the various systems and measures of fear/anxiety (Rachman, 1978, p.23). One consistent variable seems to be maintained, that is the relationship between HR and fear responses (Lang et.al., 1970) validating the "violent pounding heart" phenomena often found in literature

relating to war and extreme stress.

Lang et.al., (1970) study was an attempt to rationalize SD. A later but still contemporary paper (Leitenberg et.al., 1971) was among the first to challenge Wolpe's (1958) hypothesis. Wolpe's (1958) theory of reciprocal inhibition and the relationship between HR and anxiety was postulated on the basis of this hypothesis. This hypothesis suggested the reciprocal inhibitory effect between HR and anxiety, i.e. a low heart rate is incompatible with high anxiety. The paper by Leitenberg et.al., 1971, found 1) that therapy can take place without a concomitant decrease in HR and that 2) often HR increases accompanying therapy postulated to effect the opposite response. The fact that there need be no inhibition of HR prior to behavioural change is an important finding in the refutation of Wolpe's (1958) reciprocal inhibition hypothesis. Lietenberg etl.al., (1971) concluded with what is considered a key statement:

"There seems to be too much emphasis on reducing anxiety and not enough emphasis on training an individual to function in spite of his anxiety" (1971, p.68).

It is this training aspect that is emphasised in this thesis. It is considered that neglect of this aspect has led many researchers to confound HR research with seemingly contradictory data. Obrist et.al., (1978) presented a recent paper validating the Lietenberg et.al., (1971) research and their emphasis on the training aspect, by demonstrating that active coping responses to a psychologically stressful situation induced significant increases in HR which were disassociated or independent from somatic activity. This demonstrated

yet again the complexity of the interactive processes involved between cognitive strategies, stress, HR and cardiac-somatic coupling/uncoupling. The current approach to cognitive restructuring and cognitive behaviour modification lays emphasis on the teaching of active coping skills as the basis of training in self control in therapy (Meichenbaum, 1979).

Rupert and Holmes (1978) criticized much of the current research in HR problems (e.g. tachycardia, elevated HR, and cardiac neurosis) with respect to chronic anxiety, phobias, speech anxiety, rape trauma and animal, insect or snake phobias on the basis of lack of inadequate control and methodological weaknesses. The emphasis of their paper was on the effects of training in HR control using instructions and biofeedback in a variety of combinations. They examined the effects of multiple sessions of HR biofeedback training on HR control and anxiety levels of anxious psychiatric patients. It was a methodologically elegant experiment, and was unique in that it included controls for instructions alone as well as adaptation and placebo groups. These two latter conditions had been rarely used in HR control to that date. A second phase of no feedback was used on all groups to ascertain whether or not HR control was transferable to the in vivo non-contingency situation.

Five important conclusions were drawn from this experiment (Rupert and Holmes, 1978). The first and most significant is that increases in HR were easier to generate than decreases, and that the increases were also proportionally more significant. This indicates how easy it is to "LEARN" to be hypertensive, in comparison with relaxation. In the

past these significant increases and the nature of the reduced HR have been evidenced as indicating that biofeedback training has been effective for increasing or decreasing HR. The inclusion of control, adaptation groups and instruction only groups changes this perspective whilst remaining consistent with these previous findings.

In a second finding by including these conditions Rupert and Holmes (1978) found that none of the true/placebo biofeedback etc conditions were effective in reducing HR. There were no significant differences between all conditions and the sitting quietly or "just sitting" condition. This suggests, putting it another way, that just sitting quietly is as effective as any of the biofeedback or placebo conditions. This is an important conclusion for the purpose of this thesis. A quieting, comfortable and stable physical posture is used in Synergism to "prepare" for the relaxation response.

A third finding was that instructions plus true biofeedback were more effective in increasing HR than all other conditions. Intuitively it could be assumed that multiple techniques which are "synergistically" applied would be more effective than a singular application of a specific technique (Lazarus, 1976). That is sitting quietly plus instructions plus true biofeedback would be better than any of these conditions or a placebo alone. This experiment validates the synergistic hypothesis, at least for increases in HR, that the progressive additive and cumulative effect (synergistic) of a multiple technique is the most effective strategy for successful therapy.

The fourth finding is interesting. When matched with

all other conditions the true biofeedback condition did not evidence significant transfer effect. The authors (Rupert and Holmes, 1978) contend that their research was the first to assess transfer effect (in vivo generalization) within the context of all the other discriminant conditions. They suggested this important finding weakened the therapeutic potential of HR biofeedback training. Patel (1976) however, demonstrated that biofeedback-augmented relaxation enhanced the efficacy of relaxation training. The point had been explicated earlier by Bandura (1974) in his presidential address to the American Psychological Association:

"So called conditioned reactions are largely self-activated on the basis of learned expectations rather than automatically evoked. The critical factor therefore is not that events occur together in time but that people learn to predict them and to summon up appropriate reactions" (1974, p.860).

Most HR control experiments seem to be conducted along behaviourally oriented paradigms and are time-phase locked. This orientation tends to ignore the "learned predisposition to act" referred to here by Bandura. The classical behaviourist orientation makes an assumption that response performance is a permanent unchanging and fully automatic set. Apparently conflicting results could therefore, according to this statement by Bandura, be predicted on the basis of differences in expectancies and prior learning experiences. That is, the human factor makes responding malleable. Rupert and Holmes (1978) suggest their findings indicate a weakened therapeutic potential, whereas Patel (1976) demonstrates that when the "people" variable is taken into account, biofeedback augmented relaxation training is more effective in some in-

stances than relaxation training. It allows people to help themselves predict their responses more accurately within the framework of a scientifically based rationale (e.g. Patel, 1976). They are then able to discriminate appropriate versus inappropriate responding and this then reinforces the new learned relaxation attenuation (e.g. HR) and teaches HR control.

Lang (1968) had early noted that "the absence of programs for shaping cognitive sets and attitudes may contribute to the not infrequent failure of transfer of treatment effects" (1968, p. 94). It is consequent to this and other similar research based comments that Rationale (Section 2.4) is given such high priority. Despite the elegance of their experiment, Rupert and Holmes (1978) seem to have overlooked the significance of similar research to Lang (1968) and Bandura (1974) in their search for justification of non-transfer effect of biofeedback.

The final finding is that HR biofeedback training has no effect on a person's subjective feelings of anxiety. This reinforces the early findings of Leitenberg et.al., (1971). It demonstrates yet again that it is possible to develop an ability to significantly raise and lower HR whilst the subjective components of anxiety remain unchanged. Again this is predictable intuitively. There is a plethora of evidence which demonstrates the protracted and debilitating effects of fear, anxiety and depression, which can extend for months if not for years - yet in this same time frame people sleep, rest and exercise - three conditions in which dramatic physiological HR changes take place at variance with the hypothesis of reciprocal inhibition (Wolpe, 1958). Again Rupert and

Holmes (1978) draw a false conclusion when they question the efficacy of biofeedback as a therapeutic strategy. Biofeedback-augmented relaxation uses biofeedback from a different perspective. It may not be a therapy in and of itself. It becomes an effective therapeutic strategy when used as a sensitization and educational device, in combination with a multiple technique, relaxation strategy.

Whilst the emphasis in much of the HR control literature has involved the discussion of biofeedback effects, other behaviourally oriented paradigms have investigated the close relationship between phasic cardio-vascular and somatic changes. Some of these investigators have reported large increases in HR during psychologically stressful situations (Taggart et.al., 1973). A detailed review of this literature suggests four factors deemed notable; a) cognitively mediated neural factors have the capacity to override the normal metabolic control mechanisms of HR during psychologically induced stress; b) these neural override mechanisms result in the elevation of HR and other cardiovascular response systems beyond the metabolic requirement; c) the resultant CV response prior and during psychological stress appears to be physiologically similar to an exercise response situation; and d) psychological stress precipitates a sympathetic condition which mobilizes the organism for action.

In research to investigate the HR concomitants related to stress and exercise, Gliner et.al., (1979) used highly physically trained subjects. This reduced the confounding effects of stroke volume. Two of the ten subjects had a past history of hypertension although at the time of the experiment

were normotensive. These two subjects responded to psychological stress with a significantly increased stroke index and HR. These levels were in excess of that produced by exercise stress. The exercise stress had been assessed on the basis of the previously collated psychological stress determinants. Overall Gliner et.al., (1979) indicated that individuals respond to psychological stress with a cardiovascular pattern which was excessive relative to the metabolic requirements. Their results also demonstrated that there was a distinct and significant difference between the cardiovascular patterns of psychological stress compared to physical exercise.

"What is not discernible is whether this response pattern is qualitatively different from other subjects due to individual differences in cardiovascular responsiveness, or whether it represents a quantitative difference which would have occurred for all subjects at a greater intensity of stress" (1979, p.361).

Another research paper contemporary to Gliner et.al., (1979) reviewed evidence which demonstrated that HR responses during anticipation of a socially threatening event are similar to those occurring prior to physical threat. Also that the pattern of these responses display an accelerating pattern of increase, time-locked to the actual threat. Responses increase as the event becomes more imminent.

"Taken together these results indicate that irrespective of psychometrically assessed anxiety, and/or type of threatening stimulus, the autonomic patterns during anticipation of threat are characterized by accelerating responsiveness" (1979, p.213).

This demonstrated conclusively the interaction between cognitive events and HR. In these experiments it is obvious

that for most people there is a fairly direct relationship between HR and psychological stress which is both parallel and proportional. Also, previous research already reviewed has indicated that it is easier to increase HR than to decrease it. Experimental research and emphasis has centred on the most reactive component of HR (cardiac acceleratory response) in its most volatile state (anxiety/stress). Only currently does research seem to be investigating the active components of effective cardiac control in reducing HR. The most productive area has been imagery.

In summary, the effects of fear/anxiety indicate imperfect coupling between various systems and measures. In the case of HR the relationship is much more direct. Wolpe's (1958) theory of reciprocal inhibition can no longer be held valid. Lietenberg et .al., (1971), and Bandura (1974) both emphasised the need for attention to be directed towards the training and re-learning of coping mechanisms rather than the overemphasis on anxiety per se. Rupert and Holmes (1978), although concerned primarily with biofeedback and HR control, nevertheless demonstrated that there were five important conclusions to be drawn from their research.

- 1) Hypertensive (stress/anxiety response) conditions seem to be the easiest HR control techniques to learn.
- 2) Just sitting quietly is effective in significant HR reduction.
- 3) The synergistic application of multiple techniques is the most effective in HR change.

- 4) Biofeedback conditions of themselves do not lead to HR transfer effects.
- 5) It is possible to significantly raise or lower HR without a concurrent reduction in self-perceived anxiety/stress.

Glimer et.al., established a number of further points of significance:

- a) cognitively mediated neural factors can override the normal metabolic control mechanisms of HR during psychological stress;
- b) the results of psychologically induced stress or self perceptions of stress is an elevation of HR beyond normal metabolic requirements;
- c) psychological stress results in similar stress measures but activates different CV responses to the CV responses of exercise stress;
- d) psychological stress precipitates a sympathetic condition in HR response;
- e) the concomitants of HR change in social stress are similar to psychological stress;
- f) anticipatory stress indicates an accelerating pattern of stress responses, increasing HR as the time of the actual event approaches closer.

#### 2.9.7 Cardio-somatic coupling

Whilst relationships between the various parameters of autonomic control may not be clear cut, abundant evidence from a variety of experimental sources, has provided support

for a cardio-somatic coupling/uncoupling paradigm (Obrist et. al., 1974). The purpose of presenting this paradigm was an attempt to resolve the apparent inconsistencies which are apparent throughout all the literature on HR control. The relationship between behavioural and cardiovascular events is extremely complex and much of the extensive research is pervaded by seeming contradiction and inconsistency. Behavioural concepts have proven inadequate (Obrist et.al., 1974, p.137). What became obvious from their experiments was the consistency of the concomitance between HR and somatic activity. This concomitance was a two directional effect a) in direction of change (increasing or decreasing) and b) in magnitude of effect. It reflects a biologically substantive relationship between HR and somatic events, which is a vital factor in the cognitive control of HR.

Much of the emphasis of Obrist et.al., (1974) was to explicate the importance of research into HR and HR control mechanisms. It is a 'useful biological tool' for the measurement of discrete striate musculature as an index of activity. It is a finely tuned measure of behaviour within a psychobiological perspective. In some cases the heart is also a measure of the insensitivity of central processes to somatic or behavioural events. HR can also be used as a measure of the efficiency of the cardio-somatic, and cardiovascular system. For the purpose of this thesis the cardio-somatic relationship is an important one in respect to the interactive events of this system on HR changes.

Some of the more significant findings in the review by

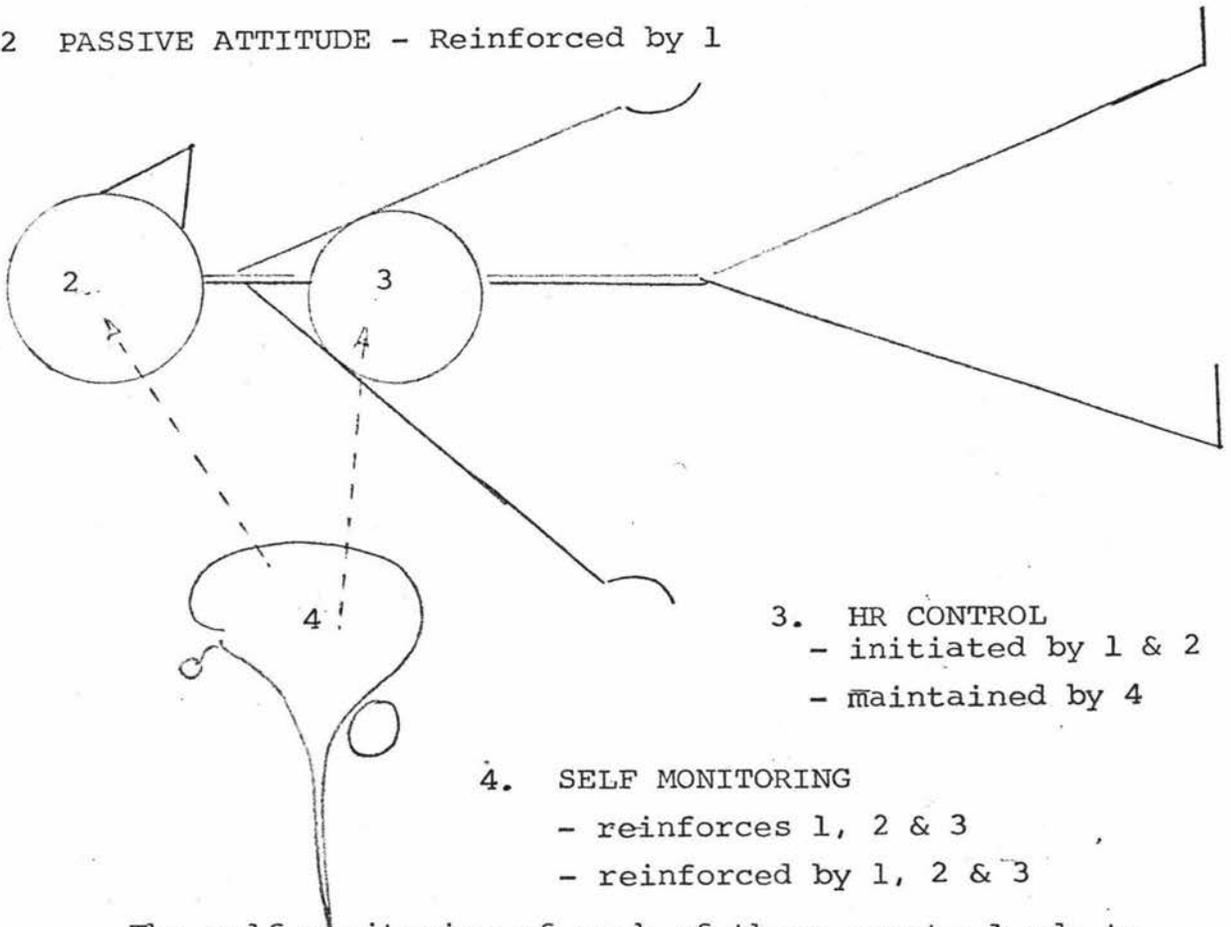
Obrist et al., (in Obrist et.al., 1974) are summarized since they are considered to be relevant to HR control and the factors which influence it.

- a. Mediation: Cardiac and somatic events have a common central mediating mechanism and this is the CNS. The primary neural influence on HR is mediated through the vagal innervation.
- b. Coupling: HR change is initiated by the CNS process associated with the initiation of somatic events. HR changes are therefore not dependent upon somatic activity but rather the reverse.
- c. Uncoupling: This seems to be contingent on the evocation of sympathetic innervation and vagal inhibition. HR change can take place on instruction and in the absence of any somatic event (e.g. in a curarized arm). The magnitude and direction of this HR change is dependent upon expectancy and instruction.
- d. Stress response: The initial and immediate response to threat stress or perceived/anticipated stress consists of a decrease in HR, cardiac output and vasoconstriction in both specific viscera and muscle groups. Generally this is followed by an increase in HR, cardiac output and muscle blood flow with a maintenance of vasoconstriction to the viscera.
- e. HR increase: Most research indicates the ease of HR increase and its reinforcement contingency effects following feedback or instruction.
- d. HR decrease: EEG responses which indicate inactivity

are normally associated with somatic quiescence and cardiac deceleration.

The last factor is a significant one. By direct manipulation or through modifying the electrical activity of the brain, both somatic quiescence and cardiac deceleration can be achieved. This "brain event" can be a learned response using biofeedback-augmented techniques to develop awareness and sensitivity. Each component then becomes interactive, e.g.

- 1 SAVASAN - Quiet, stable body posture
- 2 PASSIVE ATTITUDE - Reinforced by 1



The self-monitoring of each of these events leads to further HR decrease, a greater ability to develop more sensitive responding and awareness. Each becomes an interactive loop inducing the relaxation response and resulting in the quiescent self-monitoring which leads to further relaxation with concomitant reduction in HR, cardiovascular changes, vaso-

dilation in both viscera and muscle groups and a generalized whole body/mind generated relaxation.

#### 2.9.8 Skills Training

It has already been indicated that there has been little emphasis in the past on training in developing the capacity to function in spite of stress or anxiety (Lietenberg et.al., 1971) and the fact that research using behaviourally oriented programmes takes little cognizance of the fact that a person's ability to predict outcomes can change maladaptive response patterns (e.g. hypertension) into adaptive response patterns (Bandura, 1974). This has led to the new Cognitive Behaviour Modification (Miechenbaum, 1979), and Behaviour Therapy paradigm of Walen et.al., (1977). The basis of these new therapy systems is Self Control (Section 2.10). Central to these therapies is skills training. These involve programmes for shaping cognitive sets and attitudes, leading to in vivo transfer of treatment effects, whose absence was commented upon by Lang (1968).

Two sources of information relevant to HR control are a) informational load, i.e. instructional set and expectancy, and b) the feedback contingencies and the manner in which responses are interpreted and reinforced. In an early experiment Bergman and Johnson (1972) used three categories of information processing; no specific HR information, specific HR information and augmented HR information. Their results indicated that the first condition did not affect significant HR change, whilst the other two did. Information consists of instructional set, expectations and feedback (Bergman and

Johnson, 1972).

Mahoney (1974), Bandura (1974), Miechenbaum (1974) and many others have questioned the adequacy of the strictly behavioural learning model. Therapists introduced covert mediating effects involving concepts of self-control, self-management coping skills and many other cognitive strategies, all of which are fundamental to a skills training approach.

McCanne and Iennarella (1980) also emphasised the importance of a focus on cognitive strategies in learning the skills associated in manipulations of autonomic functions. Brener (1977) had already drawn attention to the importance of the instructions given to subjects. Voluntary control over visceral responding occurs whenever a subject is able to comply with instructions to change heart rate. Brener (1977) noted that on these occasions somatic events were closely associated with these instructions. Subjects taught to perceive changes in somatic activity, which are more readily perceived by these people than HR change, actually result in HR change because of ready acceptance of the association of cardiac and somatic events. This expectation can be inculcated by education (Miechenbaum, 1979).

It is obvious from all of this research that training people in proprioceptive awareness (McCanne and Sandman, 1976) awareness of visceral changes, and other cardio-somatic coupling components will increase the overall efficacy of HR deceleration.

Normally autonomic events can be used to enhance the relaxation response, which can be triggered by awareness of

other somatic changes. These may be all linked to the hypo-metabolic response partially recognised by Beary et.al., (1974), and incorporated into a book by Benson (1974). In addition to the four changes suggested by Benson (1974) HR passive attention and self-monitoring with instructions to attempt HR reduction, will, according to all the evidence cited, result in a parallel reduction in other cardio-somatic coupling components. In fact, it has already been demonstrated that a relaxation cycle is set up between relaxation variables if the rationale is given in the instructional "set" that, 1) attention to voluntary HR control and the resultant reduction in HR combine to achieve a further reduction in HR, and 2) HR self-monitoring (passively) "which will occur" (instructional "set") will result in even further HR reduction. All of which enhances the ability to relax.

Skills training in HR reduction can therefore be seen to consist of the following components and sequence:

- a. Rationale (Educational Phase - Meichenbaum, 1979)
- b. Passive awareness of HR (Passive Attitude - Benson, 1974)
- c. Self-monitoring of HR change (Proprioceptive Awareness - McCanne and Sandman, 1976)

These can be seen to be further components of the Rr proposed by Benson (1974). They are considered to be Relaxation Induction components rather than Rr components. The latter, Rr should be related to the specific physiological responses which may be triggered off by Relaxation Induction (refer to Section 2.11, Correlates).

## 2.10 Self-Control

### 2.10.1

Locus of Control (LOC): The self-perception of control is a key variable of major significance in understanding control in human subjects. A central factor is the subjective awareness of the self-perceived degree of control and process of management of internal events (Rotter (1966) was an early researcher who demonstrated that people form generalized expectancies which are dependent upon two control perceptions, internal (I) or external (E) locus of control (LOC). Actual behaviour was determined by perceptions of LOC and Rotter (1966) developed the I-E scale to differentiate persons along this dimension.

### 2.10.2

Cue-Association: Bandura (1977) took this hypothesis one step further, by demonstrating that expectations resulting from LOC perceptions determine 1) whether coping behaviour is capable of initiation, 2) how much effort is to be expended and 3) how long coping behaviour may be sustained in the face of perceived anxieties and aversive experiences. This is an important development. It suggests that coping is dependent upon self-perceptions and covert cognitive events. Often maladaptive responses are the result of early faulty learning which results in automated (unconsciously mediated) response patterns. New learning procedures have to be implemented to replace maladaptive responses. Bandura (1977) considered that SM strategies enhanced feelings of mastery, by producing success increments during relearning. He proposed four major informational components to develop self-efficacy (feelings of mastery). These components were, a) success increments based on actual performance; b) vicarious experi-

ence; c) verbal cues, and d) physiological feedback. In each case internal cues (b and d) and external environmental/social cues (a and c) were considered by him to be covert cognitive reinforcers. They could lead to feelings of mastery or increase in self-efficacy (Bandura, 1977) or they could lead to feelings relating to anxiety stress and learned helplessness (Seligman, 1975). This aspect of cue-association is another important development. Feelings of mastery or self-control are generated not only by LOC perceptions relating clearly to an I-E dimension (Rotter, 1966), but also cue-associated factors (Bandura, 1977) determined ultimately whether the response is towards mastery or helplessness. It is proposed that the first step in any therapy model which intends to reverse the aversive consequences of maladaptive responding, is the learning of a relaxation technique which allows a person to cognitively become aware of covert conditioning to cue-associated phenomena. In short, self-monitoring is considered to be the critical first learning phase.

### 2.10.3

Self-Monitoring: Schachter (1966) early demonstrated the importance of internal cues. He established that perception of autonomic arousal (physiological cues or vicarious experience) prompts a cognitive search for the source of arousal. It was reasoned that it is the attributions arising from cognition of arousal, that is the self-perception of arousal, which determines response rather than the determinants of the arousal themselves. Actual behaviour according to Schachter (1966) is dependent upon learned attributions consequent upon perceptions of autonomic arousal. In a detailed analysis of autonomic arousal as a cognitive cue, Gerdes (1979) suggested that the

problem is more complex. Attributions in themselves are not sufficient. The accuracy of matching information also determines actual behaviour. This writer suggests that perceptions of anxiety which occur in the absence of consensually validated stress seem to be the result of a dissonance between real world information and cognitive cues. These cognitive cues can be generated a) by internal physiological cues, b) cognitively induced learned responses (which may be inappropriate) or c) external factors given a cognitively induced anxiety factor loading. It is proposed, on the basis of Schachter (1966) and Gerdes (1979) data, that relaxation using self-monitoring techniques initially allows a person to develop an awareness of inappropriate cues. Goldfried and Goldfried (1977) established that relaxation presented as an active coping skill was a more significant technique for the reduction of anxiety or self-perceived stress, than relaxation presented as a series of exercises which would automatically reduce tension. The latter had minimal therapeutic effect. However, the jump from self-monitoring to self-coping is precipitate. It is considered by this writer that the essential component in moving a person in a therapeutically viable direction is the learned attention to autonomic and environmental/social cues through self-monitoring. Indeed this is the essence of what self-monitoring actually is. Self-control is proposed as the next chronologically determined step in the therapeutic process. Self-monitoring is considered the first and most critical step in the therapeutic process. Relaxation is proposed as a learning procedure to achieve awareness in self-monitoring.

## 2.10.4

The ethics of SM therapies: The experiments by Bandura (1977) gave emphasis to an heretofore much neglected field by behaviourists. Bandura moved at this time from a classical behaviourist stance to a cognitive-behaviour posture. A decade of cognitively oriented psychological treatment strategies resulted in a plethora of self-help manuals. These SM therapies were reviewed extensively by Glasgow and Rosen (1978). They revealed a number of inherently ethical issues.

In their discussion of their review findings, Glasgow and Rosen (1978) made a number of pertinent comments. A first problem centred on common definitions for terms. This could have been extended to include common definitions for self-management, self-control, self-coping and self-monitoring. An attempt is being made to define these terms in this section.

Self-management therapies are central to this thesis. It is considered that the therapist should not be satisfied until the responsibility for the control of the treatment programme shifts from therapist to client-centred. Semantic and conceptual problems raised regarding issues of what constitutes client versus therapist centred therapy seldom yield practical results. A therapist should be regarded as a professional able to objectively evaluate and treat a client. The expertise of the therapist is tested when a client is moved from dependency to self-sufficiency.

The proposed test of a successful therapist is:

- a. has the quality of life and life expectancy of the client improved?
- b. does the client relate to other human beings in a

more humane, adaptive and effective way?

- c. is the client sustained by high self-regard?  
     motivated by ideals related to personal freedom and choice?
- d. does the client maintain treatment from a posture of self-responsibility?

Each of these are value laden for the therapist, and self-interest motivated for the client. It is difficult for the therapist to avoid involvement in values, perceptions and responsibilities. The review by Glasgow and Rosen (1978) pointed out that often it is difficult to justify neglect of areas such as "a consumer clients ability to self-administer the programme at home" (1978, p.17). This writer considers such a position to be unethical. The ability to self-administer a programme at home should be central to any self-help programme.

#### 2.10.5

Key Components: In a third disturbing comment these reviewers also state that the relevant and effective components have generally not been identified. The purpose of this thesis is to overcome such justified criticism. Identification of key components, issues regarding the direction of therapy from therapist to client-centred and alternative treatment strategies, multi-modal therapies and issues of internal versus external control are all essential factors in self-control. The most criticized aspect of self-help manuals was lack of maintenance or of follow-through. Interestingly these very points were held to be key issues in a little known book by Williams and Long (1975) in which they identified six sequences for self-management programmes.

1. Select goals vide therapist-client interaction.

2. Self-monitor "problem areas" to develop awareness.
3. Implement change through self-control techniques
  - a) eliminate reinforcers for undesirable behaviour
  - b) reinforce conditions which maximize desired behaviour
4. Use self-report strategies to record and monitor change.
5. Maintain the programme in vivo by contingency reinforcement.
6. Use covert cognitive control procedures (self-coping).

Using this developmental approach, the many self-prefixed terms become definitive. They depend on the chronological sequence of the strategy and can be defined on this basis, i.e.

- a. Self-monitoring develops awareness of response mechanisms. It precedes,
- b. Self-control, which develops existential CHOICE from optional responses,
- c. Self-coping occurs when the self-control choices of self monitored events are self-perceived as leading to adaptive and effective behaviour.
- d. Self-management is the strategy which optimizes these contingency techniques.

#### 2.10.6

Self-management (SM) is taken to refer to a treatment package involving behaviour change manipulated solely by a client.

The techniques, strategies and total package may be developed by a therapist but the choice of treatment and responsibility for behaviour change is contracted firmly to the client. The client plays the central and active role in SM starting with the selection of therapist, initial behavioural contract,

selection of target behaviours, strategies and other optimal change components. SM differs markedly from behaviour modification strategies which rely essentially on observable behaviour and the reinforcement of socially determined target behaviours. SM assumes the efficacy of mediational covert controls, the ability to learn coping skills, monitor maladaptive behaviour and established adaptive responses in a self-manipulable way in the natural environment. "Self instructional applications of behaviour therapies are of recent origin" (Glasgow and Rosen, 1978, p.16). "Isolating the most powerful procedure is not enough" (Goldfried and Davidson, 1976, p.433). SM may be a potent therapeutic device but an understanding of the self-control factors involved is essential.

Transference is avoided at all cost. Initially a dependency may evolve but the ethics of treatment must be on SM. A detailed analysis of SM is contained in Saunders (1973). In this thesis however, the term is extended to include a complete treatment package. SM is a treatment strategy. All other self-prefixed terms are considered to be techniques used within a programme.

#### 2.10.7

Relaxation as an SM technology: An early attempt to analyse the usefulness of relaxation as a self-management skill, was conducted by Sherman and Plummer (1973). Relaxation was presented as a five stage process. This experiment is rarely cited yet constitutes a major advance in relaxation technology. It was not a standard PMR or SD relaxation programme. Starting with PMR techniques developed by Jacobson, Stage 1 and 2 represented PMR in developmentally deeper states of relaxation. In Stage 3, cognitive relaxation replaced the tense-release

strategy developed by Jacobson. Stage 4 was the most significant. Several "advanced techniques" used were imagery, deep respiration, counting respiration involving counting the cycles of respiration, and clients were told to practice in vivo. Stage 5 involved mentally scanning the body for tension spots and used selective/differential relaxation.

The analysis of this experiment is significant. Self-perceptions of reduction in tension, belief in controllability of tension and greater tolerance of stress were clearly demonstrated. Whilst Sherman and Plummer (1973) stated that there was no evidence to suggest relaxation as a panacea for all psychological distress, they maintained that it was a useful self-management strategy for control and reduction of tension. This was one of the first experiments to establish relaxation as a self-management strategy.

A later experiment by Ollendick and Murphy (1977) was also as significant. The purpose was to settle some of the controversy regarding relaxation as a self-management therapy. This experiment was also to examine the differential effectiveness of relaxation as a function of locus of control based on Rotter's I-E scale. The general findings showed a decline in physiological arousal and transient distress. Specific findings were that the HR and state anxiety of high internal LOC's were significantly decreased by cognitive strategies whereas muscular relaxation resulted in a greater decrement in high external LOC females. These results demonstrated that mode of intervention and LOC orientation were key variables in determining individual response to relaxation. These researchers did not cite Davidson and Schwartz (1976) yet

arrived at a similar result using Rotter's (1966) I-E dimension.

#### 2.10.8

Perceived Self-Control: One area, already covered in Section 2.3, Anxiety and Social Skills, has been important in Self-control techniques. This has been the use of SD procedures to reduce anxiety (e.g. Deffenbacher and Parks, 1979). In this section only the self-control aspects of this research will be briefly dealt with. An important assumption in self-control is that individuals are able to respond to external or internal cues in order to develop perceptions of control. It is the perception of self-control that is the dominant feature. In a detailed behavioural review of controllability, Miller (1979) defined three parameters of control. An interesting finding was that perceptions of self-control allowed such persons to tolerate more shock, rated shock as less painful, reduced subjective anxiety and rendered physiological effects more tolerable. Perceived loss of control was a crucial factor. This effect was transferred differentially to each of the three parameters of control which were defined in terms of 1) ability to directly reduce aversive events, 2) ability to self-administer aversive events, or 3) the belief that control is possible but refrained from (Miller, 1979). This research clearly demonstrated that stress/anxiety tolerance is directly proportional to perceptions of self-control.

Seligman's "learned helplessness" theory is a reversal of this (1975). His theory has been well validated. Inability to control aversive outcomes leads to reports of increased physical distress and an increase in stress related symptoms such as headaches, stomach disorders and sweaty palms (Penne-

baker et.al., 1977). Seligman (1975) clearly demonstrated the connection between learned helplessness (perceptions of lack of control) and excessive worry, feelings of helplessness, and depression leading to psychosomatic disorders such as CVD. As Miller (1979) pointed out in her survey of control Theories, Seligman's (1975) theory is equally predictive on the basis of perceptions of control (or lack of it) rather than "learned helplessness". Stern et.al's (1980) study confirms Miller's (1979) hypothesis that the key factor is perception of control. The former study established that perceived control played an important role in both the understanding and treatment of psychosomatic disorders. The specific perception of control engendered in subjects during this experiment displayed significant beneficial effects. As already defined, Self-control is the ability to make cognitive choices from the available cues which may determine overt behaviour.

#### 2.10.9

Self-Coping: Goldfried and Goldfried (1977) consider SD provides clients with self-coping skills through training in the relaxation component of SD. A self-coping skill is defined by these researchers as the ability to be sensitive to cues in the internal or external environment in order to reduce anxiety. As already defined in this Section, this definition is not specific enough. Self-coping is preceded by contingency Self-control. Perceptions of self-coping are enhanced by incremental success in self-control. Control can be viewed as an internal and precedent cognitive event, whereas coping is the active covert/overt behavioural event leading to adaptive behaviour. An important distinction raised by Goldfried

and Goldfried (1977) is that self-control becomes effective when a person responds to the proprioceptive anxiety cues rather than the external situation which elicits this perception of tension.

2.10.10

Summary: As an extension to this it is proposed that attention to proprioceptive cues is a self-monitoring event. This becomes a self-control event when the person attending to aversive cues then changes these aversive cues using a relaxation technique. The result is a new more appropriate internal "set" of responses. Self-coping is effected when a person having monitored and successfully controlled an aversive proprioceptive response then adopts a behavioural stance, more adaptively responding to the environment with a changed internal "set". If this set can be generalized and used in vivo as a protracted life-style technique the programme is a self-management strategy. It is further proposed that relaxation and skills training techniques are important components of this programme. It can be seen that Williams and Long (1975) have already provided the structure for such a strategy in their six stage programme. Sherman and Plummer (1973) have provided the basic structure for a more effective cognitive self-control relaxation technology. Rotter (1966) and Bandura (1977) have provided the theoretical constructs for LOC dimensions of perceptions of cue-associated self-control (CA-SC) used by Ollendick and Murphy (1977) to establish these concepts as key determinants of response differentiation to relaxation. These have been defined and validated using another conceptual posture (Davidson and Schwartz, 1976).

(CA-SC): The clinical efficacy of cue-controlled relaxation

(CCR) has been examined by Grimm (1980). CCR was not entirely validated. He resisted the implication that CCR was an ineffective procedure. It is considered the use of an attention-placebo group to refute CCR shows lack of understanding of the components of relaxation. The attention-placebo groups constituted merely a different relaxation technique and a viable treatment. Gerdes (1979) in an earlier experiment established some important factors in any analysis of (CA-SC) Strategies which use relaxation as a primary technique; 1) subjective anxiety or self-perceived stress occurs when cognitive arousal is noted (proprioceptive cues) in the absence of valid attributions or as a fear response; 2) the controlling factors determining resultant overt behaviour may be situation or person specific, and are individually different.

CA-SC is proposed as a valid strategy for relaxation techniques. All sections in Chapter 2 of this thesis attest to the validity of autonomic arousal/inhibition as cue-associated phenomena. Chronologically self-monitoring precedes self-control, but these and other techniques incorporated into self-management strategies depend on cue-associations whether internal or external. Self-coping is considered to be the essential and therapeutic outcome of SM strategies.

## 2.11 The Relaxation Response (Rr) (Psychophysiological Correlates)

### 2.11.1 General

It will be shown that there is a great deal of research data which can be called on to establish a series of gross physiological responses which are the natural corollary of adopting an attitude of relaxation or meditation. The purpose of this section is not to establish this data base and indicate the volume and availability of evidence. There are a great deal of issues involved which cannot be explored due to time and space constraints. What is offered is evidence from research data, upon which the base for the relaxation response (Rr) for Synergism is built. This represents a new and radical proposal to anything extant.

The early studies of TM, (Beary et.al. 1974; Benson, 1974) established that there were four essential components which elicited the hypometabolic changes of the Rr. To reiterate:

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

It has been contended (section 2.5, Relaxation) that in fact these researchers mixed two systems, that of induction and that concerning the actual physiological changes which constitutes the Rr. It is now proposed to extend the paradigm suggested by Benson (1974) and to incorporate that presented already by Paul (1969) into a new Rr paradigm suggested by the research data offered in the summary to section 2.5,

and validated by other research.

It is proposed that the physiological concomitants of the Rr comprises eight physiological changes which can be identified from existing research data. Each will be discussed in turn. The role of imagery, feedback and passive self-monitoring will also be discussed where relevant. Relaxation Induction is considered a separate issue and will be discussed in Section 2.12, Relaxation Induction.

A detailed rationale explaining the characteristics of the trophotropic response which results from the hypometabolic changes occurring as a result of relaxation/meditation, is given by Beary et.al., (1974). A more detailed rationale is offered in the appropriate section on Synergistic Relaxation in this thesis.

In the context of this thesis the Rr is assumed to consist of:

1. Generalized skin awareness (Proprioceptive awareness)
2. Awareness of 'decreased muscle tone'
3. Monitoring of RR (Respiration)
4. Awareness of HR
5. Monitoring of generalized Pulse awareness
6. Monitoring of forehead and eyes (Respiratory vasomotor reflex)
7. Electrodermal monitoring (temperature control)
8. Awareness of gross "whole-body" changes

As can be seen, the phase referred to as Rr is attitudinal and consists of a passive awareness and self-monitoring

phase. This is essentially a reinforcement contingency and is regarded as a key variable in the induction of relaxation. As has been already demonstrated in Section 2.6, Meditation, a passive attitude actually generates a greater responsivity in the autonomic system. The research by McCanne and Ien-narella (1980) ably demonstrates this in relation to voluntarily induced discriminative changes in heart rate control.

### 2.11.2 Generalized skin awareness (Proprioceptive awareness)

Most literature dealing with the proprioceptive awareness of the surface of the skin concerns the use of electronic devices for use in feedback studies. These ordinarily consist of either endosomatic devices or exosomatic (e.g. GSR) devices (McCanne and Sandman, 1976). Most of this data has explored the possibility of ANS control via control of spontaneous galvanic skin responsivity (GSR) (Klinge, 1972). The emphasis in research on ANS control has been on HR control. Very little emphasis has been given to the value of the surface of the skin itself as a vast reservoir of proprioceptive awareness. Individuals have successfully demonstrated the sensitivity of the skin to cognitive events, and biofeedback literature is replete with this data. Few researchers have made the important connection to peripheral generalized awareness of the whole surface of the skin as a relaxation technique in its own right.

Klinge (1972) was among the first to make the connection between the possibility of ANS control by examination of the effects of exteroceptor feedback. She did not however, make the reverse assumption which is that made in this thesis.

That is, that exteroceptor feedback using the gross proprioceptive skin awareness as an indicator, can induce Rr. What Klinge (1972) did demonstrate was that sympathetic mediation, as indexed by GSR, is a function of two independent factors, 1) the type of instructions given, and 2) the type of feedback received. There was significant interaction between both factors.

In the first case subjects were given instructions to "think" or "relax". Klinge (1972) reported that subjects were able to comply with these instructions in both feedback and no-feedback modes, but that the significance in responding found between the "Relax-Think" conditions was even more significantly elevated when accurate exteroceptive feedback was given on GSR. The type of feedback (accurate, positive or negative) became a major finding. A significant increase in basal skin resistance, with the appearance of spontaneous galvanic skin responses (GSR's) was incorporated into a biofeedback assisted technique using Relaxometers of the Aleph One variety. "This confirmation of relaxation was intended to encourage further relaxation" (Patel and North, 1975, p. 94). The Relaxometer was not used in the normal biofeedback role, but in a relaxation-assistance role. Subjects who received positive, non-contingent feedback were superior in instructional compliance than all other groups. The conclusion was that the kind of feedback (accurate, positive) rather than the contingency of the feedback was the important factor involved.

The basis of the efficiency of Patel's Savasan (1976) is considered to be fortunate in her selection of the GSR

biofeedback-assisted method employed by her in this design plus her use of posture and meditation techniques. Klinge (1972) reported in her conclusion that the provision of feedback is augmentive to the process of relaxation. It offers more convincing evidence when perceptions of control are validated by objective instrumental measures. Klinge (1972) in fact predicted that augmentation using feedback procedures would be useful especially with externally cued persons. Evidence already given suggests that hypertensives and persons suffering from psychosomatic ills have difficulty in locating proprioceptive cues (Nemiah, 1976). Patel's success was therefore predictive, on the basis of positive biofeedback-augmented feedback. This in no way is meant to detract from the rest of her design. It will be shown that Patel's design constituted the basis of Synergism, and that her technique was more sophisticated than most relaxation techniques since it incorporated many of the Induction, Rr and Meditation factors reviewed so far.

The difference in the proposition offered in this thesis, is that the cognitive self-monitoring of a generalized state of proprioceptive awareness is a key missed by most research. It can be used in the induction of Rr, as generalized skin awareness, to differentiate this condition from 'Decreased Muscle Tonus' (Beary et.al., 1974). The research by McCanne and Sandman (1976) validates the use of proprioceptive awareness as a technique. The relationship of GSR and HR is a much more complex issue.

### 2.11.3 Awareness of 'Decreased Muscle Tone'

The effects of relaxation on major muscle groups is extensively documented by Jacobson (c. 1923) and many other researchers. A recent thesis by Peterson (1978) examines some of this data in detail. This data base provides more than sufficient data to establish that it is possible to cognitively self-monitor gross muscle groups. The use of PMR can be used as a pre-training condition for people who find it difficult to cognitively locate gross muscle groups (e.g. subjects identified by Nemiah, 1976). Both Benson and his co-workers Beary et.al., (1974) admit of the possibility of this awareness mode when they mention 'Decreased Muscle Tone' as a key component in their version of Rr. As with skin awareness, the research situation is reversed. If relaxation results in decreased muscle tone (or reduction in GSR) then using the induction procedures outlined in Section 4.2, Synergism, it is possible to elicit this response by passive awareness and self-monitoring of the key variables. The increased efficiency of passive awareness in comparison to active command has been fully detailed in Section 2.6, Meditation and Section 2.9, Self Control, Monitoring and CASC, and in other areas as relevant. The importance of this passive attitude justifies its use as a key variable in Section 2.12, Relaxation Induction.

### 2.11.4 Self-monitoring of Respiration (RR)

In the central article to this theme of Rr, Beary et. al., (1976) noted the incidence of respiratory changes involving decreased oxygen consumption and respiratory rate. As indicated in Section 2.7, Respiration Rate (RR), the situation

is much more complex. Respiration, as also indicated in Section 2.7, is a gross response in that attention to it alone can significantly reduce awareness in other modalities, until the focus of awareness is exclusively that of the breathing response. The interaction of reduction in RR with HR, BP and muscle/skin tone is again physiologically complex, but its importance in meditation practices warranted its mention as an exclusive topic in this thesis.

It seems reasonable to the writer that the self-monitoring of respiration is an important component in the Rr. The initial purpose is merely to "witness the breath". Conscious control of breath is a specific technique which will be mentioned in detail in the Chapter of Synergism. It was used by Patel (1976) and other detailed references to its use as a relaxation technique are contained in Section 2.7, Respiration. It is interesting to note that in the Klinge (1972) study already referred to she noted that the respiration rate was lower in the "Relax" condition than in the "Think" condition. This indicates that the induction of relaxation which results in preliminary relaxation followed by passive awareness of this condition should register a gradual "settling down" or reduction of the RR. This main effect of instructional "set" was significant in the GSR frequency analysis noted by Klinge (1972).

Given the expectancy effect generated by the Rationale programme in Savasan (Patel, 1976) and Self Relaxation Training (Seers, 1977) it is reasonable to predict that specific attention in Rational Cognitive restructuring (rationale) to RR variables will result in a significant reduction in RR.

This is predicted as a response to self-monitoring even before conscious control of RR is manipulated. Conscious control of RR represents a separate component for relaxation (Shapiro, 1978). It is also worthy of note that in terms of positive non-contingent feedback (a powerful mediator of change already noted) breathing, as an attentional focus, is a powerful relaxation technique in its own right in addition to the techniques of conscious RR control.

The findings by McCanne and Innarella (1980) concerning the interaction of HR and RR are considered significant. These researchers found that the changes in HR recorded by them were parallel to changes in RR. These had also been noted by Wells (1973). Due to the nature of the parameters of their experiment, the former found that the specific nature of this interaction was difficult to detect. Their findings indicated that these two response modalities exhibited considerable independence from one another, and that these parallel changes were not necessarily consistent. In some cases HR and RR seemed to act reciprocally. For example whereas the HR may move in a consistently decelerating direction, RR in some individuals moved in the opposite direction.

The critical determinant seems to be instructional "set". Both Brener (1977) and Lang (1975) have reported that the instructions which subjects are given can result in changes in a variety of autonomic and somatic responses. These can be preconditioned by the expectancies subjects have about the types of physiological states which become associated with instructions. In their own study McCanne and Innarella state:

"It seems possible that other types of instructions might produce other types of expectancies, and thus lead to Cardiac-somatic relationships different from those observed in the present experiments" (1980, p.27).

This experiment was a further refinement of the Klinge (1972) study even though not referenced by them. In their experiment, McCanne and Innarella (1980) gave instructions to think "Relax" and to think "Anxiety". These instructional sets resulted in highly significant changes in heart rate of approximately the same order of magnitude as in previous experiments (notably Lang, 1975 and Obrist et.al., 1974). In the experiment by McCanne and Innarella the notable finding (in a significant experiment) was that even after heart rate scores were adjusted for the statistically obvious relationship between HR and RR "the analysis of covariance indicated that the discriminative changes in heart rate were still highly significant" (1980, p.23).

#### 2.11.5 Awareness of HR

A detailed review of this subject is contained in Section 2.9, Control of HR. In HR control in relaxation the degree of parasympathetic (vagal) control seems to be a key factor. Cardiac slowing which usually accompanies sleep onset seems to be related to an increase in vagal tone (Johns et. al., 1976). Research into sleep latency may be a profitable area to explore. Relaxation and sleep are generally related in physiological terms. This research seems to indicate that the interaction between sympathetic and parasympathetic control of the heart is more complex than seems at first appear-

ance.. Johns et.al., (1976) suggest that the current conceptual basis for the treatment of insomnia may have to be changed. Sleep latency research seems to indicate that sleep latency may not simply be a consequence of hyperactivation of the CNS. Often the interaction of this factor, produced by the ascending reticular activating system (RAR) and the limbic system, has been invoked to explain insomnia.

Relaxation techniques have been successfully applied to insomniacs resulting in an increase in ability to sleep (Coates and Thorenson 1977) which seemed to lend support to the sympathetic hyperactivity concept and its reduction using relaxation. Sympathetic tone is not however, consistently related to sleep latency, (Good, 1975) whereas vagal tone and the conceptualized activation of some CNS mediated sleep-promoting activity centre, appears to be responsible (Johns et. al., 1976).

As in most HR research the relationship of HR and sleep latency is not straightforward. They need not be directly related. A racing heart caused by fever does not markedly prolong sleep onset (Johns et.al., 1976). This fact does not negate the significance of the direct interaction between an increase in vagal tone and HR decrease observed in sleep latency research. What this observation demonstrates yet again is the complexity of this area relating to HR control.

"One indeputable implication of this literature is that the traditional view of a structurally-based operat-respondent dichotomy is no longer tenable. The cardiovascular system displays easily demonstrable voluntary and involuntary characteristics" (Brener, 1974, p.366).

Brener (1974, p.366), goes even further by stating quite categorically that in principle all responses in the CVS are amenable to both voluntary and involuntary control. Vagal control has already been reviewed in Section 2.9, Control of HR. It is not intended to give a detailed review of sleep. It is however necessary to state that sleep research is often overlooked in research dealing with relaxation and meditation. Sleep is considered by this writer to be an important determinant of the physiological response systems which can be consciously experienced during relaxation and meditation. These experiences have been described in Patanjali's yoga sutras (Satyananda, 1976; Taimni, 1975), which is a detailed and classic guide to meditation.

#### Cardio somatic coupling

In an important experiment by McCanne and Iennarella (1980), instructions to merely think relaxing and to conversely think anxiety thoughts resulted in highly significant changes in heart rate, of approximately the same order of magnitude as previous experiments (notably Lang, 1975, in Obrist et.al., 1974). Most significant was the finding that relaxing thoughts resulted in the deceleration of heart rate in students given no specific instructions about somatic events. The students in this experiment were informed that the purpose of the experiment was to determine the kinds of physiological responses which occur when a person attempts to think certain kinds of thoughts. They were not given a relaxation procedure nor were they informed of the specific physiological measures being monitored. Significant changes in deceleration of heart rate due to the cognitive event of thinking relaxing events

only, is an important experimental finding.

What seems to emerge from this complex domain of HR control and awareness is that a) the control mechanisms are complex. They do not lend themselves to direct cause-effect models. Each major mechanism is integrated in the CNS in a way which makes the conscious control of HR decrease difficult, whereas HR increase is amenable to significant changes. b) Imagery seems to be a major component in HR decrease effects. Awareness of HR using imagery procedures enhances significant HR reduction. c) Locus of control effects seem to be connected to Ornstein's (1971) attentional mode. External vs internal LOC attenuation can effect HR changes in both directions. d) The key factor concerning individual differences seems to be that autonomic lability which may be a causative factor in psychosomatic disorders, may also be the key to their control. e) Autonomic perception and awareness factors therefore become paramount. This factor is related to attentional mode, LOC effects and the self-monitoring and awareness of autonomically labile processes. f) There has been a great deal of attention to stress and anxiety factors, but little seems to have emerged about the fact that these are one end of a continuum of experience. The factors which are deemed causative can be reversed to induce relaxation. g) The interdependence and independence of the cardio-somatic coupling model suggest that the beneficial effects of implementing close cardio-somatic coupling using relaxation, may be profound. h) The effect of education and skills training on motivation and expectancy can radically alter any programme. More particularly an attractive rationale can dramatically

increase the effectiveness of a relaxation programme.

These HR control factors taken together with data concerning sleep (Oswald, 1974), respiration (Levenson, 1979), cognitive mediation (McCanne and Iennarella, 1980), self-control (Meichenbaum, 1979), meditation (Satyananda, 1974), and imagery (Lang, 1979) make relaxation a complex but potent phenomena for life style change and therapy.

#### 2.11.6 Self Monitoring of Generalized Pulse Awareness (BP)

Many physiological studies involving the cardiovascular system (CVS) have made inferences about correlations based on HR and BP changes. Brener (1974) defines voluntary control as "one that is systematically influenced by instructions" (1974, p.367). He postulates that there should be a positive relationship between a person's ability to discriminate, and the ability to voluntarily control this activity.

Clement (1979) conducted research into HR discrimination using a pulse generator in an attempt to discover whether effective discrimination of HR can be achieved simply on the basis of pulse discrimination. Prior to training the ability to discriminate was poor. After heart beat discrimination training responses improved "even brief training in heart beat discrimination seems to lead to more consistent and stable behaviours" (p.336). The overall results were reported to be unequivocal. Discrimination was effective, some subjects improved significantly as a result of a brief training session, and this enhanced discrimination was maintained after training. Once feedback was provided discrimination improved dramatically.

An interesting factor about this discrimination, was that subjects with high HR's found discrimination difficult. This seems to suggest that a subject who experiences a slower HR as a result of relaxation may find this slower HR assists in achieving a greater degree of discrimination. Again, a cyclic responding system can be instituted. Relaxation lowers HR which enhances discrimination, which induces further relaxation enhancing discrimination more dramatically etc.

Clement's (1979) experiment demonstrated unequivocally that discrimination is improved through training and feedback. In addition, this discrimination is maintained over time and was posited to increase through knowledge, feedback and the creation of internal standards for judging response accuracy. Further training may not even be necessary once the 'discrimination effective' cycle is built-in with appropriate feedback loops.

Two discriminative mechanisms are suggested by this writer which will develop pulse awareness. One is awareness of pulse beat. Sophisticated technology such as that used by Weiss et.al., (1980) is recognised as essential for research and validation studies. Pulse Transit Time (PTT) was used by them to analyse ANS effects on CVS. However, for the purpose of Rr such PTT sophistication is unnecessary. It is suggested that discrimination sufficiently accurate for self-monitoring of gross pulse beat is possible with a reasonable degree of proficiency at specific major peripheral sites (e.g. carotid, finger pads, groin, wrist., ankle and temple etc). The second discriminative mechanism is a generalized

awareness of the BP at the actual pulse site. Using vivid imagery detailed anatomical knowledge of the pulsing action of the blood at the pulse site (rationale) and pulse awareness it is possible to reinforce discriminative awareness at a specific pulse site. Both these discriminative techniques interact to develop sensitivity of BP and pulse. Training and feedback especially using biofeedback-augmented training, will increase the accuracy of predictions concerning BP and pulse vide Clement (1980).

BP lowering using techniques related to biofeedback-augmented voluntary control has been demonstrated by Steptoe (1977). Relaxation using biofeedback-augmented technology was effective in significant BP reduction in Patel (1976). Self-monitoring of generalized pulse discrimination at specific sites is a key component assisting in HR control and inducing relaxation. The results of relaxation induction using the suggested techniques results in generation of Rr related to pulse and BP.

#### 2.11.7 Self-monitoring of Forehead (RVR)

The respiratory vasomotor reflex (RVR) is a well known phenomena of plethysmography. Royer (1966) draws attention to the fact that on deep inspiration various cardio-somatic changes take place which have specific physiological correlates. These include vasoconstriction of the hand and ear, and vasodilation of the forehead and neck. The RVR has a latency of about 3 seconds from deep inspiration (1966, p. 241).

It is considered that the RVR of the forehead is par-

ticularly relevant. It was postulated by Royer (1966) that the RVR is an active vascular reflex induced by hemodynamic reflexes associated with RR. He also suggested that the neural mechanisms were probably the same as the vascular component of the orienting reflex.

Delman and Johson (1976) found that biofeedback-augmented passive self-control techniques produced significantly greater EMG reductions than PMR. Most studies including Delman and Johnson (1976) emphasise subjective awareness of muscle tension as an intrusive factor in the process of reducing muscle tension. The view is not supported by the writer. Muscle tension is not a technique presented in most meditation systems. It was not intrinsic to the studies of Benson (1974), Patel (1976), or Seer (1977). It is maintained that most subjects can develop an internal self-awareness of resting muscle tension states without the need to increase muscular tension at specific sites. It is further maintained that meditation-type relaxation procedures induce deep muscle relaxation.

Awareness of absolute differences in progressive muscle relaxation (not PMR) can be used as threshold subjective state determinants in exactly the same way as muscle tension is used. In such experiments (Staudenmayer and Kinsman, 1976) research has indicated that awareness of muscle tension and concurrent relaxation can be determined by the proportion of correct judgements of absolute differences in muscle tension between adjacent trials. Subjects were reported to develop cue-associated procedures by attending to internal proprioceptive cues of tension. It is maintained that a similar CA-SC technology can be more appropriately cued to relaxation

states.

A significant experiment by Sime and Degood (1977) was used in which subjects were trained in PMR specifically related to frontalis muscle tension (forehead). This experiment demonstrated unequivocally the effectiveness of a significant reduction of frontalis muscle tension using PMR and biofeedback training. The subjective feeling of being relaxed was suggested to be an interaction between skeletal muscle awareness, autonomic variables and EMG changes. To effect this change the authors posited (1977, p.528) that the procedure of relative estimates of muscle tension in adjacent time periods (awareness and self-monitoring) is a promising method for evaluating changes in awareness.

Two significant factors arise from this experiment by Sime and Degood (1977). The first and most obvious was the resultant significant reduction in frontalis muscle tension from biofeedback and PMR. The second was the authors' contention that specific attention to the rationale of biofeedback and education in the anatomy of adjacent muscles and effects contributed to the greater success of the biofeedback condition over the PMR one.

Knowledge of RVR may be used in combination with respiratory control of RR, vivid imagery, CA-SC using awareness of resting frontalis muscle tension and adjacent facial muscles. In addition, the technique of the awareness of perceived differences in relaxation in a time-phased relaxation self monitoring mode can be used to further effect reduction of tension. It is reasonable to suppose that frontalis muscle relaxation will occur. When this event is phase-locked into

other Rr components, the frontalis response will be even further enhanced.

#### 2.11.8 Temperature Regulation

The RVR demonstrates that vasoconstriction and vasodilation effects follow from awareness of specific somatic sites and breath regulation. Attention to these processes results in the feelings of WARMTH (vasodilation and increased peripheral blood flow) and feelings of COOL (vasoconstriction and reduction in peripheral blood flow). Instructions alone can increase these effects (Bergman and Johnson, 1972) and "warm" and "cool" instructions are basic components of Autogenic Training (Luthe, 1969), and can be used to induce hypnosis (Barber, 1969).

Maslach et.al., (1972) state that hypnosis a) amplifies the effects of cognitive processes, b) uses an internal centering device (LOC) to shift a person's perceptions of causality, and c) amplifies the sense of visual imagery. They used these hypnotic techniques to establish the hypnotic subjects control and regulation of skin temperature without either external reinforcement or feedback. This effect had been dramatically emphasised by Luria (1969) with a subject who with eidetic imagery had used these vivid visual imagery techniques to exercise profound psychophysiological changes enabling him to place one hand on a hot stove without dermal damage.

All hypnotic subjects in the Maslach et.al., (1972) experiment were able to produce large ( $4^{\circ}\text{C}$ ) bilateral changes

in skin temperature on opposite hands within two minutes of verbal instructions. These changes were maintained throughout the entire testing period, and were rapidly extinguished on verbal suggestions to normalize skin temperature. Temperature changes were of the same magnitude in each hand. One temperature of  $7^{\circ}\text{C}$  was recorded as a decrease, whilst the largest increase was  $2^{\circ}\text{C}$ .

The processes of induction of hypnosis (Barber, 1969) are similar to the processes used in relaxation induction. Although waking controls in the Maslach et.al., (1972) study did not demonstrate significant change, no experiments have been conducted using deep relaxation to achieve similar "hot/cold" hand results.

Keefe (1978), demonstrated that autogenic training produces significant and reliable increases in skin temperature, which were not dependent on feedback. In a further refinement of this study, Surwit and Fenton (1980), added biofeedback-augmented skin temperature feedback to autogenic training instructions. They used patients with Raynaud's Disease assuming that these people would be well motivated to practice these techniques. The results indicated modest increases in skin temperature. An average drop in skin temperature resulted in  $5^{\circ}\text{C}$ . Concomittantly the feedback subjects showed a significant decrease in HR. This demonstrates the interaction of each of the correlates of Rr. It indicates that changes in skin temperature occur concurrently with vagal excitation (and a decrease in sympathetic tone). Unlike other parameters it was stated that an increase in somatic activity (higher skin temperature) does not lead to HR increase.

In fact, in physiological terms, an increase in skin temperature is not an increase in somatic but in hemodynamic activity (blood flow). The skin temperature response again demonstrates that it is easier to induce sympathetic excitation (vasoconstriction = cold) than to induce the Rr (vasodilation = warm = HR reduction). The conclusion of Surwit and Fenton (1980) was that the addition of biofeedback to autogenic training enhances the perception of skin temperature differences.

Both Maslach (1972) and Surwit and Fenton (1980) demonstrate that it is possible to use relaxation techniques to induce a generalized awareness of differences in skin temperature. Patel (1976) uses a different technique to develop awareness of temperature difference between the inhaled air and exhaled air in the nostrils. Peripheral skin temperature differences, or to the temperature differences of the RVR (vasoconstriction versus vasodilation) or to temperature differences in breathing airflow, are all techniques which can be implemented to induce relaxation. The enhancement of these techniques by training education feedback and biofeedback-augmentation needs little emphasis.

#### 2.11.9 Whole Body Awareness

The induction techniques, training, education and development of awareness of the individual Rr, infuses the general attitude of relaxation as a passive attitudinal state. From this it is easy to see that a whole body time-phased experience can lead to

First: Awareness of general whole body resting tone

Second: Generalized self-monitoring of changes occurring as a result of relaxation induction' affecting the whole body.

Third: Induction of Rr. .

Fourth: Attention to whole body/mind correlates of relaxation as a passive resting attitudinal state.

## 2.12 Placebo

The administration of an inert chemical substance (placebo) can be associated with a psychophysiological response similar in effect to the effect of therapy (Shapiro, 1971). A review of the literature concerning placebo leads to five clear conclusions; 1) in every clinical study it must be anticipated that a proportion of subjects will make a significant therapeutic response which will in effect be a placebo response; 2) no reliable procedure exists that can lead to identification of this subset of subjects; 3) people who respond to placebo cannot be reliably predicted, nor can the response; 4) any object event or procedure can, under the right conditions generate placebo effects; 5) the mechanism of placebo is unknown and the initiating conditions are also unknown (Wiekramasekera, 1980).

Paul (1966) was one of the first to demonstrate an innovative attention placebo procedure for controlling non-specific treatment effects (placebo). The need for such a procedure had been earlier established. Psychologists had long been aware of the significant effect of psychologic vari-

ables such as expectancy, attention, suggestion and faith or fear (Kazdin and Wilcoxon, 1976). In this latter research Kazdin and Wilcoxon (1976) suggested that placebo effects can largely be held responsible for the claims of SD as a therapeutic strategy. This is a most significant statement. Their review encompassed literally hundreds of therapists with thousands of clients. The emphasis of the research appeared to demonstrate the efficacy of SD as a treatment strategy unanimously. The Kazdin and Wilcoxon study (1976) postulated a rival hypothesis i.e., that the greatest therapeutic gain could be said to be caused by placebo effect. The Wickramasekera study (1980) not only confirmed this but also quoted evidence from many other studies indicating a high incidence of placebo effect derived from reviews concerning drug therapies, biofeedback studies and the use of mechanical devices to generate placebo effects.

These placebo effects can be active ingredients in therapy, curing organic illness and malignancy, can mimic or even negate drug effects, as well as their side effects. Placebo can create a range of confounding effects in any experiment, its mechanism is unknown, it is not related to any specific form of therapy its effect is neither reliable or predictable, nor need placebo effect be durable. Placebo effect has been labelled "non-specific" for the same reason that "essential" is the predicate to hypertension, where the cause is not known.

Wickramasekera postulates a conditioned response which results in placebo learning (1980, p.7). This will undoubtedly generate feverish supporting evidence from behaviourally-ori-

ented researchers. Wickramasekera also tied the placebo mechanism to arousal hemispheric and hypnotizability postulates making his posture difficult to dislodge. His analysis of placebo, his reductionism and predictions do however, bear study. He maintains that children, highly hypnotizable adults, early adolescents and persons higher on trait anxiety will be stronger placebo responders, leaving little or no residual population to test this hypothesis on (1980, p.14). In his conclusion, Wickramasekera states: "It may even turn out that this realm includes the only therapeutic effects, which are primarily psychological" (1980, p.15).

Clearly this is a circular argument. The Kazdin and Wilcoxon (1976) suggestion is held to be more valid.

"Additional research would be useful if stronger empirically derived control conditions were used to rule out differential expectancy effects across treatment and comparison groups" (1976, p.747).

Rather than condemn psychological therapies for using the psychologically valid therapeutic techniques of persuasion, attention, suggestion, expectancy and other such variables, it is considered more productive to conduct tightly controlled experiments using cross-over designs and elegant methodology to attempt to identify, rather than negate, the active ingredients specific to any therapy. By definition psychological intervention strategies will include both verbal and non-verbal components, cues and persuasions. The purpose would be to refine the techniques so that the ingredients can be perceived and evaluated. The lesson of Kazdin and Wilcoxon (1976) was clear. If in fact SD is NO MORE POWERFUL than a placebo group,

then the ritual is to blame rather than the ingredients, Ethically psychologists should therefore look for more powerful socially sanctioned health rituals.

From the point of view of this thesis the lesson is that a placebo group is a treatment strategy in its own right. This writer considers that placebo should be a minimally effective intervention strategy which incorporates into its specific strategy key therapeutic components such as expectancy suggestion and a similar time-phase locked procedure to the therapy being researched. Placebo must be incorporated into any therapeutic design, but it must leave conceptual room to investigate the particular therapeutic strategy being implemented. The placebo model must be a treatment module but not identical. It would be preferable if a simple placebo model was developed which could act as a baseline control across a variety of strategies.

One of the major problems in placebo group research in therapy evaluation (e.g. SD) has been the factor of credibility of treatment rationale (Kazdin and Wilcoxon, 1976, p.735). One problem related to credibility is that a researcher with a vested interest in a specific therapy e.g. SYNERGISM may often present a highly credible placebo, but contaminate its effects by own expectancy and effect (unconsciously) lowered expectancy in subject credibility. The literature review by Kazdin and Wilcoxon is replete with such examples. Another problem is that of subject selection: "Researcher's should be aware that subject selection methods can be the primary determinants of significant results" (Dumas, 1977).

To reduce these significant effects this thesis used a

placebo group from another experiment by another experimenter (Zika, 1980). In this dissertation (Zika, 1980) a number of therapeutic intervention strategies were being compared. There was no vested interest in any of the techniques of relaxation, meditation, hypnosis or placebo, and a random selection procedure was conducted. The student population was sufficiently similar, from which samples for both experiments were taken. The time-frame was identical, the on-campus facilities were the same and both experimenters had similar credibility with the students i.e., both worked with the same groups of students at the same on-campus Student Counsellor Service. In addition some identical personality measures (POI and Anxiety measures) were being used in pre-post test conditions across all groups which could be used as a basis for pre-post conditions.

The problem of therapist-specificity was not removed, but it was considered that this placebo group (Zika, 1980) would provide a more unbiased sample of placebo effect than the "same-therapist" initiated intervention strategy as experimental and controls. It is considered that experimenter bias, expectancy and motivation factors are extremely powerful determinants in any relaxation strategy. The most powerful single component across the various domains of relaxation autogenic training and hypnosis is considered by this writer to be suggestion. The strength of suggestion and its effects are often a significant function of the person giving the suggestion (Sargent, 1956).

A study by Beiman et.al., (1978) compared live PMR and taped PMR. The results demonstrated the significant advantage of live versus taped instruction. It is considered that this

further validates the personal variable of suggestion. Throughout the whole intervention programme, only one hour per week was allotted to experimenter conducted sessional group practice. Each session was taped and each individual was given the tape to practice in daily sessions individually at home. It was considered that therapist-specific and group-specific placebo effects were reduced by these procedures.

It is considered that subject selection bias, and therapist-specific bias, expectancy and personality effects (even in randomly allocated groups) were the more powerful placebo effects ruled out by the advantage of using a placebo from another sufficiently similar experimental paradigm.

## CHAPTER 3

AN ANALYSIS OF SAVASAN

- 3.1 Savasan - A Body Posture
- 3.2 Patel's (1976) Thesis
- 3.3 Summary
- 3.4 Conclusion
- 3.5 Actual Technique from Patel (1976)

## CHAPTER 3

AN ANALYSIS OF SAVASAN3.1 Savasan - A Body Posture

It is considered that Patel's (1976) study is an important breakthrough in relaxation technology. In a study of the various reviews it became obvious that this significance, though noted, seemed to be "en passant". This chapter is an attempt to redress the oversight. Savasan, correctly understood is an important component in any relaxation technique. It provides a base-line mode, the physiological correlates of which can be determined. On the structure of this component other strategies may then be applied.

Savasana as a technology in the non-pharmacological treatment of essential hypertension, was initially proposed by Datey et.al., (1969). Even in this simple form, Savasana was composed of about 4-5 separate components, some of which are unrelated to the classical form of Savasana. In its classic form, Savasana is a supine body posture (Sav - corpse, asana - posture; sanskrit) (Satyananda, 1974). It does not in this classic sense involve the breathing or mental device technologies used by both Datey et.al., (1969), by Patel and North (1975) or by Patel (1976). In its classic form Savasana is an attitudinally passive recumbent body posture.

It is maintained that the relaxation response (Rr) recorded by Benson et.al., (1974) and taken much further in this thesis will occur as a natural result of Savasana. These

basic components of Rr initially consists of HR, RR, BP, which are sometimes elevated, other times reduced merely by adoption of Rr. Other changes will occur in  $O_2/CO_2$  exchange, GSR, EEG, ECG, EMG and other sophisticated electronic measuring devices such as digital temperature recorders.

The hypometabolic correlates of Savasan with respect to HR, BP, RR, EMG, EEG, GSR etc., represent a multiple baseline by which the effectiveness of any relaxation technology may first be evaluated. Savasan therefore should first be operationally defined.

Datey and Patel rely on extensive knowledge of other techniques in their description of Savasan. They have both incorporated components from other Meditation technologies. Slow rhythmic breathing is not Savasan, it is a Pranayam technique. Attending to the temperature of inspired and expired air is a technique of Ajap Ajap (Satyananda, 1974), not Pranayam as listed by Frumkin et al., (1978, p. 310). In the sophisticated technologies from which these techniques are obtained there are many variants. Each variant is a component capable of individual research. Savasan (in its technical usage) is a useful technique. It provides a baseline strategy against which other components may be tested and upon which an effective sophisticated synergistic relaxation system may be built.

Unfortunately, most Western psychotherapists are unfamiliar with oriental technologies except as associated with Eastern religious systems (e.g. Shapiro, 1978). The comments by Smith (1978) in regard to Transcendental Meditation are particularly pertinent to this discussion. He

points out that the "specific content of the rationale given in TM lectures and instruction is not available to the non-TM researcher (Smith, 1978, p. 277). Whilst this is in fact not true, his comments are valid. TM, along with a number of other Eastern psycho-religious philosophies such as Zen, Guru Maharaji and Muktananda, use widely used and practiced techniques of yoga, some of which are incorporated in Savasan. The details of Savasan are available in the studies by Datey et al., (1969), and Patel (1974), and are listed in the appropriate Lancet articles.

There is in fact, nothing secret about the TM techniques. Smith (1978) refers to an ethic of secrecy which binds the TM practitioner. He complains that "if psychologists wish to learn TM they are asked to promise not to divulge the technique": This must be only a commercial ethic. The essential details of TM have already been spelled out by Benson et al., (1974) and Beary et al., (1974). In the section of this study dealing with mental devices, adequate evidence is given to allow the diligent researcher to find these "secrets" without obligation. The point is made however, that such diligence is unnecessary. The Jacobs et al., (1977) and other reviews, eliminate TM as the only successful meditational strategy. It is nowhere near as successful for example, as Savasan. Savasan is therefore a more valid area for relaxation research.

In the Datey et al., (1969) study, the group without meditation achieved an average systolic reduction of BP over ten subjects, of 37.0 mm HG and an average diastolic reduction in BP of 23 mm HG. The results of TM over fourteen clients was only BP reductions of 10.6 mm HG, and 4.9 mm HG

respectively (Jacob et.al., 1977). In fairness it must be stated that the Datey et.al., (1969) group started from an original average systolic BP based of 184.5/109 mm HG, with an average age of 46. Benson et.al., (1974) started with subjects at an average age of 43.1 with an average BP of 146/94.6 mm HG. The final results are therefore comparative 147/86 (Datey) versus 135.9/85.7 (Benson). The Benson et al., (1974) program is nevertheless contaminated by demand characteristics. Savasan as a relaxation technology lends itself to a non-secretive, non-commercial research-oriented model.

In a recent review of relaxation techniques by Henry (1978) and Frumkin et al., (1978) ambiguous and controversial research designs were noted, in outcomes of research into essential hypertension. Of all techniques reviewed to date the yoga technique of Savasan, developed by Datey et al., (1969) and refined by Patel (1976) appears the most effective relaxation technology (Jacob et al., 1977; Blanchard and Ahles, 1979). Biofeedback was used as effective relaxation assisted training device. Biofeedback is effective to immediately validate the efficacy of a relaxation technology and as a reinforcement to the successful reduction of Blood Pressure (BP). The Patel and North (1975) study is a significant breakthrough. It indicates that in Relaxation Technology, a basic yoga technique (Savasana) is far superior to the standard muscle relaxation programs, and suggests biofeedback techniques have a supportive role.

Savasana, as used by Datey (1969) and Patel (1976) is a relatively complex technique incorporating components of a number of other relaxation/meditation technologies. These

need to be analysed and understood. Other studies such as Stone and deLeo (1976) and Seer (1977) use parts of this technique.

Both Datey and Patel have incorporated additional techniques into Savasan. Technically Savasan is Sanskrit for body (Sav) or corpse and posture (asan). Savasan refers therefore to an attitudinally passive (translated- corpse-like recumbent body posture.) The body is allowed to rest on the back, on the floor. The legs are normally about twenty inches apart rotated outwards in a relaxed manner from the ankle joint. The hands are held about six inches away from each side of the body, arms straight and rotated outwards from the shoulders in a relaxed manner. The back of the elbows and hands rest on the floor and the fingers allowed to curl naturally and gently inwards. The spine and head are in a straight alignment, shoulders flat, jaw limp, eyes naturally and lightly closed.

This describes the technical details of the recumbent posture known as Savasan (Satyananda 1974). To eliminate client-resistance, variations can be allowed. These include neck, lower back and back of the knee supports. Clients may be asked to gently rotate the head from left to right. This reduces tension in neck and shoulder muscles, and allows the head to naturally assume a straight alignment, with the nose pointing directly to the front.

Datey et al., extends the technique to include "slow rhythmic diaphragmatic breathing with a short pause after each inspiration and a longer one at the end of each expiration" (1969, p. 326). This is a classic Pranayam technique

taken from Patanjali (Satyananda, 1976 "Freedom"). It is not Savasan. What it effectively does is to increase the depth of relaxation. This represents an additional component to the Savasan technique and should not be confused with it. It develops Savasan in a synergistic way. Part of the effectiveness of Datey and Patel's technology has developed because both have an existential and cultural awareness of meditative techniques and the methodology involved in their synergistic application.

Datey goes further again. "After establishing this rhythm he (the client) is asked to attend to the sensation at the nostrils, the coolness of the inspired air and the warmth of the expired air." This is part of a technique of Ajap Ajap which is a Tantric meditation technique. Many other cross-cultural esoteric systems have borrowed from Ajap Ajap. This includes the Stone and deLeo (1976) buddhist meditation technique. These explanations are not meant to denigrate the Datey and Patel contributions. Each component of any relaxation or meditation technique is capable of being analysed in terms of its components. Once these components are identified, each component should be tested in the A, AB, A, ABC research design format. The effectiveness of each component should be capable of analysis and measurement. Its measured effectiveness then determines its inclusion in a synergistic technology.

Finally, Datey et al., (1969) uses a hypnotic induction technique also recognisable in auto suggestive techniques. "The patient is asked to relax the muscles so that he is able to feel the heaviness of different parts of the body".

Other parameters of autosuggestivity include heaviness versus lightness, warmth versus cold and other dichotomous degrees (Luthe, 1965).

In the Patel (1973) study, she asked clients to adopt the posture Savasan, then asked the patient "to pay attention to his breathing first". This again is similar to the Stone and deLeo (1976) study. The patient was then asked to mentally repeat instructions relative to heaviness and relaxation. Essentially this is the same as Datey's Savasan. The Patel and North (1975) study uses a more sophisticated technology. Again it is necessary to identify and validate each separate component.

Brady's (1974) Mentronome-Conditioned Relaxation (MCR) experimental design validated a significant BP diastolic reduction by the monitoring effects of the acclimatisation phase or rationale phase given prior to the introduction of the MCR technique. Conservatively this represents a 10 mm Hg drop (Brady et al., 1974). It is considered that Savasan as presented by Patel (1976) also fulfils this condition. The body posture, WITHOUT IMPOSING ANY OTHER TECHNIQUE, will result in a significant BP reduction.

Sivasan then becomes the "springboard" so to speak, for the synergistic application of other technologies involving mental devices, attitudes and breathing. Some significant physiological technologies are also available in the form of Shiatsu, Reflexology, and Massage for location and reduction of specific physiological tension areas.

Each of these represent separate technologies which should not be applied randomly, but in a synergistic way for increased sophistication and effectiveness. This kind

of sophistication of development is notably absent from most relaxation research. It is available in both Eastern and Western esoteric systems. It is important not to exclude information and technologies available from these sources from the psychotherapeutic model. For too long, these areas seem to have been forbidden to the "objective" psychotherapist. Important technology and understanding has been lost. A classical paradox is involved. Biofeedback research has indicated the same classical paradox (Elmer and Alyce Green, 1977).

It is not sufficient to be the "objective" scientist. Important issues are overlooked, and significant connections are not made due to lack of existential commitment to the processes under research. The scientist who wishes to make the significant connections in research into the intrapsychic phenomena of relaxation needs existential familiarity with this area. Too often psychotherapists have ventured blindly into research into this field on false "objective" assumptions. Research into relaxation and biofeedback is therefore replete with ambiguous and controversial results. For example, the obvious connection is not made by Frumkin et al., (1968) between Datey's Savasan and Patel and North's Yoga and Biofeedback, in their review. Also, due to lack of experiential commitment, the review of Savasan by the same people, fails to make a connection between the details they give regarding Savasan (Frumkin et al., 1978, p. 310), and the psychologic relaxation technology of Stone and DeLeo. Datey's technique incorporates into Savasan, a similar (almost identical) breathing technique. One of the most outstanding contributions

to the literature of relaxation has been the study by Brady et.al., (1974). Unfortunately there seems to be a psychic block in many investigators who fail to see the connection between TM, yoga, buddhism and the techniques of Loyola (Mottola, 1964), Steiner (1971), and Shapiro (1978). Casual or careless research has also missed the significance of the baseline (A-design) connection in the research of Brady et. al., (1974) referred to earlier.

### 3.2 Patel's (1976) Thesis

Some of the more significant research in relaxation methodology has been in the area of BP reduction. The thesis by Patel, submitted by her for her degree of doctor of medicine, is a classic example. The basis for her rationale is thoroughly grounded in the anatomical and physiological correlates of stress. The writer is of the opinion that this is an essential grounding. Too much criticism of the medical model by modern psychology has robbed it of the substantial contribution made by this discipline. It had provided the basic discipline for the earlier discipline of psychiatry. It is considered by this writer that an early return to the fundamentals of anatomy and physiology will give a much needed injection to a failing art which claims also to be a science (Albee, 1980).

Patel (1976) uses the rationale of the medical model to establish the determinants of stress, and the correlates associated with its relief. Much of her thesis, as also this thesis, is concerned with the establishment of the parameters of her design. The apparent over-emphasis in the

current thesis is based on the same concern to validate the parameters of the design. Patel's thesis (1976) establishes a new direction for relaxation, research method and technology, all of which meets the concurrence of this writer.

As already indicated, it is felt however, that Patel does not seem to fully grasp the significance of Savasan herself, nor does she bother to analyse the essential components of her technique. This was not her task. She presented a technique, explained the whole technology in detail, gave the underlying scientifically validated rationale, and demonstrated quite conclusively the effectiveness of her technique.

The purpose of this current (1980) thesis is quite different. It is to identify the individual components essential for an effective relaxation strategy. The multi-modal approach is given validity. Each of the separate techniques which are key components in a successful self-management strategy have been identified. A further step has also been made. A treatment programme (Synergism) is proposed, and given experimental validation.

Patel's (1976) thesis was the essential starting point. Her rationale is scientifically valid, though somewhat out of date. Where relevant these new developments have been incorporated into the current proposal. Corrective action has been taken to correctly identify the components of Savasan. Her use of biofeedback-augmented relaxation technology is lauded. It is not incorporated into the current design since it would then become a confounding variable. It is recommended however for future designs. Much of Patel's thesis is devoted to the problem of hypertension. Her Chap-

ter One is largely irrelevant to this current thesis for this reason.

Patel, in 1976, was also proposing a behavioural model. Chapter Two of her thesis is wholly devoted to establishing the basis of animal and human experiments concerning hypertension to demonstrate a behavioural-medicine approach. Basically this demonstrated the physiological mechanisms of feedback and arousal and the determinants of autonomic control. She used this knowledge to establish the efficacy of biofeedback-augmented strategies. Her literature review in this chapter was primarily concerned with establishing the pathogenesis and epidemiology of hypertension, with emphasis on feedback and the obvious link of these physiological mechanisms with biofeedback devices. Patel (1976) also used this chapter to establish the links between stress, hypertension and treatment. She used the evidence from psychology and physiology to establish the psychophysiological structure of her thesis. She postulated the correlates of the pathogenesis of hypertension and the behavioural treatment approach, and introduced the subject of yoga as a sophisticated self-control strategy for control of BP.

Patel's (1976) emphasis was concluded in her Chapter Two as being a scientifically validated behaviour modification programme, using yoga to obtain a self-management strategy to reduce BP in hypertension. Key components at this stage were

- a. regular practice of the techniques identified
- b. in vivo self-management and CA-SC
- c. an educational programme which provided cognitive "counter-conditioning" (Rationale)

- d. training in - regular breathing
  - relaxation
  - meditation
  
- e. reinforcement of the programme using biofeedback-augmented strategies

Patel's (1976) Chapters 3 and 4 contain details of her pilot study and its extension, with interesting and detailed comments on individual case histories. Chapter IV does contain details of interesting in vivo control problems as well as in vivo self-management strategies. An example of one was the placement of a coloured disc on the dial of everyone's watch to remind clients to relax. Others were the use of red traffic lights to induce a relaxation response, retraining of responses to telephones, meal times and other life-style changes recommended by the programme, which included frequent monitoring of anxiety/tension levels. "This integration into daily activities has been found to be an effective substitute for regular practice..." (1976, p.72).

Patel's pilot study and extension study helped confirm her speculative hypothesis that the increase in the perception of the internal environment through regular yoga practice and biofeedback would allow clients to develop perceptions of self-control when realistically cued into the in vivo situations. Her studies to that point indicated the success of these techniques in the significant reduction of BP.

Her final Chapters, five and six, were a further extension of her hypothesis by a randomised controlled trial (Chapter 5) and a discussion of the neurological mechanisms

(Chapter 6) which determine BP reduction. The need for verbal instructions, as well as educational and motivational programmes (Rationale) and the emphasis on CA-SC in vivo generalization is worth mention, since it was a direct outgrowth of earlier protracted (1973-1975) research. "Support for the increased efficacy of a composite programme is apparent in the literature" (1976, p.79).

Patel (1976) was clear that mantra meditation efficacy rested not on the esoteric significance of the Sanskrit syllable, so much as the use of a device on which attention can be passively maintained. She used films, slides and lectures to reinforce the rationale being used.

In Chapter 6, Patel (1976) made some key comments under Summation of Effects (p.102) regarding the incompatibility of regular breathing and anxiety/tension states. She cites other evidence for effects demonstrated by her. Most of the chapter is concerned with her postulated neurological mechanisms, and mediating influences, but it is considered that the brief notes on breathing constitute the most significant findings. They validate the emphasis on somo-cardiac coupling and the critical factors identified in this (1980) thesis with respect to these issues. Much of her cited data (e.g. Schwartz) has largely been replaced by consolidation into theoretical postures by Davidson and Schwartz (1976), Lang (1980) and Fowles (1980).

Chapter 7 contains details of a cold pressor test. This is an important measure of stress response. Chapter 8 is more significant. It contains a listed review of Lessons from Experience (1976, pp.134-145), which is worth reproducing

in brief form. This review is renumbered to conform with the format and findings of the current (1980) thesis.

1. Therapist as Teacher: Patel (1976) reinforces the need for an experiential commitment. It is not sufficient to teach. She reiterates a common educational theme of involvement and commitment, and acknowledgement of the cognitive elements which induce attitude modification. The conditions which precede, initiate and maintain learning were listed in detail as important in this process.

The establishment of rapport was the subject of a detailed review by Patel (1976, pp.140-142). The concept of leadership, expertise and professionalism was considered quite consistent with the establishment of the therapist/client relationship. This particular view of therapist/client interaction is maintained by this author. It is felt that the 'facilitator' psychotherapist approach can often mean an abdication of the professional and competent posture advocated by Patel (1976).

2. Rationale: Patel (1976) continuously emphasised the importance of this aspect, which from her extensive in vivo experience was the most critical component, for the success of her techniques. Details of specific instructions to clients are contained in Appendix C (1976, pp. 168-190).

a. Education: Patel (1976) was quite explicit. This was vital to the programme and was considered by her to be part of an effective medical care programme (p. 136). She was very clear that full explanations of aims, objectives, treatments, outcomes and their psychophysiological correlates were essential. Patel (1976, pp. 136-140), gave detailed

attention to developing in the client an understanding of the physiology of the response mechanisms involved. Accurate information, and the precise relationship and current research into these determinants were held by her to be essential. One purpose was to teach the discrimination of these correlates, and the accurate discrimination between realistic/unrealistic and appropriate/inappropriate responses. The critical development was the initiation of appropriate self-coping responding.

b. Commitment: Patel (1976) developed a therapist/client teamwork approach. The purpose was to establish responsible therapy, promoting accountable treatment. A contract is sometimes negotiated to enhance her suggestion of a therapist/client existential commitment leading from Awareness to Choice finally to a shift in Responsibility.

c. Self-Management: This is the central theme of Patel's (1976) thesis. Control of autonomic functions (HR, BP, and RR) were the means to develop in vivo CA-SC.

d. Choice: This is another existential theme. Each client is taught the responsibility for and awareness of

- i. Life-long drug dependency versus self-control
- ii. Unpleasant side effects of drugs versus relaxation therapy
- iii. Selection of appropriate choice
- iv. Success of already validated strategies.

3. Attentional Component (Self-Monitoring effects): Emphasis on Rationale is considered of primary importance. The purpose is to develop the habit of monitoring success. Initially,

the aim is to monitor inappropriate responding and to train a person to cue in a more appropriate response. The monitoring phenomena is a first phase technique, the purpose of which is to teach a person to perceive the inappropriate response and associated physiological correlates to everyday situations. The next phase is the choice and selection of a more appropriate response. "This requires a considerable amount of practice (p.138)." The knowledge that a Choice (in existential terms) exists, is not enough. A person must then select a more appropriate response (e.g. relaxation response) which may involve attitude change, breathing control, imagery or other such device. Attention is first directed to the self-monitoring of success factors. These are reinforced and the person learns to eliminate irrelevant, distracting or irritating stimuli. Patel (1976) talks here about tolerance thresholds being increased by these methods, and concentration/attentiveness being enhanced. These are positive side effects.

An effective technique used by Patel (1976) was self-assessment. Each evening clients were asked to spend a few minutes recalling details of the day's events and reactions to various situations. They were encouraged to develop self-criticisms of the appropriateness of their behaviour. Gradually appropriate in vivo habits are developed by trial and error. This technique also aids in attentional refocusing as an aid to sleep.

4. Self-Dependence (CA-SC): It is not enough to expect a person to control light/tone biofeedback effects or self-control HR, BP or RR. "The importance of precise explanation

cannot be over-emphasised" (p.137). The purpose is to achieve intentional rather than random phenomenal learning. The object is to facilitate the habitual reproduction of a form of behaviour which can be readily adapted to the in vivo state. This continual emphasis on in vivo is one of the most significant contributions of Patel's (1976) thesis. The emphasis on participative interaction commitment, teaching and education, and the high priority on clear information and constant reiteration of aims and objectives accounts for the high subject retention and success rates. The function of the therapist is clearly to motivate, educate and maintain each client on a self-management regimen. The paradoxical intent should be clear. Intimate therapist/client interaction to lead a client to self-dependence.

5. In vivo CA-SC Generalization: This is maintained as a separate issue, since Patel (1976) gives it special emphasis throughout her thesis. The remainder of Chapter 8 (pp. 142-145) is concerned with the factors found by experience to be relevant to in vivo CA-SC generalization. Chapter 9 (1976 pp. 146-149) gives special emphasis to what were considered to be the most important "lessons" from Patel's thesis (1976).

#### Actual Technique (Patel, 1976)

Appendix R attached in Volume Two gives Patel's (1976) actual instructions to her clients.

### 3.3 Summary

Savasan was first introduced by Datey et.al., (1969). In his study and its later development into an MD thesis by Patel (1976) Savasan was presented as a multi-modal technique involving sophisticated breathing practices. Savasan is in fact a body posture involving absolute body stillness and a particular body configuration. Both Datey (1969) and Patel (1976) are guilty of adding to a recumbent body posture (Savasan) other technologies including some from a repertoire of meditation systems.

Savasan has been reviewed many times. In comparison to other techniques to reduce BP in hypertension, these reviews (e.g. Frumkin et.al., 1978, Jacobs et.al., 1977, and Blanchard and Ahles, 1979) have extolled the significance of the Patel (1976) study without fully seeming to understand the actual technique. It is maintained by this writer, that the Patel (1976) study is a major breakthrough in relaxation technology and BP reduction. Its merit however, does not rest on Savasan alone.

It has been explained in detail that Savasan is an important component. The baseline of the Brady et.al., (1974) MCR design established the efficacy of a recumbent body posture to significantly reduce BP in hypertensives. The technique's used by Patel (1976) involved an extremely sophisticated multi-modal design. Her emphasis was to establish an effective treatment which she named Savasan. It is contended that Savasan represents a baseline mode. Her design in fact included sophisticated breathing (meditation) techniques, which also involved MANTRA meditation (see Appendix R - AUM AUM AUM ... for 10 minutes).

It is felt that some of the power of Patel's (1976) technique also rested on the factors she listed in her Chapter 8 Lessons from Experience (1976, pp. 134-145). These were considered important enough to list in detail.

1. Therapist as Teacher
2. Rationale
  - a) Education
  - b) Commitment
  - c) Self Management
  - d) Choice
3. Attentional Component (Self Monitoring Effects)
4. Self-Dependence (CA-SC)
5. In Vivo CA-SC generalization

These components have been incorporated into Synergism, as also her brief comments in Chapter 6, Summation of Effects, which were concerned with the incompatibility of regular breathing with anxiety/tension states.

In addition Patel (1976) in her Chapter 2 proposes a behavioural model, and justifies her use of yoga to develop self-management strategies for the reduction of BP in hypertensives. The essential components listed by her bear repetition:

- a. Rationale
- b. Training in - regular breathing
  - relaxation
  - meditation
- c. Regular practice
- d. Reinforcement using biofeedback as an augmentation strategy
- e. In vivo self-management and CA-SC

### 3.4 Conclusion

Patel's (1976) thesis is an important breakthrough in relaxation methodology. It has established some of the assumptions and technologies on which Synergism is based. It is considered that her presentation lacks a research oriented base. This thesis is attempting to identify the significant components with a research oriented approach. Each major component which is deemed significant in an effective relaxation strategy, has been analysed in the literature review in Chapter 2 of this (1980) thesis. What follows is an attempt to judge the efficacy of the proposed model. Chapter 4 of this thesis gives the details of the model and concludes with a detailed summary of Synergism. Chapter 5 provides details of the Research Design used to attempt to experimentally validate Syndergism as an effective relaxation strategy. Following these presentations are summaries of Results (Chapter 6) and the Discussion (Chapter 7).

## CHAPTER 4

SYNERGISTIC RELAXATION

- 4.1 Introduction
- 4.2 The Technology of Synergism
- 4.3 Relaxation Techniques
- 4.4 In Vivo Generalization
- 4.5 Summary

## CHAPTER 4

SYNERGISTIC RELAXATION (SR)4.1 Introduction

Synergistic relaxation is a modification of Patel's (1976) Savasan. The key elements of Patel's (1976) Savasan are adhered to. The essential goal, objectives and outcomes of this thesis are:

Goal: To significantly reduce the incidence of self-perceived stress and anxiety.

Objectives:

- a. To effect significant reductions in RR;
- b. To provide a component-designed relaxation technology enabling a behavioural analysis of relaxation;
- c. To establish SR as a non-pharmacological in vivo intervention technique;
- d. To provide replicable data for further research.

SR is a multi-modal research-oriented relaxation technology. It is considered an important therapeutic intervention strategy which can be used as a major psychophysiologic device for use by helping professionals. Many aspects of SR have already been subject to research and validation (see Chapter 2). To date no synergistic system has been applied to relaxation technologies. SR bridges this gap.

SR provides a unique contribution to relaxation technology.

It is a new intervention technology. SR divorces itself from any previous relaxation techniques whilst retaining the essential qualities of the best of the contemporary techniques. It is not related to either Jacobson's Progressive Muscle Relaxation or any derivative, such as Systematic Desensitization. SR takes a radical posture whilst at the same time deriving strength from past mistakes, failures and the more dramatic successes among relaxation techniques. It is derived from the most successful contemporary relaxation intervention strategies currently in use e.g. Luthe (1969), Barber (1969), Benson et.al., (1974), Brady et.al., (1974), Satyananda (1974), Stone and DeLeo (1976), Seer (1977), Shapiro (1978), and others. The technique Savasan, first used by Datey et.al., (1969), and further by Patel (1974), Patel and North (1975) and Patel (1976) is currently perceived as the most successful relaxation strategy (Blanchard and Ahles, 1979).

The wide-spread use of relaxation as an intervention strategy covers many domains. The goal of SR is simple; to provide a treatment package for the use of relaxation in the non-pharmacological treatment of various psychophysiological disorders. Other professionals in helping healing or nursing agencies may form goals related to their specific client needs. The primary function of SR strategies is to reduce anxiety and tension and improve the quality of life of individuals.

The effectiveness of any relaxation method is best judged by two criteria. The first is a match between goal and outcome. The stated goal of this thesis is a significant

reduction in self-perceived stress and anxiety. This will be measured along two self-report dimensions. There are a number of objectives. A significant reduction in RR is normally accompanied by significant reductions in self-perceived stress (Section 2.7, Respiration) and significant reductions in HR and BP (Section 2.9, Control of HR). Chapter 2 provides the data for a component-designed relaxation technology. The outcome is detailed in Section 4.2 of this chapter. The overall outcomes of this research (Chapter 6, Results and Chapter 7, Discussion) should establish the efficacy of SR as a non-pharmacological in vivo intervention technique. Finally, the Annexures to Chapter 4 in this part give full details of Synergism in an easily replicable format.

The second criteria is concerned with in vivo generalization. Guided by Patel's (1976) thesis, the emphasis at all times is on in vivo generalization. Take home instruction sheets, take home tapes of each session and self-monitoring formats are all contained in the Annexures to this chapter. This effort is directed to commitment, involvement, compliance and in vivo generalization effects, all of which are considered essential prerequisites to an effective relaxation strategy. This design includes in vivo self-monitoring, cue-associated and self-coping techniques which aid compliance and long-term maintenance, two factors overlooked in most relaxation research. They are considered critical criteria to in vivo generalization.

All these mandates have been considered and applied to each stage of SR.

To make generalized claims of effectiveness from this research design to other populations on the basis of this thesis alone would be foolhardy. However, it is maintained that every person responds in some way to skills training with an effective relaxation technology. SR is a flexible format with a wide variety of relaxation "batteries" to call on. The skilled therapist can be trained in the selection of the right "menu" for each person to relax by. The aim of SR research design is to provide synergistic "batteries" of relaxation techniques. Each of these techniques are capable of validation against these criteria. The advantage of using Savasan as a base mode is that it can be used as the stable baseline measure for all relaxation batteries.

#### 4.2 The Technology of Synergism

The SR format provides a basic module or battery which consists of a multi-modal programme. As opposed to Benson et.al., (1974) a different posture is taken regarding the hypometabolic responses identified by him. It is considered that there are two easily identifiable procedural differences which occur during the application of any relaxation technique. One is relaxation induction (Section 4.2.1) which as the title suggests is an induction procedure similar to that identified by Barber (1969, p.12). The other is Rr detailed in Sections 4.2.5 and 4.2.6.

##### 4.2.1 Relaxation Induction

These are considered to be the means employed to bring about the altered state of consciousness referred to as relaxation. Davidson and Schwartz (1976) have identified three

operative modalities i.e. somatic, cognitive and attentional. It is considered by this writer that in fact there are six modalities which determine the efficacy of relaxation and twelve key components. These are all considered inductive procedures.

#### 4.2.2 Summary of Inductive Procedures

<u>Operative Modes</u>	<u>Key Components</u>
1. Motivational (Barber, 1969, p.12)	1. Rationale (Patel 1976)
2. Somatic *	2. Quiet Environment + 3. Physiological tension reduction + 4. Posture (Patel, 1976)
3. Attentional *	5. Passive Attitude + 6. Self Monitoring of Rr (West, 1979)
4. Affective (Lang, 1979)	7. Breathing (Stone and DeLeo, 1976, Steptoe, 1977, Shapiro, 1978 Jackson, 1979)
5. Cognitive *	8. Rotation of Consciousness (Satyananda, 1974) 9. Self-Control (Meichenbaum, 1979) 10. Awareness (Staudenmeyer and Kinsman, 1976)
6. Reality (in vivo) (Patel, 1976)	11. Present Time Consciousness 12. Cue Associated-Self Coping (CA-SC) (Patel, 1976)
* identified by Davidson and Schwartz (1976)	+ identified by Benson et.al., (1974)

Each SR programme uses this same Induction procedure. The full SR programme involves twelve different batteries of which only four were used in this thesis due to time con-

straints. The full programme consists of a different battery either each week (minimum twelve weeks) or each fortnight (minimum of 24 weeks). This thesis was restricted to eight weeks of actual SR programme time and four batteries were used at the rate of one each fortnight. The purpose of SR is attitude change, behavioural self-control and modification of autonomic functions. These are not short term interventions. The self-control and autonomic function modifications are relatively simple to achieve, but the aim is to achieve in vivo (CA-SC) generalization and long-term maintenance and compliance.

People habituate fairly quickly to specific relaxation batteries e.g. TM. This results either in early drop out/failure rates or a two to three year involvement. To maintain the programme it is necessary to provide individuals with a wide variety of coping skills and relaxation techniques to avoid habituation and boredom effects. This aspect has rarely been covered in the literature.

The SR programme set up as the design to this thesis was engineered to obtain significant reductions along the parameters measurable for the validation of the technique. To induce these changes four of the twelve available programmes were selected. Every SR programme contains the Induction procedure outlined here and given specific attention in 4.2.2. Every SR programme is initiated by the Basic Technique (Annex A, Transcript 1.)

#### 4.2.3 Details of Induction Procedure

Each key component will be dealt with in turn. The validity for each component has been detailed in Chapter 2. Only

aspects relevant to the research design will be dealt with in this chapter.

Rationale: Relaxation techniques are normally preceded by or taught concurrently with, some underlying rationale. The general purpose of relaxation has been to reduce the incidence of self-perceived stress or to induce a state of calm as an antidote to stress/anxiety. It has also been used as a major technique in the changing of maladaptive behaviour patterns, and responses. Initially relaxation was researched and taught as a skeletal muscle tension reduction technique. The initial rationale was provided by Jacobson (c. 1929). He identified the modalities of cognitive and somatic responding at that time. His error was to infer that cognitive relaxation and cognitive events (e.g. emotive imagery) was incompatible with somatic relaxation. He was wrong.

Many therapies have been developed from Jacobson's PMR, the most notable and researched of which has been Wolpe's SD (1958), modified later by Paul (1966). These have been critically analysed by Kazdin (1976). This latter research has sounded the death knell for the rationale of reciprocal inhibition provided by these researchers. The most recent research by Davidson and Schwartz (1976) gave rise to a rationale for the psychobiology of relaxation, adding another modality to that of Jacobson called Attentional. It is proposed that Patel (1976) (Chapter 3) and others have provided sufficient incentive for the inclusion of a Motivational component, and Lang (1979) (Chapter 2, Section 2.8) has provided sufficient justification for the inclusion of an Affective mode, in which RR (Section 2.7) is the major component. The emphasis on self-

coping has also increased the need to recognise the in vivo state (Meichenbaum, 1979). It is considered that relaxation, acknowledged as an altered state of consciousness (Frumkin et.al., 1978) is only effective if the Reality modality is recognised as critical to success. According to Rachman (1976) the simultaneous application of somatic and cognitive procedures ensures a deeper relaxation than a one mode orientation. It is proposed that the multi-modal programme offered by SR is a further refined improvement. This is used as a logical sophistication for development of a rationale based on Synergistic techniques, synergistically applied.

Sections 2.1, 2.2 and 2.3 deal with the areas of stress and anxiety considered pertinent to this thesis. Many of the persons involved in the treatment programmes measured by this thesis, suffered varying degrees of these disorders of stress and anxiety. The rationale for treatment is first based on dealing in specific terms with these problems. The "Take Home Instructions" in Chapter 4, Annex B give examples of instructions given. Sessional instructions are based on each battery. An example of a sessional instruction for Tape Transcript 1 is contained at Chapter 4, Annex C. The data contained in Chapter 2 is used as the psychophysiological rationale throughout the programme. Rationale is explained in Sect. 2.4.

It is emphasised here and elsewhere that each key component in a Synergistic programme is a relaxation technique in its own right. As can be seen from the details in Chapter 4 Annex C (Sessional Instructions) the Basic Technique (Tape Transcript 1, Chapter 4, Annex A) is the building block for all other techniques. Each subsequent technique is an expan-

sion of a component of the Basic Technique. The purpose is to reinforce the fact that each component is a technique with a wide variety of applications. Put together e.g. Basic Technique it is a multi-battery all purpose technique. The in vivo capacity of EACH component is emphasised at all times.

Quiet Environment: A "quiet environment with decreased environmental stimuli should be used" (Beary and Benson, 1974, p.116). In fact this establishes a good placebo effect, and validates the claim made in this thesis that each key component is in itself a separate treatment package (Nash and Zimring, 1969). Synergism capitalizes on each of the effects (already validated in the literature vide Chapter 2) and places each effect in a synchronous pattern to achieve maximum additive effect.

Initially a quiet environment is a pre-requisite to conditioning a passive attitude. Many relaxation therapists insist that it is essential. Stroebel (1978) has capitalized on this fact calling his particular menu "The Quieting Response". In Patel's (1976) Savasan, it was noted that the condition (or posture) Savasan, plus HR feedback, passive attitude and quiet environment, resulted in successful and significant BP reductions.

Client expectations suggest relaxing in a quiet environment produces the anticipated Rr. Synergism does not ignore the efficacy of expectations as a powerful determinant of outcome. Initially therefore a quiet environment is maintained. However sound is a relative issue. Even in a sound-proof room a person can be driven to distraction by background sound effects, normally kept out of perception by the

effects of "white" noise.

Tantric techniques (Satyananda, 1974) are reality oriented. It is difficult to retain the "quiet environment" in a normal environment. Many laboratory studies fail in the in vivo situation because of this "escapist" reinforcement pattern. In component 10 - Awareness, sound is introduced as a meditation even in the Basic Technique. The emphasis is on reality. Using the attentional component, this technique de-fuses the exacerbating effect of sound normally associated with anxiety states. Sound can be and is often experienced as stressful. A shift in perception is taught so that extraneous sound during relaxation does not become a distraction.

At one stage during the programme, a room was selected on campus for its quiet environment. Half-way through the programme a pneumatic drill was used in the next room. This sound was incorporated into the awareness component so successfully that students thought it had been specifically "turned-on" for them to meditate to. All students accommodated this sound quite naturally - none were disturbed.

A quiet environment does enhance initial relaxation but often the real world does not allow this luxury. In another situation a sudden hailstorm on a tin roof was "accommodated" into the session. Training in Synergism attends to reality issues such as this. People who experience this ability to accommodate to sound, find their anxiety reactions to normal environmental family "noise" considerably reduced.

Physiological Tension Reduction (PTR): Jacobson's PMR is a

good example of a physiological tension reduction programme. This infers direct interaction with deep tissues and skeletal muscles. It can also involve organ massage either using yoga techniques, acupuncture or direct massage (although this latter is best left to professional masseur/masseuse, or physiotherapists due to the possibility of organ damage).

Shiatsu, massage, chiropracty, reflexology and other techniques have long been used to identify, locate and treat specific skeletal muscle tension. Any therapeutic device which is successful in this regard, should not be overlooked. These devices are referred to as physiological tension reduction techniques (PTR), and are a necessary adjunct to the repertoire of the successful therapist.

Hatha Yoga constitutes another form of physiological tension release and these methods represent important technologies (Davidson and Schwartz, 1976, p.413). Hatha Yoga, in classical terms, consists of physical postures. Hatha Yoga is not to be confused with the popular modes of yoga exercises. It is a sophisticated technology of human awareness and sensitivity. Proponents of Hatha Yoga (PTR's) are to be found among many of the popular yoga cults.

The purpose of Hatha Yoga is initially to develop the ability of a practitioner to achieve deeper states <sup>of</sup> relaxation in increasingly difficult physical postures. To effect this, components are added from other yoga disciplines. Advanced Hatha Yoga postures are effective feedback devices to test proficiency in both relaxation and later, meditation. In this context, breathing techniques may be used effectively in certain postures. Breathing techniques of themselves, con-

stitute the esoteric science of Pranayama. Unfamiliarity with the specific details of yoga techniques can lead the unwary to assume that a popular model (e.g. Satchidananda, 1970) is representative.

Confusions and ambiguities naturally occur. Western practitioners are often experientially limited to one system. Imprecision or ambiguity by a "guru", or non-experiential book knowledge, can lead to incorrect assumptions. Satchidananda has had excellent training, and would be aware of the important distinctions between Hatha Yoga and Pranayam, and their synergistic use. Clarification can also be obtained from his (guru bai) brother Satydananda, (1974), who also provides details of Savasan. Both were trained by an internationally acclaimed teacher, Sivananda who was initially a Western trained medical doctor. The Sivananda "school" of Satyananda (Bihar), Satchidananda (Canada), Chidananda (Rishikesh), Venkatesananda (Mauritius) and Vivekananda (USA) is one school which has authority on the subject of Hatha Yoga. Others include Iyengar (Poona), Gitananda (Pondicherry), von Lysbeth (Europe), Jonn Mumford (Australia) and the International Yoga Teachers Association founded by Swami Nirmalananda (Roma Blair) Australia. Of special interest and highest repute is the Kavaillyadhama College of Yoga (Poona). The writer has been trained by and taught in each of these systems, in addition to massage, shiatsu and many other PTR technologies.

These techniques are an effective pre-dispositional factor to obtain good "body tone" prior to relaxation. They are not essential for relaxation. Jacobson's PMR modified vide Paul (1969) is pre-dispositional. Mental techniques may also be used.

Passive Attitude: At the conclusion of Chapter 1 (p.30) of this thesis the four components identified by Benson (1974) were listed as: a) a mental device, b) a passive attitude; c) decreased muscle tone and d) a quiet environment. This chapter suggests that the situation is more complex. Whilst only listing these four components, Benson (1974) also mentioned the importance of posture and breathing, both of which are considered unique and significant in their own right.

In Section 2.5.4, a critical identified variable was the sense of calmness which is often recorded as a relaxation experience by clients. A passive attitude develops this sense of calmness. A sense of calmness is experienced when a passive attitude is maintained. The cyclic reinforcing schema already noted in the previous subsection of Posture is once more noted here. In Section 2.7, Respiration, and 2.9, Control of HR, it was noted that direct attempts at self-control is less effective than the passive self-monitoring effect.

Benson listed a mental device as a key component but he was specifically referring to the use of mantra, which has already been commented upon. Smith (1976) and Seer (1977) have along with other researchers, found that the use of such a specific mental device was not necessary. Whilst this is partially correct, these researchers have missed a key technology. A passive attitude and the attitude of self-monitoring are two mental devices. In the first there is a non-intentional, non-specific awareness mode which is in itself a mental device. In the second, a specific attentional component is cued-in to attend to either HR, BP or RR, thoughts,

feelings or sensory-cued awareness. Whilst non-intentional passive awareness is the aim of the second, it is quite different to the first.

These two components, a) mental device and b) passive attitude, are therefore more related in a more complex way than appreciated by Benson (1974). The demystification extolled by Smith (1976) and Seer (1977) does not meet the problem. If expectancy is a key variable (admitted by Kazdin and Wilcoxon, 1976) then client's expectancies about the efficacy of Mantra for example, will change outcomes. This will again result in HR, BP, RR reduction which may be significant. In the Patel and North (1975) research design a passive attitude was obtained by a rational cognitive reconstruction programme. This seems paradoxical in that "Active treatment consisted, first, of meetings during which the patients were shown films and slides about hypertension... and so on" (Patel and North, 1975, p.94). Apart from establishing rapport, established by rationale, the "active treatment" phase also creates the correct passive attitude.

There are many Zen Tantra and Yoga techniques to establish attitudinal passivity. Thought stopping (Hackman and McLean, 1975) correctly implemented, also induces a passive attitude. This technique has to be applied with care, sensitivity and awareness. It is a powerful tantric technique (Reps, 1975). Similar techniques were available in the literature of fourteenth century England (Wolters, 1976). They are not unique to oriental literature. Like Maslow, "I maintain that we can learn most by studying our most moral, ethical or saintly people" (Maslow, 1973, p.7). For some reason

there appears to be some prohibition on Maslow's injunction, where this involves the study of Western Saints, and Western "Masters". Oriental ones appear more palatable to most.

As detailed in sub-section 2.9.8 (Skills Training), HR reduction is a skill which can be taught in order to effect behavioural and actual HR/RR/BP changes. Instead of meditational skills for the dubious faculty of spiritual growth, these same skills and techniques can be implemented without the heavy religious/spiritual overlay. The purpose of these skills in the context of this thesis, is to obtain psychophysiological relief and personal growth resulting in significant and beneficial changes to quality of life. The three keys to success in HR reduction are given detailed attention in sub-section 2.9.8.

It seems necessary to attend at this point to the various abilities of the mind demonstrated by the literature concerning a passive attitude and a mental device. There is a difference in mode between passive attitude and self-monitoring which has already been identified in this sub-section. Both of these are considered to be two of many modes of cognitive responding. They are similar in that they are passive modes. Others have described this passivity as non-specific attention, passive meditation, or as the pre-requisite state, for "Grace" to occur among Charismatics. Shamanistic oriented researchers would describe it one way, artists call it the pre-creative mode, some mind-power groups call it the intuitive mode.

Whereas Benson (1974) suggests passive attitude as a response, this thesis suggests that a passive attitude is a

process which induces relaxation rather than a response to it (see Section 2.5.7). It is maintained that it is an altered state of consciousness which allows the focus of awareness to undergo a shift in perspective and a shift in the involvement processes of conscious attention. As outlined in Section 2.5.7, awareness seems to have the ability to move from a passive generalized awareness to a non-involved attending (self-monitoring) or to the "witness" experiences of watching the many and varied functions of the mind. The increased efficacy of a passive attitude is given emphasis in Section 2.6, Meditation, and Section 2.9, Self-Control.

### 4.3 Relaxation Techniques

The actual Synergistic Technique consists of seven major components vide:

- 4.3.1 Body Awareness - Posture
- 4.3.2 Relaxation response - Rr
- 4.3.3 Breathing Techniques
- 4.3.4 Rotation of Consciousness
- 4.3.5 Awareness
- 4.3.6 Visualization
- 4.3.7 Resolve

#### 4.3.1 Body Awareness - Posture

Body stillness has always been considered to be an essential component in any system of meditation. This is achieved through emphasis on posture. Many systems insist on some form of sitting meditation, (Watts, 1968 pp.154-173) which may include special leg positions e.g. lotus or variations on this theme (Satyananda, 1973, pp. 45-48). Reasons given often include a complex rationale concerning the CNS as a "Tree of Life",

or the spine as a central switchboard for the CNS, in which the straight, erect spine opens the relay switches which fire off the nervous plexii's (Chakras). Most use Patanjali's sutras as the basis for such rationale. However, often these are misquotes. Patanjali, an ancient Indian sage (rishi), only states that a meditation posture should be stable and and comfortable (Taimni, 1975). His sutra 46 states clearly "Sthira Sukham Asanam" (1975, p.252). Crowley (1976) translates this correctly, but then goes on to describe four positions, sitting, kneeling, standing and a complex "thunderbolt" posture (1976, pp.12-13). Baker (1975) argues for a sitting erect posture. He argues against meditating horizontally (or supine) because of the possibility of sleep induction (1975, pp.123-124). Butler (1963) on the other hand suggests that lying on the back on a couch or bed induces a deep state of meditation by setting up "a paralysis of sensation" (1963, p.152). The emphasis on correct posture is technique-specific. Body stillness is the key.

Savasan is a lying down posture (Satyananda, 1973, p.64) in which a person lies down on the back with palms up, eyes closed and feet comfortably apart. It is known as the dead man's posture (Sanskrit - SAV = corpse ASAN = posture). It is normally adopted on a hard surface e.g. the floor.

The rationale for such a posture is:

- a) A ritualized body posture seems to enhance expectation
- b) Lying down enhances sleep onset
- c) The spine is naturally straight, therefore "unblocking" the CNS
- d) Meditation is unaccompanied by pain feedback from a difficult to maintain posture.

Savasana lends itself to be easily replicated. Emphasis is given to the ritual. A great deal of mileage can be made in the rationale to the fact that this is a POSTURE in exactly the same way that more complex postures are described. The emphasis is on body stillness in a "corpse like posture". The physical attitude of the body is that of a five pointed star, which is often incorporated into meditational visualizations and help to synthesise mind/body awareness. The mental attitude is best described as submissive, open and receptive. These mental attitudes reinforce witness/observing techniques and prepare the mind adequately for passivity and self-monitoring.

It is important throughout most meditation systems to keep the body as still as possible. This is enhanced by a stable (Sthira = absolutely still, rocklike steadiness) comfortable (Sukha) posture (Asanam). This rocklike steadiness aims at reducing neural feedback to an absolute minimum so that the mind can attune itself to internal events more readily (pratyahara = withdrawal from the senses). According to the widest quoted sage, Patanjali, this sensory withdrawal is a prerequisite to successful meditation. It is essential to deep relaxation.

The phenomena of sensory withdrawal has been widely researched (Lilly, 1977 pp. 128-129; and Barber, 1969, pp.177-178) and in most cases is accompanied by:

- a) increases in suggestibility
- b) decrease in awareness of the borderline between sleep and waking
- c) increase in visual phenomena including hallucinations

and delusions of various sorts, in which,

- d) a seven stage process ensues (most people only experience 2 or 4)
1. awareness of day's 'residues'
  2. rest and relaxation
  3. "stimulus - action hunger" (psychophysiological stress state)
  4. need to end relaxation (psychic stress state)
  5. focussing on residual external physical stimuli (physical reactive stress state)
  6. focus on internal emotive events and fantasy (emotional reactive stress state)
  7. hypnogogic phenomena (mental reactive stress state)

It is interesting that in Savasan, both Patel (1976) and Satyananda (1973) have emphasised breathing techniques. Lilly (1977) also found that breathing techniques were essential if one were to have an extended relaxation in the isolation tank. He stated it to be "a comforting, constant safeguard and a source of rhythmic stimulation" (1977, p.129). It is this writer's contention that for deep states of relaxation, training in breathing techniques is essential. The phenomena reported by Lilly (1977) which include, hallucinations, hypnogogic phenomena, oceanic bliss, etc, and the seven stages of "entry into inner space" are always recorded by relaxation clients at various stages.

Body stillness is in itself a relaxation technique which induces the phenomena referred to. It is also a hypnotic induction technique (Barber, 1969, p.245). In any relaxation, clients record that relaxation occurs when the focus of attention shifts from external reality to internal reality. In

body stillness this occurs fairly rapidly. Hypnotism therapists are well aware of the effects of this shift in perception (Barber, 1969, pp.60-79). Body stillness, enhanced by sensory deprivation is the centre of the experiences recorded by Lilly (1977). Sensory deprivation is willfully induced in most effective meditation/relaxation techniques by visualization, fantasy and other internal event imagery techniques. There are parallels between the many seemingly different systems. Common denominators are body stillness, breathing and voluntarily induced visualization.

Relaxation therapists should be aware that the simplest relaxation technique e.g. body stillness, can lead to altered state of consciousness normally experienced in deep meditative practices. They should therefore be aware of the valid experiences which can develop. The associated phenomena should be allowed expression. This is one reason why experientialism is emphasised. Therapists should know these valid areas of experience.

The psychophysiology of posture is an important study when dealing with clients who are hypertensive, who have suffered some CVD, or are suffering from a psychosomatic disorder. The response of the circulation to postural changes has been studied in normal subjects and patients with ischaemic heart disease. Changing the posture of a client from the upright to a recumbent position raises the cardiac output and stroke volume. Heart rate and blood pressure show little change. After myocardial infarction the heart is unable to respond normally. In some the cardiac output and stroke output may fall. When this occurs, an increase in heart rate often re-

sults (Thomas and Shillingford, 1965). In hypertension, the normal responsiveness of the vascular system is absent. In Datey et.al., (1969) research, most recumbent BP of essential hypertensives were raised. This vascular response can be "monitored" by clients, when they initially lie down in Savasan.

Self-monitored awareness of HR can be a reinforcing factor in HR control, by such knowledge. Self-monitoring of heart rate is pre-conditioned by a passive attitude. Self-monitoring becomes a useful HR control/reinforcement device. Passive awareness of HR may record an initial measurable rise when a person first lies down. If the passive attitude is maintained, this becomes a mental device. Awareness of HR reduction facilitates BP reduction in the Savasan phase.

Three techniques interact with posture and body stillness to establish a cyclic reinforcing situation. A passive attitude develops the ability to self-monitor HR. The self-monitoring of HR helps the client to become aware of the response of the circulation to postural changes. The circulatory responses are noted due to the passive attitude and the self-monitoring effect. Since these changes have been predicted, passivity and self-monitoring help to further reinforce this cycle of HR/BP responsivity.

#### 4.3.2 Relaxation Response (Rr)

Whereas a passive attitude implies a now-specific generalized awareness which seems to lead to a calm almost blissful state, self-monitoring implies an active focussing. In the case of Synergism it is a very specific form of attending to the Rr. Eight components have been identified in Section 2.11,

Relaxation Response (Rr), each of which were given detailed attention. The cyclic reinforcing effect of monitoring each of these cues to Rr was given emphasis throughout.

Section 2.10 Self-Control gave detailed attention to Self-monitoring. The key variable is the passive perception of internal cues. In the case of Rr, each component is a gross proprioceptive or (in the case of the heart) sensory cue. In Self-monitoring of Rr no attributions are elicited. The process is still passive, with the specific focus of attention given to one Rr at a time. As indicated, Self-monitoring is considered to be the first and most critical step in the therapeutic process.

In Section 2.11, it became clear that passive attention to specific Rr components induced relaxation more effectively than direct attempts at Self-control. Whilst HR and RR show parallel cardiosomatic coupling this is not maintained in direct ratio. In the induction of RR, the Self-monitoring mode makes no attempt to adjust the cardio-somatic rhythm. The sole effect is merely to monitor and note changes as they occur. In the rationale, clients are told of the beneficial effects of self-monitoring. As noted in Section 2.11.4, the instructional set determines the actual response pattern.

Self-monitoring of Rr as used in Synergism is a very powerful technique of relaxation in it's own right. The technique is expanded into a forty minute relaxation technique in the full version of Synergism. The technique is at the base of many mind-control strategies. Self-monitoring is the non-involved focussing of attention, on Rr. It is also used to monitor the stream of consciousness whether in verbal thoughts

or images, and is the base of the Tantric techniques of Chidakash and Dharana (Satyananda, 1974). Self-monitoring is used in sensory awareness techniques which involve sound, sight, touch, taste and smell, as internally evoked sensations. It can also be used as a centering device (the existential NOW), and awareness of feelings past, present and future can be evoked in an SD-imagery fashion with emphasis on detachment. This is the reverse of much of the Encounter, Sensitivity and Awareness methodology current or of Primal Therapy type hysteria.

Self-monitoring is central to much of Synergism. It is viewed as a mental device not only to induce relaxation, but also to create the therapeutic conditions for a reassessment and reconstruction of self-constructs. It is an experiential tool. It has an Existential component. As such it is given a philosophic construction using Shostrom's POI as a central referent and group/individual discussion initiator.

In Annex 4, Chapter 5, the Self-Report forms are contained. The appendix to the POI contains an Annex used in the POI Manual. This details alternative answers to the POI by items vide the Self-Actualization Scale. Some of these questions and answers are discussed relevant to individual S-A scales, at each session.

A valid criticism of Self-Assertion training is that the emphasis on the Self-Report Ratings throughout each course merely train people to answer the questionnaire rather than teaching Self-Assertion. It is maintained that such a posture would be difficult to maintain over a 150-item questionnaire, with over twelve separate and factor-analytic variables.

Self-monitoring is not a programme-specific or session specific mode. Daily self-report forms have been constructed to involve clients twice each day in the self-monitoring of BP, HR and RR as well as a general daily attitude state. It is used in this way to induce self-coping, self-control and ultimately self-management. Again the existential basis represents a shift from therapist to client-centred Responsibility, Choice and Awareness. Each of these represents a key existential commitment.

In terms of Relaxation induction, self-monitoring is a mental device which induces relaxation and enhances growth.

#### Mental Devices (Word Power - Mantra)

Before leaving the subject of Passive Attitude and Self-monitoring it is felt necessary to extend the concept of mental devices. It is considered that breathing techniques, rotation of consciousness, visualization and fantasy techniques are all mental devices used in each Synergism programme. These are detailed in following paragraphs, however the subject is not as easily dismissed as Seer (1977) and others would suggest. Expectancy determined by instructional set is a strong determinant of outcome. Mantra must not be so lightly dismissed. Patel (1976) uses "AUM" in her actual Savasan technique. Again, under the broad umbrella of Savasan she has introduced culture-specific factors.

There are a number of mental mantra-based devices which are effective. TM uses mantras or sacred syllables such as "OM", "SO-HAM", "RAM", often using the bija mantras or sacred "seed" sounds (such as Hrim, Lam, Kreem etc.). These are

neither unique nor specific to TM. The techniques of mantra are common to both oriental and occidental esoteric systems. Oriental systems such as Yoga, Zen or Buddhism use either Pali or Sanskrit. Occidental systems often use Hebrew. Some use even more ancient Sumerian mantras (Allegro, 1974). The oriental techniques are borrowed from an ancient non-sectarian esoteric system called Tantra. In Tantra, mantra is an existential device of deep symbolic significance. The soporific and arousal properties of mantra have not been fully explored. Whilst the ethic of secrecy may inhibit TM researchers from exploring this domain, (Smith, 1976), sufficient information is readily available to ensure that the mental device of mantra is not overlooked (Sivananda, 1972 and Lalita, 1978).

Many Western orientalist have provided the primary sources of reference for mantra (Sanskrit). Many guru-cults depend on these sources. Sir John Woodroffe, eminent jurist and Tagore professor, Calcutta, (Avalon, 1972), Dr. Evans Wentz (1965) of Jesus College, Oxford, Herbert V. Guenther, (1963) one of the few authoratives on Tibetan Tantra and Professor Alex Wayman (1973) renowned sanskrit and tibetan scholar from Columbia University are only some of the non-Indian scholars who have contributed to the knowledge of Tantra. The "secret" mantras of TM are available from these and other easily accessible sources. Agehananda Bharati (1975) of Nairobi Kenya, lists many of the reputable and authoritative Indian and Tibetan sources, and gives also a clear lucid explanation of the Tantric tradition.

However, neither submergence in the esoteric doctrine of Tantra nor committment to TM is necessary to research the

effects of mantra. Commitment is required to the powerful influence of cognitive processes upon the autonomic nervous system (Maslow et.al., 1972). Mantra is one such mental device. Research is already available in the area of cognitive processes. Mental devices take many forms. Most involve some form of mental imagery.

Paul, (1969) has long researched simple imagery technologies. It has been found that cognitive processes can exert powerful influences on the autonomic nervous system. A study by Maslach et.al., (1972) addressed itself to the use of mental devices to successfully effect relaxation. The altered states of consciousness of hypnosis and relaxation were studied. The researchers argued that the effects of hypnosis and relaxation are analogous. They drew attention to the shift of focus of awareness from skeletal activities and external environmental events to relevant visceral and internal awareness. This is a significant finding.

Borkovec et.al., (1978) in a non-related study of PMR, also found significant relaxation effects occur when focus is shifted to internal sensations. This is sufficient to promote tension reduction. These researchers in fact were frustrated. Their aim was to establish that successful reductions in daily tension occur with PMR training. The use of a mental device was sufficient to achieve markedly similar effects. The PMR technique consists of two principal components. The first involves physical tension-release of gross muscle groups. The second involves focussed attention on the relaxation response conditioned by the focussing of awareness on the non-tense (relaxed component) achieved in the first condition.

The Borkovec et.al., (1978) study confirms that relaxation can be induced by the mental device in the second condition.

In the face of Borkovec's commitment to PMR, this result is significant. It points to the possibility of the more effective control of autonomic functions using as a major component, the use of mental devices. The whole strategy of esoteric meditation systems hinges on this important concept. Much emphasis is placed on imagery and visualization techniques. The results seem to be circularly reinforcing. Relaxation techniques develop the innate potential to visualize even in difficult clients. Visualization techniques using mental devices such as imagery and fantasy improve the ability to relax (Lang, 1969). Deep relaxation states produce hypnagogic and eidetic imagery which can be controlled. Control of these factors result in meditative and altered states of consciousness. All states, starting with relaxation and ending in meditation (the controlled inner environment of imagery and awareness) have therapeutic components.

#### 4.3.3 Breathing

Section 2.7 gave sufficient attention to the detail of this subject. The emphasis in Synergism is initially concerned with the slowing down of the breath. This has the effect of capitalizing on the parallel cardio-somatic coupling. As indicated in subsection 2.7.2, significant HR/RR relationships occur at below 8 RR/min. Most people appear to breathe at about 14-20 RR/min, with psychotics generally at the top end of this scale. The relationship between hyperventilation and psychosomatic illnesses is well established. Reductions of 4 RR/min have proven to be beneficial. This is the goal

RR of the Synergistic programme in this thesis.

RR is an autonomic function which is more accessible to conscious manipulation than others. The interdependence of HR, RR, imagery, instructional set, attitudes and skills training was noted in sub-section 2.7.2. BP reduction is especially amenable to HR/RR control. Compared to PMR those techniques which capitalize on the HR/RR interaction are more effective at relaxation. One beneficial effect of slowing down breathing rates is the overall increase in respiration efficiency e.g. increase in amplitude.

Every Synergistic Battery has a breathing component. Four batteries are concerned wholly with breathing. One of the four selected for this thesis (Tape Transcript 4 "Counting" - Annex A, Chapter 4) deals with timing the breath, and consciously slowing it down. It is similar in effect to Brady et.al., (1974) and MCR.

The Daily/Weekly Self-Monitoring Schedule contained at Annex A to Chapter 5 includes an entry for monitoring the RR twice each day. Emphasis is given at each session to RR. The problems related to hyperventilation are explained. The effects of self-monitoring using the schedules assigned to the programme are also explained. Clients are also advised to watch others breathing. This latter technique represents a form of vicarious counter conditioning.

#### 4.3.4 Rotation of Consciousness (R of C)

Sub-section 2.5.4 deals in particular with the established effects of cognitive relaxation. The emphasis throughout the literature review has been concerning two mental devices, a)

self-monitoring and b) imagery (Section 2.8). The passive attitude which is adopted in self-monitoring is a much more effective method of reducing HR/RR/BP than PMR. Add to this imagery techniques cued in to the monitored changes which occur and result in Rr and a powerful relaxation device is obtained.

Brady et.al's (1974) MCR technique has been lauded in detail. The synchopation effect of a metronome has been suggested as the reason for the significant BP reduction which occurs in MCR. Some of this effect has already been noted to enhance breathing reduction (Tape Transcript 4 - Counting). The metronome conditioned effect is used in this Synergistic technique.

In R of C the same MCR effect is capitalized again. The consciousness is allowed to move quickly from point to point over the whole body. There are 89 points of contact altogether. The purpose is to experientially force the mind to be located in the Here and Now. The effect is a deep relaxation. Each point is mentioned in cadence. The timing is approximately 60 points per minute, which is the approximate rate of the resting heart. With practice a therapist can maintain a metronome-like cadence.

The rationale for R of C which is suggested above provides an instructional set which again is important. As a side-benefit body awareness becomes acute when R of C is practiced as a skill training module. It is taught as a whole technique on its own merit in the complete programme of Synergism. Nemiah et.al., (1976) found that psychosomatic sufferers have an inability to be aware of somatic events, cannot relate to

feelings and experience difficulty in some specific localization. This problem is referred to as Alexthymia. R of C can change these effects. Constant practice in R of C, focusses awareness on specific body parts. The R of C technique can be extended to include internal organs and anatomical body parts. It is a sophisticated cognitive device for overcoming Alexthymia.

In such problems, as Alexthymia, the rationale phase could include detailed anatomical charts, and education in physiology. This, coupled with imagery skills training to enhance the ability to visualize actual body parts would make the imagery component of R of C a powerful technique.

In R of C Synergism and its underlying rationale can be seen to good effect. It represents the multiple application of already proven successful technology. MCR conditioning is used in a specific PMR type R of C which is enhanced by using vivid visualization to increase the effect of the cognitively induced relaxation. The efficacy of each of these components has already been established in significant HR/BP reduction. Add these components to expectancy generated by Rationale and a skills training approach, and R of C can be seen to be a powerful relaxing agent in its own right. Most of the essential elements noted in sub-section 2.5.7 have been applied in R of C. The conditioning of a set-piece R of C which does not vary, means that under in vivo stress, a client can quickly mentally check each individual part of the body for two reasons:

1. Check tension levels (as in a SUDS technique)
2. Conduct a relaxation technique which takes 89 secs.

Some clients have reported amazing proficiency with this technique. Constant practice develops the skill of being able to very rapidly check the tension state of the body in an extremely detailed and methodological manner. This skill is often sufficient to break the pattern of Alexthymia.

#### 4.3.5 Awareness

The philosophy of awareness is avoided. In Chapter 2 emphasis is continually related to experience. In Section 2.8 (Imagery), Lang (1969) considered imagery vividness and experiential feeling to be the dominant SC conditions. He proposed that a "fear prototype" exists in the software mechanisms of the brain. This maladaptive software programme he suggests should be interfered with. This is the basic postulate of a Synergistic programme.

Awareness is a multi-dimensional experiential phenomena. Many definitions exist. Few manage to separate awareness from consciousness. Huxley (1977) tries to give an experiential view whilst Sirkler (1977) gives a Christian version. Laing (1974) is quite clearly Existential whilst Shapiro (1978) gives a Buddhist version. White (1975) uses both terms synonymously, yet gives what for this author, is the clearest definition of consciousness among those offered:

"Consciousness is the meeting ground between inner and outer reality" (White, 1975, p.ix).

In his "Celebration of Awareness", Illich (1973) refers to an intrinsic "knowingness", in which awareness is a function of knowing e.g. the social and economic mores which currently dictate the society in which we live. He calls upon individu-

als to reduce the suffering of the world by recognition of abilities such as self-realization, by development of the healing expression, and by expanding the concept of the dignity of man (Illich, 1973, p.19). Each of these are central to Synergism.

An important difference, however, is that Synergism has an Existential (Tantric) base. It is not enough to think, to philosophize or to explore the conditions of consciousness. Awareness is the most central concept. It is the core concept. It is more than a concept, it is an experience. The emphasis is on the acquisition and development of this experience. Practice is the only way, according to Synergism. The techniques of Synergism must become a way of life. When confronted with difficulties - Practice. When tension is noted - Practice. When the mind is confused - Practice. When all else fails - Practice. When the practices don't seem to work - Practice other techniques. Above all, the major admonition is - Practice.

It is through constant practice of the techniques of Synergism that awareness is developed. Initially the awareness is restricted to gross aspects of consciousness.

Consciousness is defined by this author as that aspect to which the awareness is attached. Awareness is the experience of the witness, observer or seer. It is the aspect of the mind which has the ability to know that it is detached. Detachment is possible from emotions, feelings, thoughts and many other aspects or dimensions of the mind.

Illich (1973) talks about the awareness of poverty. He uses verbal shock tactics to shake people into recognising

that poverty is a relative issue. Through intellect a person can suddenly achieve an experience of realization in which for example, instead of pouring money, lives and material into Third World Counties, awareness dawns about New York ghettos, violence or poverty. Toffler conjured similar intellectual tricks in "Future Shock" and "The Third Wave". This represents only one form of awareness.

Hamilton-Merritt (1979) comes close to the awareness important in Synergism, in her meditation diary. Lilly (1977) comes even closer. In his "Simulations of God" Lilly is closest to the experiences of awareness obtained through the practices of Synergism.

The practices which induce relaxation give an experience of the self as a separate entity to the consensually validated self. This aspect is experienced as an objectivised "knower". The mind has the capacity to monitor every physiological function of the body, at the same time that it can talk, live, move and experience being and mind. Each of these separate functions of the mind can be monitored. The mind can be shifted into an attentional mode which allows the mind to focus on itself. Like a microscope, some aspect of the mind can focus on such a small narrow perspective that it becomes "aware" only of e.g. breathing, feeling or a remote pulse on the periphery of the body.

Clients are taught to attend to this focussing. It is not concentration, because the way in which it is achieved is through a passive attitude (generalized non-specific awareness) and then part of the overall pattern is specifically attended to (consciousness). This is replaced by a passive self-moni-

toring of a specific event. This experience is one of awareness.

As pointed out by Lilly, there seems to be no end to the way in which "Awareness", can be refined. Ultimately the experience is that of relaxation or meditation. A continuous experience of this form of awareness develops a strong sense of self-identity. Awareness develops the knowledge of responsibility, choice and the desire to achieve self-control, self-management and as a consequence, growth in self-actualizing terms. It is considered that the function of Awareness is central to the self-management aspect (Section 2.10, Self-Control) of Synergistic Therapy.

#### 4.3.6 Visualization

This component relies heavily on imagery techniques for maximum effect. Visualization, fantasy and vivid imagery are used to obtain different effects. In the Basic Technique (Transcript 1) this self-control (SC) aspect is limited to visualizations to induce a calming effect. In Counting (Transcript 4) the purpose is to initiate extended breathing rhythms so that RR is slowed to 4 RR/min and amplitude increased using a three-part breathing cycle. The mind, imagination and will are incorporated to obtain sensations of a) expansion, contraction; b) rhythmic slow movement of the breath and c) visualization of pathways of the breath. The latter capitalizes on buddhist/tantric meditational practices. The key is the use of imagery to consciously slow down the RR. It is not unusual for clients to slow the breath to 2 RR/min.

The ability to consciously regulate autonomic functions is

quite often unknown in many people who come to therapy. When, through Synergism, they learn that functions such as HR/RR/BP reduction can be achieved quite simply, and especially when deep relaxation ensues from these SC practices the client is reinforced to practice. In many cases compliance and maintenance problems in drug regimens become a natural corollary to Synergism training.

Self-reinforcing cycles are used constantly in Synergism. The ability to relax is reinforced by SC procedures. When these prove simple and successful, SC procedures are used to induce relaxation. Further success often leads to long-term compliance and maintenance. Each component in each twelve component battery helps to initiate the next stage, and reinforces the last. Clients become aware of the additive and progressive way the technique is planned and are impressed by its simplicity and scientific sophistication. Education in skills training, the ability to act as a co-worker in their own treatment programme, the valid scientific rationale on which the system is based all add to the face validity of Synergism. The Existential emphasis on practice, with very little emphasis on problems tends to increase its construct validity. Psychotherapy as a "talk out" strategy is discountenanced. Treatment attends to specific problems e.g. insomnia, anxiety, feelings of selfhood. Practice of techniques, plus attending to specific NOW problems and emphasis on Self-control are the key notes to Synergistic therapy.

A firm contract ensues. The therapist teaches specific techniques. The responsibility of the client is firmly on regular practice, compliance, maintenance and self-control.

Section 2.10 gives full details of Self-Control aspects.

Section 2.8 gives full details of the imagery component.

#### 4.3.7 Resolve

An important part of a Synergism battery is the resolve. This is a positive suggestion initially given by each person, to themselves, at the end of relaxation and before Present Time. At this point a person is at their most suggestive state (vide hypnotism and autosuggestion). Clients are taught to induce this resolve at the end of any relaxation practice, in the morning just as they awaken, or after a deep sleep/rest. The power of positive thinking when a person is in a deeply suggestive state is too well documented to require specific reference.

#### 4.4. In Vivo Generalization

##### Present time technology

There is never any guarantee that a client will remain in a light state of relaxation. Many variables affect each person's ability to relax. It is therefore an important part of the technology to ensure that present time technology is incorporated in every SR programme. Psychic dislocation in its worst state, is akin to schizophrenic experience. This can occur if a client is in a deep state of relaxation and is suddenly dislocated from one state of consciousness to another. Many therapists have not had experiential awareness of deep states of relaxation and are therefore not familiar with the problems of dislocation. Many forms of present time technologies are available in the literature of the American gestalt movement, encounter, T groups and other small group literature.

Present-time techniques are always used in conjunction with each Synergism battery. In Synergism, present-time is linked with the breath. An admonition is given to breathe deeply, and to develop awareness of the physical body. The breath and feelings of the location, placement and anatomical features of the body are brought into synchrony through tense-relax.

#### Cue-Associated Self-Coping (CA-SC)

At the end of Present-time a CA-SC technique is inculcated. The physical stretch at the end of Present-time induces a very effective "Whole Body" Rr. This Rr is used to return the memory pattern of the feelings of calm, joy, peace etc., generated by Rr. Clients are instructed that this Rr feeling is

- a. a memory
- b. their perfect right
- c. the natural state of the SELF

Since it is a memory pattern (or mental attitude) it can be reclaimed at any time from the memory bank. The function of Synergism emphasised at this time, is not to induce relaxation in a stated place, at a certain time (like going to Church only on Sunday). The purpose is to condition the Rr. It is to become the 'normal' attitude. Clients are told that they are to note times, events and sequences of actions in which they develop inappropriate tension. Having mastered the monitoring (and recording on a Self-Report Schedule) clients are then instructed to learn to use the coping Rr and to use a technique appropriate to the circumstance.

Like Patel (1976) a number of simple techniques can be used as a constant reminder to check Rr and levels of tension

(SUDS). The emphasis is on Practice. Success is gauged by the way the Rr is applied to in vivo states.

At the end of each Synergism technique this CA-SC condition is given new emphasis.

### In Vivo

An essential element is considered to be the generalization of relaxation into in vivo situations. Laboratory conducted relaxation or research using controlled environment clients (students) are not considered to have made significant contributions to the identification of the important components of relaxation technology in in vivo treatment programmes. Examples of early research (Shapiro et.al., 1972) used college students in laboratory conditions. Graham et.al., (1977) was one of the first to generalize effects to the natural environment using PMR, although this claim was made later by Beiman et.al., (1978). In fact, Datey et.al., (1969), Patel (1974), Brady et.al., (1974), Patel and North (1975), Patel (1976) and Seer (1977) have been the major proponents of in vivo research, and have made this a vital characteristic of research into treatment. Relaxation techniques in the in vivo condition lead to the in vivo CA-SC condition.

### In Vivo Ca-SC

The in vivo CA-SC condition is another essential element. This area of self-management received early attention by Goldfried (1974). He has since become significant in the area of self-coping strategies in the reduction of anxiety. Goldfried (1977) uses relaxation and cognitive relabeling as a self-coping strategy. His commitment is to systematic desensitization, and therefore the relaxation strategies are the abbrevi-

ated form of Jacobson's Progressive relaxation (PMR). The review of self-help therapy by Glasgow and Rosen (1978) is an excellent review of the self-coping manuals. The seven points made in their discussion are conceded. Section 2.10 should be read in conjunction with this aspect. The six key components outlined are the key to in vivo CA-SC. Synergism is not considered effective until Self-management practice replaces the reliance on therapist initiated techniques.

## 4.5

Summary: Synergism - A Self-Management Strategy

Procedure	Item	Component	Detail	
4.1		Goals and Objectives	Client/Therapist Contract	
4.2 Induction Techniques	1	Rationale	- Education - Commitment - Self-Management - Choice	
	2	Quiet Environment		
	3	Physiological Tension Release Mechanisms	- Sport (e.g. swimming) - Massage - Shiatsu/Acupressure - Hatha Yoga	
4.3 Relaxation Techniques	4	Body Awareness	Savasan - 7 steps	
	5	Relaxation Response(Rr) (Passive Attitude)	Self-monitoring 8 Rr's (HR - BP - RR)	
	6	Breathing Techniques (RR)	- Counting - Rotation - Passages - Centres sensitization	
	7	Consciousness	Rotation	
	8	Awareness	- Sensory - Stop - Focussing - Sound	
	9	Visualisation	- Passages - Centres - Symbol	
	10	Resolve	Resolve - positive suggestions Self Statement - Awareness of self	
	4.4 In Vivo Generalization	11	Present time technology	
		12	In vivo	Cue Associated Self-coping Active Self-monitoring

## CHAPTER 5

RESEARCH DESIGN - SYNERGISM

- 5.1 General
- 5.2 Aim
- 5.3
- 5.4 Hypothesis
- 5.5 Time Frame
- 5.6 Experimental Design
- 5.7 Method - General
- 5.8 Details of Each Experiment

## CHAPTER 5

RESEARCH DESIGN - SYNERGISMOVERVIEW5.1 General

5.1.1 Chapter 1 constituted a statement and preliminary overview of the objectives of this thesis i.e:

- a. To attempt to define and identify self-perceived stress.
- b. To establish relaxation as a major treatment strategy.
- c. To emphasise non-pharmacological intervention.
- d. To propose SYNERGISM as an effective treatment strategy for the reduction of self-perceived stress.

Synergism is a new technology. It is built upon data already in existence but is not related to PMR or SD. The latter are generally the most used and researched complete non-pharmacological treatment strategies used by contemporary psychologists.

The technique outlined in this thesis has been developed from the medical thesis presented at London University by Chandra Patel MD (in 1976). It had been used earlier in 1968 by an Indian cardiovascular specialist Dr. D. Datey of Bombay. The technique is now in use at Norwich Park where the hypertension clinic is world renowned. The writer was taught the technique at the same place as Dr. Datey in Kaivailydharma College, Lonavla, outside Poona in India.

The particular technique used by Chandra Patel was improved by the author. The technique was used successfully in a relaxation clinic for over three years from 1975, for many different complaints. Any therapist or counsellor can apply the technique. Persons can use the technique on themselves or have others use the technique on them without concern. Although it is a powerful relaxation technique it is both simple and safe as well as effective.

5.1.2 Chapter 2 of this thesis constituted a detailed literature review. It was used to justify and validate Synergism by reviewing in detail the literature relating to relaxation, self-perceived stress and placebo factors. The purpose of each section was very specific.

<u>Section</u>	<u>Subject</u>	<u>Purpose</u>
2.1, 2.2	Disorders, Stress,	Identify the problem i.e. self perceptions
2.3	Anxiety	Validation of measuring instruments
2.4	Rationale	Statement of underlying theoretical perspective
2.5	Relaxation	Identification of key components in current strategies
2.6	Meditation	Emphasis on 'demystification'
2.7	Respiration	} Key components of Synergism which are used to establish this technique as an essentially different "demystified" relaxation strategy
2.8	Imagery	
2.9	HR Control	
2.10	Self-Control	
2.11	Relaxation Response	
2.12	Placebo	A treatment strategy in its own right

There were two specific objectives achieved in Chapter 2.

- a. To review the literature pertaining to stress and anxiety, relaxation and placebo.
- b. To analyse systematically the key components of relaxation so that the basis of the new technique could be established.

Assumptions: A number of assumptions were developed in Chapter 2 which are critical to this thesis.

a. Self-Perceived Stress

- Anxiety, stress and their perception constitute complex phenomena
- There is a statistically significant incidence of HiAnx within a normal population
- Self-perceived stress is related to HiAnx (high anxiety)
- The incidence of self-perceived stress can be reduced significantly using relaxation techniques

b. Relaxation

- Relaxation is a multi-modal phenomena
- It has been used with varying degrees of success to reduce anxiety, stress and self-perceptions of stress

c. Synergism

- Synergism combines the elements and key components of the most contemporary techniques and knowledge into a more powerful relaxation strategy than any currently employed
- Central to the new strategy of Synergism are the key components relating to:

Rationale	Relaxation	Meditation
Respiration	Imagery	HR Control
Self Control	Relaxation Response	

d. Placebo

- Much of the effectiveness of relaxation research is contaminated by placebo effects
- Placebo is an effective relaxation technique in its own right

5.1.3 Chapter 3 conducts a detailed review of Patel's (1976) thesis. This is considered a significant contribution to contemporary relaxation strategy. Patel's (1976) thesis has been fundamental to the development of Synergism.

5.1.4 Chapter 4 is primarily concerned with proposing Synergism as a complete and self-contained Self-Management strategy as a systematic development and improvement on Patel's (1976) thesis. The emphasis in Synergism is on Self-Management in vivo, as a long term CA-SC maintenance strategy affecting quality of life issues.

5.1.5 Chapter 5 is concerned with presenting a detailed Research Design which is replicable in all essential items. Synergism is proposed as a research-oriented strategy.

Assumptions: Some basic assumptions concerning Synergism are:

- Synergism - is an effective relaxation technique
- it can significantly reduce the incidence of self-perceptions of stress and anxiety
  - it is an effective attitude modification technique influencing quality of life issues

5.2 Aim

The aim of the present design is to evaluate the efficacy of the model of relaxation called SYNERGISM.

5.3 The research aim will be tested on a sample of University students, sub-grouped on a basis of measured anxiety level of self-perceived stress. A treatment condition using Synergistic treatment will be compared with a control condition. Synergism involves attitude change along self actualizing dimensions and behavioural change along the specific dimensions of HR and RR. An investigation into these specific and central treatment effects will be conducted using Shostrom's (1966) POI to measure self-actualizing values and a Self Monitoring Schedule developed by the author to measure HR, RR and general attitudes.

#### 5.4 Hypothesis

That the incidence of self-perceived stress and anxiety can be significantly reduced by Synergism as the relaxation strategy.

#### 5.5 Time Frame

The actual treatment programme - SYNERGISM (modified) is eight weeks. Pretesting commences the week before the Synergism treatment programme, and post-testing is finalized in the week after the end of the Synergism programme. Each research programme is therefore a total of ten week's duration.

#### 5.6 Experimental Design

There were three experiments in the present study with Experiment One and Experiment Two being conducted concurrently and prior to Experiment Three. All groups contained ten subjects except for Experiment One. The Baseline Group in Experiment One numbered one hundred and twenty one subjects from an initial sample of one hundred and thirty subjects. All experiments were conducted over a ten week period. The total design consisted of two phases.

Phase 1

- |                    |                             |
|--------------------|-----------------------------|
| (a) Experiment One | (i) Baseline Group          |
| (b) Experiment Two | (ii) Experimental Group One |
|                    | (iii) Control Group         |

Phase 2

- |                      |                           |
|----------------------|---------------------------|
| (c) Experiment Three | (iv) Experimental Group 2 |
|                      | (v) Placebo Group         |

## METHOD

5.7 General

A number of details are identical throughout each experiment. An overview of the general experimental method is given in Section 5.7.1. Subsequent chapters will deal with the specific details relating to each experiment. In general terms Experiment One was used to establish normative data with respect to the primary test instrument (i.e. self-perceived stress, the IPAT-SAQ). Experiment Two performed the task of testing the significance of Synergism as a treatment strategy. The purpose of Experiment Three was to further test Synergism as a treatment strategy compared to a Placebo treatment group. The whole design can thus be viewed as a cumulative investigation into self-perceived stress and its reduction using Synergism as the primary intervention technique.

5.7.1 Subjects

A total of one hundred and fifty-one undergraduate full-time students of Massey University took part in the three experiments. All were volunteers, and no monetary or academic inducements were offered. All except Experimental Group 1

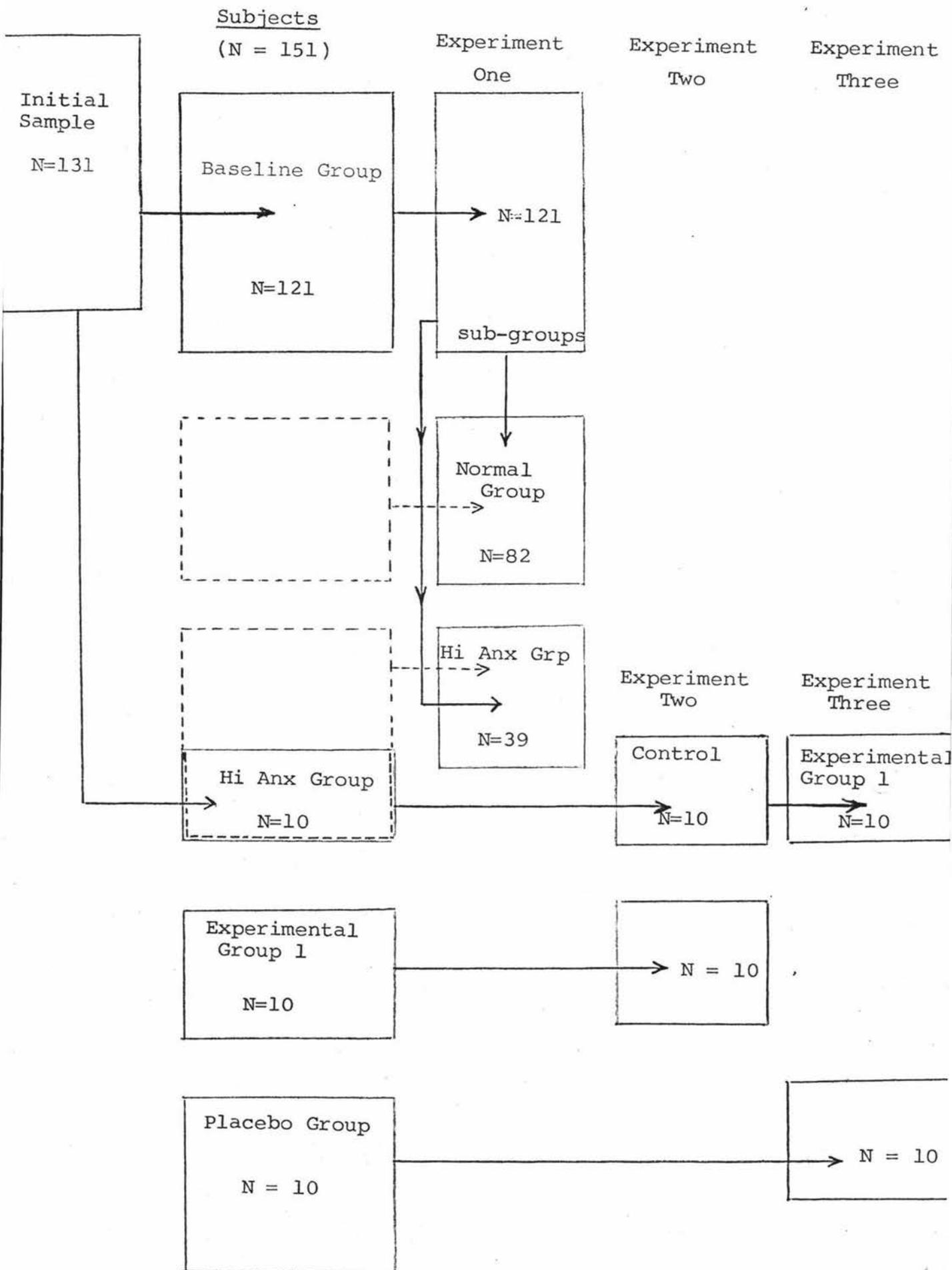


Figure 1. Composition of groups in each experiment

were first year psychology students.

### 5.7.2 Initial Diagnosis - Self-Perceived Stress

All subjects completed the IPAT-SAQ, which is an instrument for the measurement of self-perceived stress (Cattell & Scheier, 1963). Initial diagnosis was therefore at all times, consequent to self report of self-perceived anxiety.

### 5.7.3 Instruments

Three measures were used in pre- and post test conditions:

Self Anxiety Questionnaire, IPAT-SAQ (Cattell and Scheier, 1963)

Personal Orientation Inventory (Shostrom, 1966)

Self-Monitoring Schedule (See Section 2.3.7 p. 72)

and the pattern of testing is shown in Figure 2.

Experiment	Group	(N)	Pretest	Post-test
Experiment One	<u>Main Group</u>			
	Baseline Group	121	*	*
	<u>Sub-Groups</u>			
	Hi Anx	39	*	*
	Normal	82	*	*
Experiment Two	Experimental Group One	10	* ⊕	* ⊕
	Control Group	10	*	*
Experiment Three	Experimental Group Two	10	* ⊕ +	* ⊕ +
	Placebo	10	* ⊕	* ⊕

Instruments: \* IPAT-SAQ    ⊕ POI    + SMS

Figure 2. Details of test usage with each experiment

A brief description of the measuring instruments utilised in the present research is now given.

#### 5.7.4 IPAT-SAQ

This was given detailed attention in Section 2.3.4 (Chapter 2). It was the preferred instrument to the State-Trait Anxiety Inventory (STAI - Spielberger, Gorsuch and Luschene, 1970), which is given detailed attention in Section 2.3.3. (Chapter 2). The IPAT-SAQ is easier to administer and score and correlates very high (.80) with the STAI, and highly with other measures of self-perceived stress (see Section 2.3.2, Chapter 2).

#### 5.7.5 POI

This was given detailed attention and description in Section 2.3.6 (Chapter 2) and its justification as a therapeutic measure of Social Skills training is given attention in Section 2.3.5 (Chapter 2). The POI is a detailed attitude modification scale on critical quality of life issues. Both these factors are central to the long term effectiveness of Synergism.

The POI contains 14 sub-scales, each of which are specific to various aspects of an existential philosophy. It was emphasised in Chapter 4, that Synergism is essentially a practical technique with Existentialism as the underlying philosophy. In keeping with the non-philosophic approach, the POI is used as a teaching/discussion instrument for highlighting key elements in the Existential literature. The "Appendix of Keyed Alternatives" in Annex C to this section is the basic training facility.

The POI is used to measure what are considered to be critical changes in attitude which have a therapeutic influence.

#### 5.7.6 SMS

Section 2.3.7 (Chapter 2, p. 72), is a detailed justification for the behavioural inventory battery. The SMS has been satisfactorily used in a Relaxation Clinic in Toowoomba as an intervention strategy over a period of three years. This is the first experimental use of this instrument.

Three variables were measured by the SMS, although its possible extension as a BP measure has been noted. The variables measure in the thesis were measures of:

- a. Pulse (HR)
- b. Breath (RR)
- c. Attitude

More detailed description of these measures follow.

#### Pulse Rate (PR)

As part of the process to sensitize subjects to the Rr Section 2.11 (Chapter 2) the SMS is used to monitor the pulse twice daily continuously over the full duration of the course. These gross readings are a behaviour modification strategy when the rationale of self-monitoring (Section 2.10) is given emphasis. Whether actual discrete changes take place, whilst of intrinsic worth, they are not the relevant issue. The essential issue is the behavioural act of self-monitoring which leads to SM and SC. This becomes an essential part of daily behaviour. Eventually the aim is that self-monitoring becomes a cue-associated therapeutic intervention strategy in vivo.

### Respiration Rate (RR)

Enough emphasis is given on the aspect of breathing, specifically in Section 2.7 (Chapter 2) and continuously, where relevant, throughout this thesis. It is again emphasised that HR and RR control are central to Synergism. HR is grossly measured by PR - this is sufficient a measure for each subject to observe changes in vivo. RR (Section 2.7) is the major technique for HR Control (Section 2.9).

Wedded to the Rationale (Section 2.4) for Synergism with particular emphasis given to Imagery (Section 2.8) and Self-Control (Section 2.10) these two measures are considered to be key components in Synergistic technology.

Self-monitoring is a strategy in its own right (Hersen and Bellack, 1976). Special attention to HR and RR makes this a powerful CA-SC technique, as well as having the therapeutic effect of reducing HR/RR.

### Attitude/Feeling Measure

Daily monitoring of "Today I Felt", gives overall attention to attitude and feeling measures. These components are given particular emphasis by Carkhuff and Berenson (1967) and the training systems which are given attention by Carkhuff. This training system is essentially practically oriented and in vivo oriented. Its emphasis on attitudinal/feeling factors is therefore adopted as a key experiential variable.

Again, the purpose is not necessarily direct measurement, although this may have intrinsic merit, along the dimensions selected. The purpose is essentially the development of awareness of factors considered in this thesis to be critical behavioural change domains.

Subjects are required to first monitor these aspects of themselves. Then they are encouraged to change these attitudes towards those considered therapeutic, i.e. the attitudes of relaxation depicted on the SMS.

#### 5.7.7 Summary

There are three primary areas of interest which these selected instruments identify. The IPAT-SAQ is diagnostic. It measures the incidence and degree of self-perceived stress in individuals and across groups. The POI has the capacity to monitor significant attitude change along dimensions considered by this author to be therapeutic. The SMS has the ability to measure treatment gains in behaviour change terms, and it has the ability to demonstrate those gains to the client. Each measuring instrument selected has a simple structure which enables it to be used in conjunction as a therapeutic measuring device and a teaching medium with client participation.

#### 5.8 Details of Each Experiment

Specific details regarding each experiment follow in the next three chapters. A cumulative pattern will be seen to emerge as each experiment proceeds. It was determined that the clearest presentation is achieved by presenting the complete details of each experiment in succession. The final chapter of this thesis contains a composite discussion which links together the critical features of each experiment.

## CHAPTER 6

EXPERIMENT ONE

## 6.1 Baseline Group

Method

## 6.2 Subjects

Results

## 6.3 Analysis of Baseline Group Data

Discussion

6.4 IPAT-SAQ- Discrimination of Self-  
Perceived Stress/Anxiety

## 6.5 Sex Discrimination - IPAT-SAQ

Further Research

6.6 IPAT-SAQ - Discrimination of Treatment  
Effects

## CHAPTER 6

EXPERIMENT ONE

## INTRODUCTION

6.1 Baseline Group (N=121)

The purpose of this experiment was to gather baseline data, specifically in relation to the IPAT-SAQ, relative to a New Zealand university student population. The IPAT-SAQ is the central instrument used throughout each experiment to determine self-perceptions of stress or anxiety among a New Zealand student population. It was considered essential to gather baseline data with which comparisons could be made in each subsequent experiment.

Initially one hundred and thirty-one students volunteered to participate in a simple pre- and post NO TREATMENT condition using the IPAT-SAQ as a measuring instrument.

Analysis of pre-test IPAT-SAQ results revealed that a little more than one third of the student group ( $^{49}/_{131}$ ) had an IPAT-SAQ raw score in excess of forty. This category is identified as high anxiety by Cattell and Scheier (1963) who recommend that this category be given some stress/anxiety reduction therapy. Under normal disclosure conditions the group of forty-nine students self-perceived as high anxiety (+40 = Hi Anx) would be offered stress reduction treatment (e.g. Synergism). This presented an ethical dilemma.

The contract with the initial group of volunteers (131)

was negotiated on the basis of anonymity. This ethical dilemma was resolved at the conclusion of the post-test IPAT-SAQ data session. During this session all subjects had been briefed on the IPAT-SAQ results of Experiment One, and the IPAT-SAQ results obtained from Experimental Group Two (Synergism Treatment Group). At the conclusion of this briefing, all students in Experiment One with a raw score of forty or more on the IPAT-SAQ were identified using a code system devised for Experiment One which was only meaningful to each individual student.

This still anonymous group was advised of the need for treatment, and of the successful use of Synergism as a stress reduction treatment programme as revealed by Experiment Two results. An invitation was extended to this anonymous Hi Anx group of 49 students to volunteer for a further experiment involving Synergism as the treatment strategy. Ten subjects responded, coming independently to volunteer as subjects as a Control Group for Experiment Two, and as Experimental Group Two in Experiment Three.

The Baseline group was thus reduced to one hundred and twenty one subjects (from 131). Using Cattell and Scheier's (1963) criteria, this Baseline group was divided further into two subgroups (see Figure 1). These sub-groups were Hi Anx (raw score = + 40) and Normal (raw score = minus 40).

#### 6.1.1 Justification for Sub-groups

The use of IPAT-SAQ as an instrument to indicate levels of self-perceived stress is proposed as being more valid if an analysis is conducted using Cattell and Scheier (1963) criteria based on a cut-off IPAT-SAQ raw score of 40. The sub-

groups data based on this criteria is considered more meaningful.

When conducting a treatment programme, the diagnosis which determines the need for treatment is based on the IPAT-SAQ criteria of self-perceived high anxiety. Pre-treatment condition experimental groups are therefore better compared to the data of the Hi Anx group (derived from the Baseline Group) rather than direct comparison with the Baseline Group itself. It seems more pertinent and more valid to be able to compare a Hi Anx treatment group with a Hi Anx Baseline group especially in this pre-treatment condition. Table 1 data does not allow such sophistication.

The treatment outcome is determined by post-treatment testing using the IPAT-SAQ. Comparison of an experimental group in a treatment condition, is considered to be more meaningful if the obtained results are compared to a Normal group no treatment condition (derived from the Baseline Group). The mean scores of the Normal group are not contaminated by the inclusion of high anxiety scores. Since the obtained Normal group scores are lower than the Baseline Group scores (see Table 3) then the use of the Normal group scores as a comparative data base for comparing treatment effects seems not only valid, but also places a greater demand on the treatment's effectiveness.

Table 2, contains the results of dividing the Baseline Group scores into Hi Anx and Normal derived from Cattell and Scheier's (1963) criteria. It is suggested that these scores are more valid as comparison for the purpose of the IPAT-SAQ pre and post test conditions:-

- a) to identify whether a treatment condition exists (vide Hi Anx group)
- b) to establish whether any particular treatment programme is effective (vide Normal group)

## METHOD

### 6.2 Subjects

Figure 1 shows the various groups which comprise Experiment One. The initial group of 131 students consisted of a Baseline Group (n = 121) and a Hi Anx group (n = 10) which was used as a Control Group in Experiment Two. The only group in Experiment One was therefore the Baseline Group (n = 121), which was subsequently divided into two categories Hi Anx, and Normal for the purpose of analysis and comparison with other experimental groups in subsequent experiments.

#### 6.2.1 Baseline Group (n = 121)

Forty male students and 81 female students (n = 121) participated in this baseline study. Subjects from this group were administered only the IPAT-SAQ in pre- and post-test conditions. Eight weeks elapsed between the pre- and post-tests. This constituted a NO TREATMENT condition. Anonymity was the negotiated contract. Each student was issued with a personalized code number which was meaningful only to each individual student. This same code number was retained by each student for the post-test. This group consisted of first year psychology students from Massey University.

### 6.2.2 Sub-groups of Baseline Group

The Baseline Group (n = 121) was divided into two sub-groups:

Hi Anx Group (n = 39)

Based on Cattell and Scheier criteria (1963) of an IPAT-SAQ raw score of 40, analysis of the pre-test IPAT-SAQ scores revealed a group of 39 subjects from Baseline Group were in the Hi Anx category. This HiAnx group consisted of 26 females and 13 males.

Normal Group (n = 82)

Once the Baseline Group (n = 121) had been reduced by the Hi Anz group (n = 39), the remaining sub-group was categorised as a Normal group consisting of 82 subjects. This Normal group contained 55 females and 27 males.

## RESULTS

### 6.3 Analysis of Baseline Group Data

The IPAT-SAQ scores for each subject in the Baseline Group were calculated for both the pre- and post-test conditions. The means and standard deviations for the Baseline Group and for both sub-groups (Hi Anx and Normal) are shown in Tables 1 and 2 respectively. Planned t tests were conducted on these values. These results are shown in Table 3. Subsequent analysis of Baseline Group data revealed no significant differences between IPAT-SAQ scores between males and females ( $\chi^2 < 1$ , df = 2).

Table 1

IPAT-SAQ Values for Baseline Group Only

Group	N	Pre-test	Post-Test	t value	Significance (sig)
Base-line	121	$\bar{X}$ 35.05	35.95	-1.32	Non sig.
		SD 10.37	10.66		

Table 2

IPAT-SAQ Values for Hi Anx & Normal sub-groups

Sub-group	N	Pre-test	Post-test	t value	Significance (sig)
Hi Anx	39	$\bar{X}$ 47.3	46.95	0.33	Non sig.
		SD 4.9	6.98		
Normal	92	$\bar{X}$ 29.2	30.2	-1.82	Non sig.
		SD 6.4	7.7		

Table 3

Between Group IPAT-SAQ t values for both Sub-groups

Test Condition	Sub-group	N	$\bar{X}$	SD	t value	
Pre-test	Hi Anx	39	47.3	4.9	1.70**	(** $p < 0.01$ )
	Normal	82	29.2	6.4		
Post-test	Hi Anx	39	46.95	6.98	1.22**	(** $p < 0.01$ )
	Normal	82	30.7	7.7		

## DISCUSSION

6.4 IPAT-SAQ - Discrimination of Self-perceived Stress/Anxiety

In all groups of Experiment One, there was no significance within groups tested over an eight week No Treatment condition. When a large population sample of University students is tested on the IPAT-SAQ, it is sensitive enough to tease out differences between two groups (Hi Anx and Normal) which are significant. This indicates that the IPAT-SAQ is a valid measure for differentiating between various conditions of self-perceived stress such as Cattell and Scheier's (1963) criterion, and for discriminating between subjects with self-reports of high-anxiety and subjects who do not report this condition.

6.5 Sex Discrimination - IPAT-SAQ

The sex composition of all groups in each experiment was at least two third females. The finding that no statistical adjustments need be made in subsequent experiments for the sex bias of each group was therefore important.

## FURTHER RESEARCH

6.6 IPAT-SAQ - Discrimination of Treatment Effects

Having established that the IPAT-SAQ is a valid measure of self-perceived anxiety on a New Zealand university student sample in Experiment One, it is intended to use the IPAT-SAQ in Experiment Two to discriminate treatment effects to test the efficacy of Synergism as a treatment programme. The IPAT-SAQ has been shown to discriminate between two groups of clients i.e. those in need of a stress reduction

treatment programme (Hi Anx group) and those who can serve as a valid measure of treatment outcome effectiveness (Normal group).

Experiment Two is designed to test these assumptions and at the same time establish whether Synergism is an effective treatment programme. Experimental Group 1 will be shown to be in the Hi Anx category as is also the Control Group. These two groups may be compared in the pre-test condition to the Baseline Group sub-group (Hi Anx group), which is sufficient to suggest treatment. The implication is that the measures indicating pre-test Hi Anx in Experimental Group 1 should undergo significant reduction in perceived tension levels at post-test after Synergism treatment. The NO TREATMENT group (Control group) should not result in any significant change. The IPAT-SAQ is to be the primary test instrument in each experiment.

CHAPTER 7  
EXPERIMENT TWO

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## CHAPTER 7

EXPERIMENT TWO

## INTRODUCTION

7.1 General Outline

The purpose of this experiment was to test the hypothesis that Synergism is an effective treatment programme for the reduction of self-perceived stress and anxiety.

Two groups were used in this experiment to test the thesis hypothesis. Experimental Group 1 was obtained subsequent to on-campus advertising for an Assertion Training group. This group received Synergism as the treatment program. The Control group for this experiment was derived from the Hi Anx volunteer group obtained from the initial group of volunteers (N = 131). Figure 1 (Chapter 5) gives a clear picture of the derivation of the two groups in this experiment.

Three instruments were used in this experiment each of which were detailed in Chapter 5. In this experiment the primary measurement of treatment outcome was the IPAT-SAQ. In order to determine some specific attitudinal changes which occurred as a result of Synergism, each subject in Experimental Group 1 was given a POI in pre and post-test conditions. The Synergism treatment programme involves the daily use of the SMS, which can be used both as a treatment regimen and as a measure of change. In this experiment the SMS was purely a treatment regimen.

## 7.2 Subjects

There were two separate groups of students totalling twenty subjects in this experiment. All were Massey University full-time students. Ages ranged from eighteen to forty-five years. All were voluntary subjects and no academic or monetary inducements were offered for participation in the experiment. A total of five males and fifteen females took part in a two group design with 10 subjects in each group:

Experimental Group 1 (Assertion Training Group)

Control Group (Hi Anx Group)

A summary of this general outline is shown in Figure 3.

### 7.2.1 Experimental Group 1 (N=10)

Originally 15 subjects responded to an on-campus advertisement for Assertion Training. The advertisement gave details emphasising the Self-Control aspect. Three males and twelve females responded. The sample consisted of full time Massey University students from different faculties and at different academic levels.

After initial briefing and pre-test IPAT-SAQ, five females elected not to continue. Details of this group are contained at Appendix G.

The remainder, consisting of three males and seven females (total = 10 subjects) completed the eight week Synergism treatment course as Experimental Group 1. All subjects in this group having completed the IPAT-SAQ then went on to complete the POI at the initial session. The eight week Synergism treatment programme commenced in the week following the initial briefing session and pre-tests. Experimental Group 1 was a Synergism treatment condition. In the tenth week, subjects were administered post-test IPAT-SAQ and POI. Figure 4 gives details of the testing/programme schedule.

Treatment	Groups	Instruments	Purpose
		(all pre/post-test conditions)	
SYNERGISM TREATMENT PROGRAM	Experimental Group 1	IPAT-SAQ	- Measure treatment outcome
	(Assertion Training Group)	POI	- Measure attitude change
	(N=10)	SMS	- A treatment regimen only
NO TREATMENT CONDITION	Control Group (Hi Anx Group)  (N=10)	IPAT-SAQ	- Measure treatment outcome

Figure 3: General outline of Experiment Two

Period:-	Week 1	Weeks 2-9 incl.	Week 10
Programme:-	Briefing	Synergism Treatment Programme (8 weeks)	Debriefing
Tests:-	IPAT-SAQ (pre-test)  POI (pre-test)		IPAT-SAQ (post-test)  POI (Post-test)

Figure 4: Testing/Programme Schedule Experimental Group 1

### 7.2.2 Control Group (N=10)

This group of ten volunteer subjects were derived from the original group of 49 subjects self-perceived as high anxiety subjects by the Cattell and Scheier (1963) criterion (Hi Anx = raw score greater than 40). Of the original group of Hi Anx subjects, 10 volunteered to act as a Control Group for Experiment Two and a Synergism Treatment Group (Experimental Group 2) in Experiment Three. For details see Figure 1.

The subjects in this group comprised two males and eight females. All completed the IPAT-SAQ in pre and post-test conditions. This group was a no treatment group in Experiment two.

### 7.3 Procedure

Synergism was used as the specific treatment programme for Experimental Group 1 in this experiment. The detailed Synergism treatment programme is contained in Appendix H. Complete details of Synergism as a multi-modal treatment package are contained in Chapter 4, and in Chapter 5. The Control Group was a no treatment condition.

#### 7.3.1 Experimental Group 1 (Assertion Training Group)

General: Ten subjects volunteered for this group and were given a synopsis of Synergism which included aims, objectives and techniques. It was explained the course took 8 weeks to complete making a total of 10 weeks for the inclusion of pre/post testing. Each subject volunteered a behavioural contract for the duration of the experiment.

Testing: Two instruments were used as the actual pre/post-test measures. These were the IPAT-SAQ and the POI. The

SMS was used as a treatment strategy in this experiment, not as a measurement/testing device. The two measuring instruments were used as a pre-test in the week prior to commencing the Synergism treatment programme and as a post-test in the week following the conclusion of the programme.

Weekly Training Sessions: This consisted of a two hour session each week, for the total of eight weeks. At each session the experimenter conducted a 45 minute Synergism technique given live and this session was tape recorded simultaneously. A transcript of each taped session is contained at Appendix A. Subjects then discussed their experiences briefly for 15 minutes.

The second hour of the session consisted of a rationale, given by the experimenter, for the technique given in the previous one hour session. At the conclusion of this session, a printed rationale was distributed (Appendix C) and some discussion concerning the previous week's handouts took place.

Treatment therefore consisted of: a) Weekly sessions: These lasted two hours, consisting of a 45 minute treatment technique which was taped, and a printed handout plus a one hour rationale. b) Daily sessions: Each subject was instructed to play the taped treatment programme daily. Individual cassette tapes, and where necessary departmental on-loan tape recorders were supplied free to each student.

Daily Self Monitoring: Each subject was also instructed to check specific physiological and attitudinal components and to record the results on the SMS (Appendix D). The SMS was issued at the conclusion of each weekly training sessions. The SMS schedules of twice daily self-monitoring of pulse and

breathing rates, and daily attitude were handed in at the next weekly training sessions.

Physical treatment conditions: The treatment room was allocated solely for Experimental Group 1. It was small enough to comfortably accommodate all 10 subjects. Central heating kept the room at a constant comfortable temperature, lighting was reducable and noise minimal. The room was situated in a central area on the eighth floor of an on-campus teaching block. Subjects lay on a carpeted floor and covered themselves with a personal blanket for the first hour of each weekly training session. The blanket was necessary to control body heat loss due to hypometabolic reaction resulting from deep relaxation (Benson, 1974), during the first 45 minute session.

### 7.3.2 Control Group (Hi Anx Group)

This was a no treatment condition in which each subject completed pre- and post-test IPAT-SAQ over the same time-frame as Experimental Group 1.

### 7.3.3 Shostrom's (1966) POI

General: Throughout Chapter 2, there is continuous reference to the importance of attitude change along specific dimensions. Placebo effects (Section 2.11) are a dramatic expression of the fact that a person's attitude is a critical variable affecting the healing process.

Shostrom's (1966) POI measures the degree of change in attitude considered to contribute to successful therapy. For this reason the POI was administered in both pre- and post-test conditions. The POI profiles from Experimental Group 1 obtained in Experiment One are shown in detail at Appendix I. The Con-

trol Group were not administered the POI. Since there was no other comparative group with which to compare the POI results, it was not used as a treatment outcome measure.

Administration: The POI takes between 45 minutes to one hour to complete. Time constraints prohibited its use with the large Baseline Group, which incorporated the Control group. The POI was therefore used exclusively for Experimental Group One in Experiment One.

POI Sub-Scales: The two major scales of the POI are those of Time Competence and Inner Directedness (Tc + I) and a composite POI scale constructed as a summation of the remaining POI sub-scales.

Max Score			
26	SAV	Self	Actualizing Value
32	Ex	Existentiality	
23	Fr	Feeling	Reactivity
18	S	Spontenaity	
16	Sr	Self	Regard
26	Sa	Self	Acceptance
16	Ne	Nature	of Man
9	Sy	Synergy	
25	A	Acceptance	of Aggression
28	C	Capacity	for Intimate Contact
Total POI Score	219	All sub-scales	

#### 7.3.4 SMS

This instrument is built into the Synergism treatment programme. It is administered at the conclusion of every Synergism Weekly treatment session and is collected at the immediate and subsequent Synergism weekly treatment session.

In this experiment it is not used to measure<sup>r</sup> therapeutic outcome.

## RESULTS

7.4 IPAT-SAQ

The scores for the IPAT-SAQ, were subjected to analysis of variance. An ANOVA summary is shown in Table 4. In this experiment, the IPAT-SAQ was the primary measure of treatment outcome.

## 7.4.1

Table 4

Summary of Analysis of Variance in  
Experiment One (IPAT-SAQ)

Source	ss	df	MS	F
<u>Between Subjects</u>				
A (Experimental Group 1 and Control Group)	354.02	1	354.01	12.27**
Error 1	519.25	18	28.84	
<u>Within Subjects</u>				
B (Pre-test/Post- test)	1134.22	1	1134.22	83.59**
A X B	497.02	1	497.02	36.63**
Error 2	244.25	18	13.57	

\*\*  $p < 0.01$

7.4.2 Treatment Outcome (IPAT-SAQ)

The analysis in Table 2 reveals a significant difference between the groups  $F(1,18) = 12.27$ ,  $p < 0.01$ , and a significant difference between the pre- and post-test scores,  $F(1,18) = 83.59$ ,  $p < 0.01$ . The interaction between these was also significant,  $F(1,18) = 36.63$ ,  $p < 0.01$ .

### 7.4.3 Comparison of Means (IPAT-SAQ) Experiment One and Experiment Two

The purpose of Experiment One was to gather baseline data relative to a New Zealand university student population. This data is an important basis for comparison of results of Experiment Two. For the purpose of comparison the means of all groups in both experiments are displayed in Table 5 below.

Table 5

Comparison of Means IPAT-SAQ  
Experiment One and Experiment Two

Experiment	Group		Pre-test	Post-test	
One	Baseline	$\bar{X}$	35.05	35.95	
		SD	10.37	10.66	
	<u>Subgroups</u>				
	Hi Anx	$\bar{X}$	47.3	47.0	
		SD	4.9	6.98	
	Normal	$\bar{X}$	29.2	30.2	
		SD	6.4	7.7	
	Two	Experimental Group 1	$\bar{X}$	54.7	36.1**
SD			5.19	4.15	
Control Group		$\bar{X}$	52.7	49.1	
		SD	4.27	4.36	
Follow-up Control Group		$\bar{X}$	46.75	45.0	
		SD	5.3	5.1	

\*\*  $p < 0.01$ )

Planned comparisons using t tests were conducted between each of these groups to establish:

- a. the discriminant validity of the IPAT-SAQ,
- b. between group significances which are useful to analyse the data in the above table.

These are discussed in Section 7.8.

### 7.5 POI

The detailed POI results can be seen in Appendix I. These indicate that significant changes ( $p < 0.01$ ) have occurred. Post-hoc comparisons reveal that the greatest changes occur along the following attitudinal dimensions, as shown in Table 6.

Table 6

POI Scores - Summary of Major Changes

Sub-scales	Pre ( $\bar{X}$ scores )	Post	t value	df	pre/post differences
SAV	13.7	18.7	-3.41**	9	3
EX	18.0	24.6	-5.44**	9	6.6
S	9.5	13.0	-5.82**	9	3.5
C	16.9	21.1	-4.08**	9	3.0

\*\*  $p < 0.01$

### 7.6 SMS

The SMS was not used in this experiment as a measure of treatment outcome.

### 7.7 Follow-up Group - Experiment One

This group participated in pre- and post- IPAT-SAQ tests. Table 5 gives details of the results. A planned comparison using a t ratio was computed.

Table 7

Follow-up Group IPAT-SAQ pre- and  
post test mean scores

N		Pre-test	Post-test	t value	sig.
4	$\bar{X}$	46.75	45.00	0.391	non sig.
	SD	5.3	5.1		

## DISCUSSION

### 7.8 Overview

This discussion will restrict itself to the findings of the first two experiments. Detailed discussion of Chapter 2 is already contained in Chapter 4 - Synergistic Relaxation, which also built on the analysis of Patel's (1976) thesis contained in Chapter 3. The purpose of Chapter 5 was to document detailed replicable data for a research design based on Synergism to test the hypothesis:

That the incidence of self-perceived stress and anxiety can be significantly reduced by Synergism as the relaxation strategy.

The purpose of Chapter 6 - Experiment One, was to establish a data base to test this hypothesis and Chapter 7, is concerned specifically with the analytical discussion of this data base and comparisons with Experiment Two to determine the efficacy of Synergism as a treatment for self-perceived stress. The purpose is not comparative with other treatment models. This will be the subject of Experiment Three.

There are a number of people who self-perceive stress or anxiety, and either require skills training (e.g. Assertion

Training), or are suffering from psychosomatic or neurotic disorders. Assumptions implicit in both Synergism and the research design are that most of these persons respond to a programme incorporating the critical elements of: anxiety reduction; attitude modification; behavioural change.

Evaluative methodology is based on these implicit assumptions.

Experiment Two was a formative experiment. The purpose was to establish that Synergism is effective in reducing the incidence of self-perceived stress. For this purpose the IPAT-SAQ was the critical evaluative instrument. The POI was used to analyse the attitudinal changes predicted by the Synergism model. In this experiment the SMS was specifically used as a technology of Synergism.

Results pertinent to all three instruments will now be analysed each in turn.

#### 7.9 IPAT-SAQ as a Measure of Self-Perceived Anxiety/Stress

The evidence from Experiment Two establishes that both groups self-perceived a high level of anxiety. Comparison of Control Group with Experimental One group allows for assumptions about these groups and about treatment outcomes. Comparison of both pre- and post-test means of the Baseline group (Baseline Group  $\bar{X}$  pre- 35.05, post- 35.95) establishes that the pre-test mean of Experimental group 1 (Exptl 1  $\bar{X}$  = 54.7) was significantly more anxious than the self-perceptions of anxiety of the Baseline Group. The Baseline Hi Anx group was respectively 47.3 (pre-test) and 47.0 (post-test) in a NO TREATMENT condition. Both groups in Experiment One were significantly in excess of these Hi Anx values. This suggests that both groups in Experiment One had a self-perceived stress

level mean score well in excess of that considered "high anxiety". When compared to a normal group with no Hi Anx component (e.g., Normal - pretest  $\bar{X} = 29.2$ ) these stress loadings become even more pronounced. These results suggests that the IPAT-SAQ has discriminant ability as it can discriminate between a high anxiety group and a normal group. Also the IPAT-SAQ is a valid measure of self-perceived stress and anxiety. It can discriminate between treatment outcome effects.

#### 7.9.1 Experimental Group 1 (IPAT-SAQ)

In the pre-test condition this group was the most significantly anxious by self-perceived standards of anxiety than any other group treated or not treated except the Control Group.

Experimental Group 1 showed a significant within group reduction in anxiety. This was particularly significant when compared with Follow-up Control Group (Post  $\bar{X} = 45.0$ ). Since the Follow-up Control Group were initially "starters" for Experimental Group 1 this follow-up study was an important control condition. It lends additional emphasis to the Base-line data (post  $\bar{X} = 36.0$ ) and its derivatives Hi Anx (post  $\bar{X} = 47.0$ ) and Normal (post  $\bar{X} = 30.7$ ).

The Control Group (Hi Anx) was significantly higher in self-perceived anxiety than Experimental Group 1 after treatment.

In summary this group shows considerable therapeutic gains in treatment outcome based on self-perceptions of anxiety/stress (IPAT-SAQ), as a result of intervention using Synergistic relaxation.

### 7.9.2 Anxiety and Assertion Training Groups (IPAT-SAQ)

Both treatment (Experimental Group 1 pre-test  $\bar{X} = 54.7$ ) and nontreatment (Hi Anx Follow up Control Group, pre-test  $\bar{X} = 46.8$ ) indicate that all 15 persons who applied for Assertion Training had self-perceptions of high anxiety as demonstrated by IPAT-SAQ. The reduction of this component in the Experimental Group 1 condition was significant compared to no significance in Follow-up Control Group (Hi Anx). Self-reports of appropriate coping across many attitude domains by Experimental 1 suggests Synergistic Relaxation as an appropriate strategy for dealing with attitudinal problems resulting in the need for Assertion Training. The considerable reduction in perceptions of stress, and application of appropriately cued coping strategies is worthy of further development. For the purpose of this study it was necessary to establish that high levels of anxiety were self-perceived by this group, and that these levels could be reduced using Synergistic Relaxation. A number of assumptions regarding the composition of Assertion training groups, perceptions of need and treatment of these groups are presented, which may warrant further research.

- a) Assertion Training groups are composed of individuals who possess a high degree of self-perceived anxiety as measured by IPAT-SAQ;
- b) Current trends predispose these clients to Skills Training (the five 'drop-outs' gave this as a reason for leaving the specifically Relaxation group);
- c) Relaxation and cue associated coping skills may be sufficient to reduce the need for the current emphasis

of Assertion Skills Training;

- d) Synergistic Relaxation is effective in significantly reducing the self-perceptions of stress/anxiety of an Assertion Training Group.

### 7.9.3 Follow-up Control Group (N=4)

This group constituted additional confirmation of the effect of the Synergism treatment programme. The Control group (n=10) of Experiment Two could have been argued as a different population since they were initially part of the Baseline Group. The Follow-up Control group (Appendix G) were an identical sample to Experimental Group 1, with the same self-selection criteria, same initial motivation and actually responded as part of the original group which comprised Experimental Group 1. The fact that the Synergism treatment programme significantly reduced the pre-test self-perceptions of anxiety of Experimental Group 1 whilst neither the Follow-up Control Group nor the Control Group reduced their pre-test self-perceptions, gives additional and independent support to the claim that Synergism is an effective treatment programme.

### 7.10 POI and Attitude Change

The post-test POI scores are treatment outcome criteria. In terms of the POI this refers to scores along the major scales, and among the predictive scales of the POI (Section 7.3.3).

One of the assumptions implicit in this thesis is that attitudinal effects are critical. Contained in Chapter 5, Appendix C (Week 7) are the identifications made by Shostrom (1974, p.24) which divide people into three responding cate-

gories according to the POI: 1) Self-actualising, 2) Normal, 3) Non-Self-actualizing.

The POI Manual itself is used as a training medium for the development of "correct" attitudes along these dimensions. Whilst this may be viewed as a self-fulfilling prophecy approach to the post-test POI, the use of such an approach is well validated in the studies by Ellis (1975) and others who use the Assertion Training approach (e.g. Cottler and Guerra, 1976). It is suggested that the use of a 150 item 14 variable validated instrument is perhaps more scientifically objective than some of the Assertion Training inventories.

This discussion will view the treatment outcomes along pre- and post-test dimensions looking at within group correlations. The purpose is to gauge treatment effects reflected along all score dimensions of the POI.

#### 7.10.1 Assertion Training

The attitudinal differences self-reported and self-perceived by the Experimental Group 1 (Assertion Training Group) were along critical dimensions already apparent in the literature on this subject (e.g. Cotler and Guerra, 1976). Each of these were significantly effected by Synergism treatment:

- SAV - holding and living up to high values
- Ex - good judgement, flexibility - not dogmatic/compulsive
- S - spontaneity, ability to express feelings, not fearful
- \* Sr - high self regard
- \* Sa - self acceptance in spite of weaknesses (warts and all!)
- Sy - meaningfulness of life and the apparent dichotomies
- \* A - ability to be assertive

C - capacity to make meaningful interpersonal relationships

\* These are the few dimensions exaggerated by Assertion Training programmes. When the POI is considered, these parameters have little effect compared to SAV, Ex and C. It is felt this is an important finding. Adjustment of attitudes along the POI dimension, plus the learning of coping skills through Synergistic Relaxation is an interesting challenge to the current state of Assertion Training programmes. These latter programmes give little attention to the important determinants of POI (quality of life) and to the learning of anxiety reduction via relaxation and self-coping.

#### 7.10.2 POI Treatment Outcomes

The results demonstrate the efficacy of Synergistic Relaxation in the development of significant attitude change along therapeutically important dimensions of the POI.

The significant differences observed along the sub-scale dimensions SAV, EX, and C (Section 7.5) suggest that further continuation treatment to effect attitude change along these parameters could result in more significant treatment effects.

#### 7.10.3 SUMMARY

In summary, the POI is an important research criteria for therapy in the domains of interest to this research, notably issues/attitudes/values with respect to quality of life. It also helps identify areas considered critical for the development of "correct" attitudes. These results indicate that it is a sensitive therapy instrument. Its use as a therapeutic tool is justified by this data. Its use to measure the Assertion Training group (Experimental Group 1) and to instruct

attitude change suggests an interesting direction for the future development of this area.

#### 7.11 SMS

Experiment Two suggests the use of this instrument as a valid measurement of behavioural change resulting from the Synergism treatment programme.

### CONCLUSION

An additional experiment was suggested by the findings of Experiment Two. The purpose of Experiment Three is to establish whether Synergism is an effective treatment for the reduction of self-perceived stress, as measured by the three evaluative dimensions:

- a) Self-perceived stress/anxiety - IPAT-SAQ
- b) Development of "healthy" attitude - POI
- c) Measures of gross behavioural change - SMS (PR & RR)

## CHAPTER 8

EXPERIMENT THREE

8.1 General

Method

8.2 Subjects

8.3 Procedure

Results

8.4 IPAT-SAQ

8.5 POI

8.6 SMS

Discussion

8.7 IPAT-SAQ

8.8 POI

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## CHAPTER 8

EXPERIMENT THREE

## INTRODUCTION

8.1 General

This experiment consisted of two groups each of ten subjects. It developed symbiotically from the previous two experiments. The purpose of this experiment was to compare a Synergism treatment group (Experimental Group 2) to a Placebo treatment group. Whilst this was the primary purpose, Experiment Three also provided an opportunity to achieve two other objectives.

FIRST: The original baseline study (Experiment One) had revealed that a relatively large proportion of the initial group ( $\frac{49}{131}$ ) were diagnosed as high anxiety according to the criterion established by the IPAT-SAQ pre-test. This presented an ethical dilemma. The ethical dilemma was resolved by offering this programme to the Hi Anx group. From the original population of 49 Hi Anx students, ten subjects had volunteered to undergo a Synergism treatment programme. These ten subjects volunteered to be the Control group (no treatment) in Experiment Two. This group became a Synergism Treatment group in Experiment Three as Experimental Group 2. The reduction of the self-perceived anxiety (Hi Anx) of this group was the first objective of this experiment. This first objective was an ethical rather than an experimental objective.

SECOND: As a no treatment condition (Control Group) in Experiment Two, this group had maintained their poor diagnostic profile of high anxiety over the same time period as Experimental Group 1. The second objective of this experiment was therefore to show significant therapeutic treatment outcome effects following a Synergism treatment programme. The developmental profile of Experimental Group 2 is shown in Figure 5:

As a second objective, it was considered that the reduction of anxiety within this group would be a significant treatment gain. The second objective is therefore primarily an experimental one. In Experiment Two, Synergism was established as a significant treatment programme. The Control Group in Experiment Two showed no treatment gains. By subjecting the Control Group to a Synergism treatment programme in Experiment Three the overall design is more sophisticated. A significant reduction of self-perceived anxiety/stress in Control Group (as Experimental Group 2 in Experiment Three) as a direct result of a Synergism programme would constitute a definitive confirmation of Synergism as an effective treatment strategy.

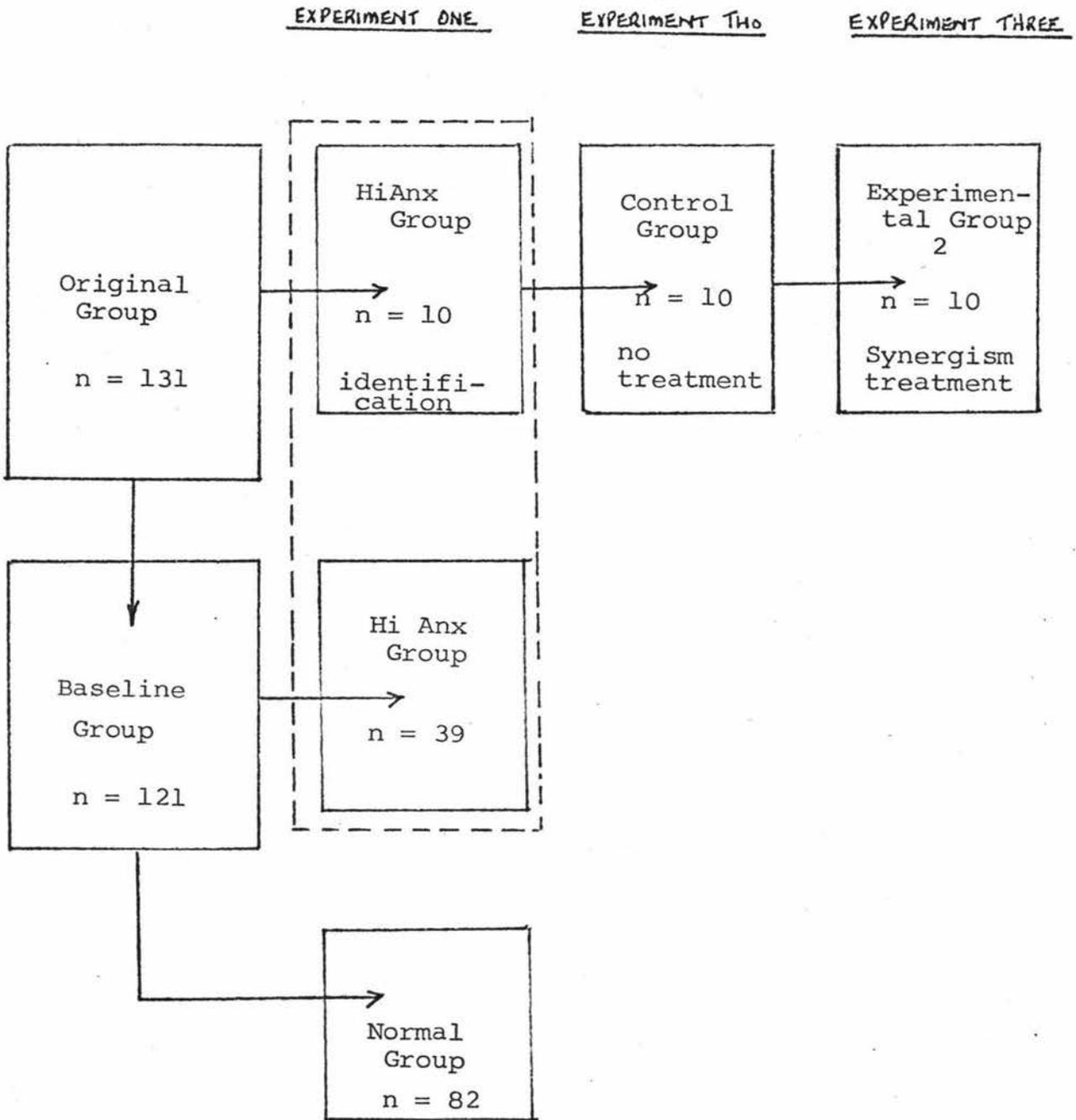


Figure 5: Developmental profile of Experimental Group 2

## METHOD

8.2 Subjects

Twenty subjects volunteered for this experiment, consisting of 7 male and 13 female subjects. All were first year full-time psychology undergraduate students at Massey University. Ages varied along the same dimensions as in Experiment Two. No monetary or academic incentives were operating.

Experiment Three consisted of two treatment groups each of ten subjects:

Experimental Group 2 (Synergism Treatment Group)

Placebo Group (Placebo Treatment Group)

8.2.1 Experimental Group 2 (Synergism Treatment Group)

This group of ten subjects consisting of 2 male and 8 female subjects, volunteered to undergo Synergism as a treatment programme. They were obtained by voluntary self-selection based on their pre-test IPAT-SAQ scores and the Cattell and Scheier (1963) criterion of a raw score in excess of 40.

As detailed in Figure 5, 49 individuals from the initial group of 131 first year subjects self-identified as Hi Anx on the same IPAT-SAQ pre-testing criterion were each given an equal opportunity to undergo treatment for the reduction of their self-perceived stress. Ten students volunteered for the synergism programme, from the Hi Anx group identified in Experiment One. In Experiment Two this group became the Control Group. In Experiment Three this same group became a Synergism treatment group as Experimental Group Two.

### 8.2.2 Placebo Group (Placebo Treatment Group)

Ten subjects consisting of 5 male and 5 female subjects volunteered for treatment in what was in fact a Placebo Treatment group using a technique labelled Periodic Somatic Inactivity. All subjects for this design were drawn from the same student population as Experimental Group Two. This group was recruited from another relaxation/meditation Ph.D., thesis project involving a total of 57 undergraduate full-time first year students from the remaining psychology classes in the same department (Zika, 1980). This group was randomly assigned to their treatment condition and therefore it was not possible to obtain a matching Hi Anx group. The pre-test IPAT-SAQ mean of the Placebo group was 39.1. This placed the Placebo group in the Hi Anx category.

## PROCEDURE

8.3.1 Experimental Group 2 (Synergism treatment group)

Ten students volunteered to participate in the treatment condition involving an eight week Synergism programme.

All 10 were given a pre-test POI and after successfully completing the 8-week course, were then administered the IPAT-SAQ and POI as a post-post test. All completed the Self-monitoring schedules (SMS) continuously during the course. This was a Synergism Treatment condition.

8.3.2 Placebo Group (Placebo Treatment Group)

This is often referred to as a non-specific treatment condition. The transcript of the sessional instructions given to this treatment group and the detailed instructions are contained in Appendix F.

As indicated in Section 2.12 (Chapter 2) this writer is of the opinion that the Placebo group constitutes a valid treatment condition. The placebo selected was called Periodic Somatic Inactivity. There were 10 subjects in this condition and all completed the treatment.

The Placebo Group completed both the IPAT-SAQ and the POI in pre- and post-test conditions. They were not administered the SMS. This was a Placebo Treatment condition.

## RESULTS

IPAT-SAQ8.4.1 IPAT-SAQ Analysis of Variance

The scores for the IPAT-SAQ were subjected to analysis of variance. The analysis contained in Table 8, reveals a significant difference between the pre and post test scores,  $F(1,18) = 40.98, p < 0.01$ . The interaction between these groups was also significant  $F(1,18) = 25.13, p < 0.01$ .

Table 8

ANOVA Summary: IPAT-SAQ Scores Experiment Three

Source	SS	df	MS	F
<u>Between Subjects</u>				
A (Experimental Group 2 and Placebo Group)	28.90	1	28.90	0.813
Error 1	638.5	18	35.53	
<u>Within Subjects</u>				
B (Treatment)	1123.6	1	1123.6	40.98**
A X B	688.9	1	688.9	25.13**
Error 2	493.5	18		

\*\*  $p < 0.01$

#### 8.4.2 IPAT-SAQ t values - Experiment Three

A t-test computed on the pre- and post-test means of Experimental Group Two demonstrates a clearly significant treatment effect between the pre-test ( $\bar{X} = 49.1$ ) and the post-test ( $\bar{X} = 30.2$ ) for this Synergism treatment group. There was no significance in the Placebo group treatment.

Table 9

IPAT-SAQ Table of t Values - Experiment Three

Group	Pre-test $\bar{X}$	Post-test $\bar{X}$	t value
Experimental Group 2	49.1 4.36	30.2 6.36	8.80**
Placebo Group	39.1 4.12	36.8 7.04	0.91

\*\*  $p < 0.01$

## POI

### 8.5.1 Analysis of Variance - Major Scales

The overall POI results were subjected to analysis of variance. No significant treatment or interaction effects occurred, on either of the two major score categories i.e., Tc + I, or POI scores. Appendix J contains the POI mean scores of the two groups in Experiment Three.

### 8.5.2 Factor Analysis of all POI Variables

In Experiment Two, four variables were identified as the attitudinal domains along which major attitude changes had taken place. Shostrom (1966) indicates consistently three variables which seem to be central to treatment outcome gains. These are the variables SAV, Ex and C.

In order to further analyse attitude changes along all ten variables of the POI major scores a factor analysis was conducted using the pre- and post-test scores of all treatment groups using the POI in Experiment One and Two i.e., Experimental Group One (n=10), Experimental Group Two (n=10) and Placebo Group (n=10). The total number of subjects in all three treatment groups numbered 30 persons. The purpose was to reduce the 10 variables of the POI to those variables most predictive of the POI major score. Justification for factor matrix using principal factors with iterations is contained in Appendix K. A factor analysis was computed and a varimax rotated factor matrix obtained. The results of this factor analysis are contained in Appendix L.

### 8.5.3 POI - Factor Loadings (SAV, Ex and C) All treatment Groups

As can be seen from Appendix L three variables occur con-

sistently in both pre-test and post-test factor loadings accounting for almost 80 percent of variance. These variables are SAV, Ex and C, all of which were identified in Experiment One.

#### 8.5.4 POI Analysis of Variance of each Treatment Group (Variables SAV, Ex and C)

The ANOVA summary of POI variables SAV, Ex and C (Tables 10, 11, and 12) demonstrates various significant treatment effects and significant interactions. These ANOVA's using POI variables SAV, Ex and C were computed between each of the treatment groups i.e.

Experiment Two - Experimental Group 1 (Synergism Treatment)

Experiment Three - Experimental Group 2 (Synergism Treatment)

Experiment Three - Placebo Group (Placebo Treatment)

#### 8.5.5 POI ANOVA Summary Tables for Variables SAV, Ex and C

The combined scores along variables SAV, Ex and C of the POI were subjected to analysis of variance. Summaries for each set of group interactions are contained in Tables 10, 11, and 12.

Experimental Group 2 vs Placebo Group

The analysis shown in Table 10 reveals a significant difference between the pre and post-test scores  $F(1,18) = 28.49$   $p < 0.01$ . The interaction between these groups was also significant  $F(1,18) = 4.526$ ,  $p < 0.05$ .

Table 10  
POI ANOVA Summary -  
Experimental Group 2 vs Placebo Group

Source	SS	df	MS	F
<u>Between Subjects</u>				
A (Experimental Group 2 & Placebo Group)	60.025	1	60.025	0.591 non sig.
Error 1	1829.450	18	101.6361	
<u>Within Subjects</u>				
B (pre- and post-test)	511.225	1	511.225	28.49**
A X B	81.225	1	81.225	4.526*
Error 2	323.05	18	17.95	
** $p < 0.01$				
* $p < 0.05$				

Experimental Group 1 vs Experimental Group 2

The analysis shown in Table 11 reveals a significant difference between the pre- and post-test scores  $F(1,18) = 64.4$ ,  $p < 0.01$ . It does not reveal a significant interaction effect.

Table 11

POI ANOVA Summary -  
Experimental Group 1 vs Experimental Group 2

Source	SS	df	MS	F
<u>Between Subjects</u>				
A (Experimental Group 1 & Experimental Group 2)	336.4	1	336.4	3.639 non sig.
Error 1	1664.2	18	92.455	
<u>Within Subjects</u>				
B (pre and post-test)	1795.6	1	1795.6	64.4**
A X B	115.6	1	115.6	4.15 non sig.
Error 2	501.8	18	27.8778	

\*\*  $p < 0.01$

Experimental Group 1 vs Placebo Group

The analysis shown in Table 12 reveals a significant difference between the pre and post-test scores  $F(1,18) = 55.52, p < 0.01$ . It also shows a significant interaction effect  $F(1,18) = 19.49, p < 0.01$ .

Table 12

POI ANOVA Summary -  
Experimental Group 1 vs Placebo Group

Source	SS	df	MS	F
<u>Between Subjects</u>				
A (Experimental Group 1 & Placebo Group)	680.63	1	680.63	4.459 non sig.
Error 1	2747.25	18	152.625	
<u>Within Subjects</u>				
B (pre and post-test)	1113.025	1	1113.025	55.52**
A X B	390.625	1	390.625	19.49**
Error 2	360.85	18	20.472	
** $p < 0.01$				

#### 8.5.6 POI Mean Scores - all Treatment Groups

The POI mean scores of all treatment groups are shown at Appendix M.

#### 8.5.7 POI Pre/Post-test Profiles - Experiment Three

Shostrom (1966) uses a POI profile method which gives a visual impact of treatment effects across each attitude/treatment dimension measured. The POI profiles for both groups in Experiment Three are shown in Appendix N.

As can be seen, the POI profile of the pre-test shows a large gap between the Placebo group and Experimental Group 2, which is all but closed by the post-test. It appears that these differences, measurable by the POI, are not sufficiently significant to become significant treatment effects using analysis of variance. Using Shostrom's scores and profiles the individual treatment effects can be seen in each group along each dimension of each variable listed by Shostrom (1974).

#### 8.5.8. POI: Detailed analysis of mean Scores and t Values

Further detailed analysis of POI mean scores and t values of all treatment groups is contained in Appendix O.

### SMS

#### 8.6 Self Monitoring Schedules (SMS)

Chapter 2.7 spent a great deal of time explaining the significance of the breath in relation to RR, and Chapter 2.9 gave even more emphasis to the interaction of HR and RR, especially Section 2.7.2. Experimental group 2 was the only condition in which accurate complete records were maintained

throughout. The SMS results contained in Appendix P for Experimental Group 2 indicate quite clearly that it is possible to alter the cardiosomatic relationship in a significant way and in a therapeutic direction. This had been demonstrated by Experimental Group 1 but incomplete data made clear determinants untenable.

Appendix P gives the relaxation state averaged daily scores and scored daily means. The schedule allows for two daily scores, one in the morning and one in the afternoon. To obtain these average daily scores each of the totals were averaged, and the results are shown as scored daily means. Appendix P also gives the summarized results for each subject for pre/post-trial respiration and pulse rates.

From this average, week one was taken as a pre-trial mean and week eight was taken as a post-trial mean. Although treatment commenced in week one, the first treatment package induced little variation in breath and pulse, as can be seen. The most dramatic changes occurred after the application of the breath awareness technique (Transcript 4) in the third week. From a statistical point of view, a complete week's results allows for more accurate representation of scores.

Also contained in Appendix P are the Pearson correlation coefficients for breath (RR) and pulse (HR) in pre/post-test conditions.

## DISCUSSION

IPAT-SAQ8.7 Motivational Considerations: Experimental Group 2

This Hi Anx Group was given the opportunity to participate in a "special" Treatment condition. This was offered specifically for the ethical purpose of offering treatment to self-revealed treatment-needy cases with self-perceptions of anxiety and stress, as indicated by the IPAT-SAQ raw score. The selection procedure for this voluntary participative group is given in Chapter 7 in the details concerning the Control Group.

This group volunteered on the basis of three main considerations:

a) Hi Anx Score: (Post-test  $\bar{X} = 49$ )

Their IPAT-SAQ raw score was predictive of poor prognosis unless treated, and deemed diagnostically accurate of a high anxiety state by Cattell and Scheier (1963).

b) Synergistic Treatment

The treatment package initially attempted on an earlier similar Hi Anx Group had established the efficacy of Synergism as a successful treatment for the same prognosis.

c) Committment

In Experiment Two, as a Control Group this Hi Anx Group had participated in a No Treatment condition. No improvement had occurred in their condition. In this experiment, Experiment Three, the same group was offered a Treatment condition, as Experimental Group Two.

On the basis of prior participation this group admitted that they felt "committed" to the Synergism programme. The literature suggests that motivation commitment and expectations are high predictors of good prognosis.

#### 8.7.1 Experimental Group 2 (pre-test $\bar{X}$ 49.1; Post-test $\bar{X}$ 30.2)

In the pre-test situation this group was significantly higher in self-perceived anxiety, than all other groups except Experimental Group 1. During Experiment Two this group (as Control Group\_ had moved in self-perceptions of high anxiety from the pre-test ( $\bar{X}$  = 52.7) to post-test ( $\bar{X}$  = 49.1).

This group then underwent treatment using Synergistic Relaxation. A high positive correlation between Experimental Group 2 and the Normal Group from Experiment One (0.816) indicates that a significant treatment effect had taken place. The new post-test mean ( $\bar{X}$  = 30.2) was significantly lower than any other group.

This was a more dramatic treatment effect than that experienced with Experimental Group 1 (post-test  $\bar{X}$  = 36.0). This could be due to a number of factors which may have acted as inhibitors to treatment of Experimental Group 1:

- a) There was some initial resistance to the trial of the new untried method of Synergism with the Assertion Training Group. This had cost the loss of five members;
- b) The experimenter was unsure of
  - significant treatment effects
  - time element involved in obtaining treatment effects i.e. 6, 8, 10 or 12 weeks
  - the effects of a modified programme ( $\frac{4}{12}$  techniques).

On the other hand, Experimental Group 2 had the benefit of:

- a) established efficacy of treatment
- b) no attempted "disguise" of Synergism
- c) development of experimenter skills in methodology and evaluation
- d) motivation of experimenter due to initial success.

The results were a significant and improved treatment effect between Experimental Group 1 (post-test  $\bar{X} = 36.1$ ) and Experimental Group 2 (post-test  $\bar{X} = 30.2$ ). Both results establish the efficacy of Synergistic Relaxation as a paradigm for the treatment of self-perceived stress/anxiety. The results of Experimental Group 2 demonstrate this more significantly.

#### 8.7.2 Placebo Treatment Condition (pre-test $\bar{X} = 39.1$ ; post-test $\bar{X} = 36.8$ )

The Placebo Treatment condition is used as a comparative base. The selection of members of this group was the result of random allocation to a variety of conditions, one of which was this Placebo condition. The Placebo condition was run concurrently with the Experimental Group 2 programme by another experimenter. The purpose was to produce a comparative study to the application of a Placebo versus Synergistic Relaxation. Placebo is a valid treatment condition. Unfortunately the random allocation did not result in Hi Anx subjects of the order of the two experimental conditions.

No significant treatment effect resulted from this treatment programme.

## POI

### 8.8.1 Within Group Treatment Effects - POI

Both experimental Synergism treatment groups were significant whereas Placebo was not as significant. When the dimensions along all scores are analysed these differences increase in significance. Placebo was only significant along SAV, Fr and Sy. No group was significant along Nc. Both experimental groups were significant along most of the POI variables, and critical measures of the independence criteria necessary for Self Control and Inner Directedness (Section 2.10). Whereas Placebo achieved some significance on five out of ten sub-scales, both experimental groups achieved greater significance, on a larger number of variables (Experimental Group 1 -  $\frac{8}{10}$  subscales, Experimental Group 2  $\frac{9}{10}$  subscales). The greatest attitudinal change seems to have been experienced by Experimental Group 1 in contrast to the IPAT-SAQ emphasis on Experimental Group 2.

### 8.8.2 Intergroup Comparisons

These results suggest that people who volunteer for meditation are essentially different on the POI attitudinal scales and according to Shostrom (1975) to people who self-perceive themselves as anxious and in need of Assertion Training or Social Skills Training.

The latter groups, though initially disadvantaged seem to benefit more, and reach better though similar levels to meditators for example. This has important therapy implications. The techniques of Synergism have been gleaned from the repertoire of meditational techniques, and put to better use with more satisfying results with people who perceive themselves as deficient in important coping skills.

### 8.8.3 Communality of All Treatment Groups: Pre-test POI Mean Scores

In Appendix Q, the Experimental Group 1 was significant on subscales SAV, Ex, S and Sy. There is some evidence to suggest that this group is marginally different to the Placebo group. The high positive correlation between Experimental Group 1 and Experimental Group 2 on Tc + I, and subsequent high correlations I, Fr, Sr, Sa, Nc, A and C, means that these groups are highly correlated with each other. Some of the correlations of Experimental group 2 with Placebo Group reach a high degree of concurrence and similarity.

The Placebo group seems marginally advantaged to Experimental Group 2, and demonstrates a mathematically improved score on every dimension. This is not however, significant enough on pre-test correlations except on the four subscales relating to Experimental Group 1. The high correlations and lack of significance between all groups indicates a high degree of communality, between all treatment groups, on pre-test mean scores. In terms of subsequent treatment, and outcomes, each treatment group started from essentially the same pre-test conditions.

### 8.8.4 Between Group Treatment Effects - POI

The pre-treatment results discussed in 8.8.3 show that the dramatic attitudinal effects suggested by 8.8.1 are not the result of inter-group differences. There were high positive correlations on many subscale dimensions of the POI. Some significances were apparent between Experimental Group 1 and Placebo Group but these were minimal between Experimental Groups 1 and 2, and Experimental Group 2 and Placebo Group.

Experimental Groups 1 and 2 differed along SAV, and Ex in the pre-test, but these differences were eliminated by the post-test. This supports the general results consensus that Experimental Group 1 experienced the greater degree of attitude change. Experimental Group 1 and Placebo Group differed in the pre-test along the major predictors of POI namely, SAV, Ex and C. These differences were again of no significance in the post-test condition. Again this demonstrates the dramatic nature of attitude change experienced by the Assertion Training Group despite the apparent early resistance. Schachter's (1965) dissonance theories could probably best explain the reason for the large changes measured on Experimental Group 1.

Both experimental groups at pre- and post-test POI showed no between-group significances with each other or between each other and Placebo Group, which would account for the treatment effects noted in 8.8.1. Synergism treatment is thus effective, and significantly more so than the Placebo treatment.

### SMS

#### 8.9 Discussion of Respiration and Heart Rate - SMS

This is the shortest section of the discussion yet, it is considered the most important. These results (HR and RR) were compiled by the subjects themselves twice per day for each week of the eight week course. They were never given detailed remarks on individual SMS's until the course was completed. The aim was to establish the act of self-monitoring rather than develop some competitive device. The effects

were a validation of the critical Davies and Neilson (1967) study. They demonstrated directly, cardio-somatic coupling of HR/RR in a dramatic measurable way.

Initially the pre-tests (week one) confirmed the worst fears of the Hyperventilation syndrome noted in Section 2.7. Most subjects who self-perceive themselves as highly anxious, breathe 21.4 RR/Min ( $\bar{X}$  of  $\bar{X}$ 's of pre-test, N=10).

As demonstrated vividly by the weekly tables of breathing, destructive interference (cardio-somatic breakdown) occurs at +16 RR/min. Once breathing rates are reduced to this level (16 RR/min or less) HR steadies down. At low RR/min (e.g. +8 RR) good HR/RR relationships occur and HR stabilizes. At 4-8 RR/min, significant cardio-somatic coupling takes place and HR/RR parallelism (i.e. low RR = Low HR) starts to occur.

Sections 2.7, Respiration, and 2.9 Heart Rate Control, are critical to this discussion. The establishment of low HR/RR rhythms is therapeutic. Emphasis on this aspect is an essential and critical element to develop a healing relationship, in Synergism.

An inverse relationship was developed during this thesis between POI scores and HR/RR/IPAT-SAQ. Low scores on the latter were predictive of high POI scores.

The high positive correlation between HR and RR is matched by the inversely low correlation with the POI. The significant results obtained in both HR and RR results further establishes the efficacy of Synergism to produce these significant therapeutically derived changes.

## CHAPTER 9

DISCUSSION

- 9.1 Experiment One (Chapter 6)
- 9.2 Experiment Two (Chapter 7)
- 9.3 Experiment Three (Chapter 8)
- 9.4 Measuring Instruments
- 9.5 Conclusion
- 9.6 Suggestions for Future Research

## CHAPTER 9

DISCUSSION9.1 Experiment One (Chapter 6)

The purpose of this experiment was to gather baseline data specifically in relation to the IPAT-SAQ, relative to a New Zealand University student population. Experiment One established that the IPAT-SAQ is a valid measure of self-perceived anxiety and was able to discriminate between a condition of high anxiety as opposed to a normal condition.

The Cattell and Scheier criterion of a cut-off raw score of 40 was sufficient to discriminate between these two groups. In subsequent experiments this data was important to allow significant discrimination between a self-perceived diagnosis of high anxiety and a treatment effect using pre- and post-testing conditions.

The IPAT-SAQ was the primary measure used to discriminate between the high anxiety diagnosis and the treatment effect in the subsequent two experiments. The data obtained from Experiment One was therefore central to the later experiments.

Assertion Training

An important corollary to Experiment One is the use of the IPAT-SAQ as a diagnostic tool to determine treatment needs. It is rarely used for example, with skills training groups (e.g. Assertion Training Groups). For this reason the high anxiety component considered by this writer to be a central

issue, is rarely treated. Most Assertion Training is conducted within a behavioural treatment paradigm which is considered to treat effect rather than cause. This suggests a further experiment, to use a normal skills oriented training programme and compare treatment outcomes to a Synergism treatment programme.

The self-perceptions of anxiety measured by the IPAT-SAQ include covert and overt anxiety components, which generalize not only to lack of assertion in specific skills deficit areas, but to a wider domain of anxiety provoking situations. It is doubtful that Assertion Training skills deal with most of these wider issues.

## 9.2 Experiment Two (Chapter 7)

This experiment was the critical one to this thesis. It established the efficacy of Synergism as a treatment programme to significantly reduce self-perceptions of anxiety and stress.

The primary measure used was the IPAT-SAQ, which had been proven in Experiment One to be a valid measure of a high anxiety state as differentiated from a normal condition. Experimental Group 1 as measured by the IPAT-SAQ, was clearly a high anxiety group. As a result of Synergism the self-perceptions of high anxiety were significantly reduced on a post-treatment IPAT-SAQ.

The literature review (Chapter 2) had established that other criteria were effected in a successful treatment strategy. Important attitude changes were considered incorporated in Shostrom's (1966) POI, and two physiological measures, HR and RR were incorporated into the SMS. Therefore, in addition

to self-perceptions of stress/anxiety, Experiment Two was also used to gather data on these equally important measures of treatment change i.e. POI and SMS, in addition to the IPAT-SAQ.

The results of the POI pre/post test conditions of Experimental Group 1 supported a case for further study. Changes were experienced by the group on all the attitude dimensions of the POI. Significant changes occurred on the core attitudes SAV, Ex and C. This was sufficient to justify a further experiment designed to test the efficacy of Synergism compared to another treatment group i.e. Placebo treatment group.

During Experiment Two, the SMS was used only as a Synergism treatment strategy. The results suggested its use as a measure of treatment outcome.

### 9.3 Experiment Three (Chapter 8)

The purpose of this experiment was to compare a Synergism treatment group (Experimental Group 2) to another treatment condition (Placebo Group). The IPAT-SAQ results once more demonstrated even more clearly, the efficacy of Synergism as a successful intervention strategy for the reduction of self-perceived stress and anxiety in a student population. The IPAT-SAQ results also established Synergism as a more effective treatment strategy than the Placebo Treatment group.

#### Placebo

The IPAT-SAQ results of Experimental Group 2 were slightly better than those obtained by Deffenbacher and Parks (1979) where they obtained a post-post-test mean of 31.56 after 9 weeks SD treatment with a significantly lower initial pre-test

score (40.09). Their pre-test means selected from 28 Hi. Anx randomly assigned students were 40.09 compared to the Placebo Group (pre-test  $\bar{X}$ , 39.1). The post-test mean from this 1979 study was 31.33 after 9 weeks SD treatment and 31.56 on follow-up. The post treatment scores of Placebo Group do not reflect the same treatment effects. No significant treatment effect occurred for the Placebo Group. The Deffenbacher and Parks (1979) treatments included Traditional SD (n=9, post-post-test  $\bar{X}$  = 34.64), and Self-control SD (n=9, post=post-test  $\bar{X}$  =29.80). Both these results are better than Placebo (post-test  $\bar{X}$  , 36.8). The importance of Placebo is stressed throughout relaxation literature. It is contended that Placebo is another treatment condition. The IPAT-SAQ results indicate little change in anxiety reduction as an outcome of this form of treatment.

The second purpose of this experiment was to analyse treatment effects using not only self-perceptions of anxiety but also attitudinal measures (POI) and behavioural measures (SMS).

The POI ANOVA results did not demonstrate the clear treatment gains that could be measured by closer analysis of the POI. The use of factor analysis confirmed the observations made in Experiment Two, that significant gains were made along the dimensions of SAV, Ex and C. The ANOVA results along these dimensions showed significant treatment effects.

A comparison of all treatment conditions demonstrated clearly that Synergism was an effective treatment strategy for implementing the changes of attitude considered therapeutic as measured by the POI. All three groups showed sig-

nificant treatment gains. A comparison of POI pre treatment conditions showed all three groups were identical by POI standards. The POI treatment outcome measures demonstrated that the Synergism treatment groups (Experimental Groups 1 and 2) developed more significant treatment gains than the Placebo treatment group.

The SMS was not used as a comparative measure. It is a technique used in the Synergism programme. It did however, demonstrate significant treatment effects. The results of the use of the SMS in Experiment Three justify its use not only as a treatment strategy and measure of treatment outcome, but also its possible use as a comparative across-group pre and post measure of treatment outcome.

Experiment Three was important to the thesis. It further established the efficacy of Synergism as a successful intervention strategy for the reduction of self-perceived stress.

Synergism was demonstrated to be effective in attitude modification along key attitude dimensions measured by the POI. The most significant of these dimensions, SAV, Ex and C are also predictors of the overall POI score. These three dimensions were those attitude changes most critically affected by the Synergism programme. The changes wrought by the Synergism programme, along SAV, Ex, and C were more significant than those effected by the Placebo treatment.

Synergism also effected significant HR/RR changes.

#### 9.4 Measuring Instruments

The use of three measures to analyse the effects of the Synergism programme is validated by the results. They cover

three separate measuring domains, i.e.

- IPAT-SAQ - self-perceptions of anxiety/stress
- POI - attitude domains which are significant in therapy outcome
- SMS - a behavioural measure of
  - respiration (RR)
  - heart (PR)
  - blood pressure (not used)

Some of the important issues relevant to each are briefly discussed in this section.

#### 9.4.1 IPAT-SAQ

##### Baseline "No Treatment" Conditions

The subdivision of Baseline group (Baseline) into high anxiety (Hi Anx) and normal (Normal) gives a better appreciation of treatment effects. Compared to Baseline, both Hi Anx and Normal are each significantly different to each other. The addition of a follow-up Control Group in Experiment Two as a follow-up No Treatment survey gives further validity to the use of Baseline "No treatment" conditions. Each treatment condition can be correlated with the "No Treatment" conditions established by these various discriminant controls.

##### Significance of Treatment-Experimental Groups

Both experimental groups showed highly significant treatment effects in the reduction of self-perceived anxiety within each group. Both experimental groups were initially significantly different in levels of self-perceptions of anxiety to all other groups. At the time of pre-test, neither experimental groups was significantly different to each other along

any dimension. Essentially both were matching groups. The discriminant accuracy of the IPAT-SAQ is considered validated by the way in which groups could be matched, or contrasted, as well as by the ability of this instrument to evaluate the significance of treatment effects compared to "no treatment" conditions, and Baseline groups.

#### Discriminant accuracy

The pre- and post-test results as determined by IPAT-SAQ indicate the discriminant accuracy of this instrument, quite conclusively. Hays (1977, pp. 413-424) indicates the problems of sample sizes. The selection of large (n=121 Baseline) and small samples (Experimental Groups and Placebo Group n=10) allows for the testing of the accuracy of IPAT-SAQ in the discriminant analysis of self-perceptions of stress and anxiety. Changes in perception were discriminated using the IPAT-SAQ, as revealed by both experimental treatment groups in subsequent experiments, and in non-treatment conditions, over all. The IPAT-SAQ is demonstrated by this research, as a valid discriminant of self-perceptions of stress and anxiety over treatment/no treatment conditions, and over time-phased conditions.

#### 9.4.2 POI

The inability of analysis of variance to evaluate significant treatment effects using the POI major scores was disappointing. The reduction of the subscales to three predictive scales (SAV, Ex, and C) obtained by factor analysis is considered important.

The use of the profile method for analysis of POI is justified by Shostrom (1966). The use of planned comparisons

using independent t tests along the subscale dimensions is considered justified by Keppell (1973, p.93). These detailed analyses demonstrated significant results in attitude treatment outcomes that the initial ANOVA results were unable to detect. The restricted analysis of variance on the three earlier identified dimensions (SAV, Ex, and C) seems justified.

#### 9.4.3 SMS

The results clearly validated this instrument as a behavioural measure and suggests future use of this instrument for the measurement of within group behavioural change as well as between group differences.

#### 9.5 Conclusion

Synergism 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 analyses into physiological, affective and cognitive mode specific components. Relaxation can include technologies of auto-suggestion, hypnotic induction, and breath regulation as well as various physiological tension-release methodologies. Most relaxation technologies can be analysed in terms of a pattern of responses following from the normal sequence of Synergistic Relaxation. Most guru-specific "menus" follow this simple developmental pattern. These response patterns incorporate sophisticated breathing, visualization, fantasy and psycho-physiological feedback monitoring technologies which can be used in these phases either to develop sensi-

tivity to self-monitoring procedures, condition the Relaxation Response (Rr) or induce the altered states of consciousness identified with meditation methodology.

The most successful technology for decreased muscle tonus so far researched is Savasan. Other techniques are available but have not received attention. 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. Its original intention was to provide a simple, single-component body posture which gives emphasis to decreased muscle tonus. Using Savasan in this way it is a sensitivity training posture which can induce awareness of actual physiologic and psycho-physiological mechanisms which naturally occur in the body (i.e. the eight relaxation responses of Synergism). This sensitivity can then be conditioned as a self-monitoring device to develop awareness of the Rr.

The Relaxation Response (Rr) induces a hypometabolic state characterized by a) changes in frequency of the galvanic skin response (GSR); b) decreased muscle tonus; c) a decrease in respiratory rate; d) changes in peripheral resistance involving blood pressure (BP); e) decreased heart rate (HR); f) awareness of respiratory vasomotor response (RVR); g) awareness of body temperature changes, and h) awareness of whole body changes. These 8 relaxation responses occur naturally when a specific supine body posture (Sivasan) is adopted, without attention to other technologies. The hypometabolic changes are distinctive enough to most people to feel a significant psychophysiological change noticeably differentiated from

the "normal" psycho-physiological base-line state. This new baseline can be conditioned and improved so that a new baseline condition can be experienced, which is identified with the "Relaxation Response". This becomes a subjectively induced baseline condition capable of inducing reduction in BP, RR and HR. Other technologies can be researched and their individual effects evaluated against this baseline condition.

Sophisticated relaxation technology is available in both Western and Eastern esoteric literature. Recognition of communality themes takes time and existential commitment. The development of an objective scientific rationale is often difficult. The technologies normally follow a pattern described as guru-specific "menus". Until familiarity breeds understanding, a recommended relaxation technology should follow the Synergism pattern listed in this thesis. This technology is recommended for future research in the non-pharmacological treatment of essential hypertension.

The results of all three experiments demonstrate the efficacy of Synergism as a relaxation strategy to significantly reduce the incidence of self-perceived stress and anxiety. The predictions made concerning the effectiveness of Synergism as a treatment strategy which can effectively induce attitude change in a therapeutically desirable direction, and which can significantly alter respiratory and heart rate patterns have been upheld.

SR technology provides a non-threatening, non-hypnotic induction synergistic technique which has all the necessary and simple pre-requisites to achieve a good relaxation state resulting initially in Rr and the hypometabolic state associ-

ated with Rr. Reversal variations in the pattern are not recommended, for reasons that will not become obvious until research has been fully documented. The advantage of this Synergism pattern is that once familiarity is achieved, components may be omitted (not reversed) dependent upon time commitment. It is synergistic in the sense that each successive phase should result in a deeper level of relaxation, leading to the establishment of healing/therapeutic responses.

Effective therapeutic strategies demand a maintenance programme. Synergism is not restricted to the clinical setting. The purpose is generalisation to in vivo situations using the Brady et.al., (1974) study as a model. To affect this it is considered that regular practice to develop CA-SC and in vivo generalisation are mandatory components for the complete SR programme.

#### 9.6 Suggestions for Future Research

To further validate this technique it should be:

- a. replicated in detail by other researchers;
- b. capable of transfer to other therapists;
- c. effective across a variety of treatment categories
- d. accepted in preference to extant therapies;
- e. compared to skills training programmes in which clients self-perceive a high anxiety/stress state e.g. Assertion Training;
- f. component evaluated, i.e. stepwise component testing of each component vide the summary (Chapter 4).

Each of these constitute additional research projects.

ACTUAL STEP BY STEP INSTRUCTIONS  
FOR  
SYNERGISTIC RELAXATION

1. Basic Technique
2. Technique 4 - Breath Awareness - Counting
3. Technique 10 - Awareness - Stop Technique
4. Technique 11 - Awareness - Self-Monitoring

SYNERGISM BASIC TECHNIQUE

You are about to adopt the relaxation posture in which you become aware of the relaxation response.

BODY AWARENESS

Lie down on the floor, the head towards the speaker. Remove glasses, remove contact lenses, ensure the clothing is loose, comfortable, not distractive. The body is covered with a large blanket. Allow the body to rest on the floor on the back. The legs about 20 inches apart, mentally check, if not - physically adjust them. The legs are rotated outward in a relaxed manner from the hip joints, feet are allowed to drop toward the outside line of the body, rotating outwards from the ankle joints, also in a relaxed manner.

Mentally check the position of the hands, the hands are held about 6 inches away from each side of the body, arms straight, relaxed and rotated outwards from the shoulder joints. If they are not 6 inches clear of each side of the body, physically adjust them. Palms upright and the back of the hands and the back of the elbows rest on the floor, the fingers of each hand are allowed to curl slightly inward towards the palms in a limp relaxed manner.....

Just feel the relaxation of the body. The body is its own biofeedback mechanism, all we have to do is to be aware of these mechanisms.

FIRST. The Hands. Stretch the fingers out so the backs of the hands and fingers are stretched out on the floor, now let them relax and curl up gently into a natural position. When

the body is completely relaxed the fingers will rest, stretched out, on the floor. Do not adjust them at this stage, just mentally visualize your fingers as they are, mentally note how curled they are; each time you start the practice of relaxation stretch the fingers out flat on the floor and mentally check how curled the fingers are. The relaxed posture of the fingers is a biofeedback which indicates the state of the upper part of the physical body.

SECOND. The Feet. Rotate the feet as far as you can without straining or hurting them in any way. When the body is completely relaxed the outside of the feet will touch the floor comfortably, do not strain, mentally visualize your feet in relation to the floor, draw a picture with the mind at the outside edge of each foot and the angle that this makes with the floor; this angle is your biofeedback to indicate your personal state of relaxation, do not force your feet outwards, let them rest naturally, just be aware of the angle and what it says about you personally and your state of physical relaxation. Remember the angle of your feet is a biofeedback which indicates the relaxation state of the lower half of the physical body.....

THIRD. Head. Rotate the head slowly from side to side..... The purpose of this is to ease out any tension in the major neck muscles and especially the Trapezius muscle that leads from the neck down the centre, each side of the back; finally when the head comes to rest, check that the nose is pointing directly to the front.

FOURTH. Check that the spine and head are in a straight line, physically adjust your body so that the head and body are in a straight line, mentally visualize the straight line drawn from the head down the spinal column out between the feet, this is the central alignment of the physical body....

FIFTH. Shoulder and back. Mentally check that the whole length of the shoulders and back are flat, relaxed on the floor.....

SIXTH. Mentally check the head, the face, check that the mouth is held lightly closed with both lips touching gently, the jaw limp but relaxed, check the teeth are not clenched, eyes closed, naturally closed as for sleep with the eye lids slightly touching.....

Last, check the whole physical body, mentally visualize your body posture, mentally feel the posture, see it and visualize it clearly, visualize clearly your whole physical body as it is lying in the relaxation posture. Mentally check the whole body, -- whole body, -- whole body lying relaxed on the floor in the relaxation posture .....

#### LAXATION RESPONSE

In this posture certain natural physiological changes will occur, you do not have to do anything; this relaxation posture is a psychophysiological trigger to the mind and the natural mechanisms of your body and mind will trigger off the relaxation response. All you have to do is be aware, let the body and the mind take over the natural functions, be passive, be still, lie quietly, let the natural relaxation

response occure..... allow the natural physiological relaxation responses to take place and become aware of each of these changes as they occur. Shortly we will detail the specific relaxation responses that the mind can check in this posture; for the moment just be aware of the natural relaxation of the body in this posture, eyes closed, mouth closed, awareness of the natural response, no further physical movement of the body. No sleeping, no thinking, just awareness ..... pure awareness.....

Now we are into the self-monitoring phase which is brought about by noting the natural relaxation responses as they occur. There are eight changes which occur, eight gross changes which occur, which we can note as we become aware of the relaxation process. Be aware of these natural processes.

FIRST. The Skin. Be aware of the whole surface of the skin of the natural body, of the physical body. Be aware of any changes at all that may occur on the surface of the skin. Be aware of any exposed surface like the face and feel the difference in feel between the exposed and covered surfaces of the body. Just be aware of the surface of the skin. If any itchiness or sensations of crawling occur on the surface of the skin, ignore them. These sensations are a trigger mechanism which are triggered off by the natural response in the body the moment you become aware of the surface of the skin, so you will become aware of sensation on the surface of the skin, and the skin thus becomes the first barrier to your relaxation. Ignore any itchiness on the surface of the skin, any sensations on the skin... just be aware of them, but no movement, no thinking, pure awareness.

SECOND. Become aware of the major muscle groups below the surface of the skin. The calves, the thighs, the abdomen, lower arms, upper arms, front of the body, buttocks, back of the body, shoulders, neck, head, whole of the head, face, especially the forehead, the eye sockets, the nose, the mouth, the jaw; all the major muscles involved in the face.

The THIRD relaxation response to become aware of is the Breathing process. Just become aware of the natural breathing. Become aware of any changes as they occur in the breathing process. As you relax so the breathing will slow down, become aware of the slowing down of the natural breath, do not interfere with it, just note whether the breath gets slower or faster.

FOURTH point. From the breathing we move more deeply into the major organs of the body, especially the heart. Become aware of the heart--the heart rate, the beating of the heart--any experience at all connected with the heart. Just be aware and be aware of any subtle changes that may take place in the heart rate. Sometimes the heart will move faster, sometimes the heart will move slower. Become aware of any of these changes as they occur.

The FIFTH point. Feel any pulse anywhere at all in the body, either on the periphery of the body or on the neck or anywhere in the trunk. Feel any pulse anywhere at all in the body and try to become aware of the sensation of the blood pressure at that point. Eventually as you deepen your relaxation you will become aware of changes in the pulse. For the moment just be aware of the pulse itself.

The SIXTH point. A natural response of the body is known as the Respiratory Vasomotor Response (RVR). As the breath is drawn in the forehead will feel cool. As the breath breathes

out the hands will feel warm. Be aware. Feel the blood drain out of the hands as the breath is inspired. As it is expired, feel the blood rush into the hands. Be aware

### FRONTALIS VMR

THE SEVENTH relaxation response has to do with the feeling the difference in temperature between the various parts of the body. Feel in the first group the tips of the toes, knee caps, finger tips, nose tip, ears; this is called group one. Tips of the toes, knee caps, finger tips, nose tip, ears. Just feel the temperature of those parts of the body. Now become aware of group two, -- calves, thighs, abdomen, palms of the hands, mouth, eyes. Become aware of those particular groups and feel the temperature of those particular groups. Group one, -- tips of the toes, knee caps, finger tips, nose tip, ears; group two, -- calves, thighs, palms of the hands, mouth, eyes and feel any difference of temperature between those two.

Finally the EIGHTH point and eighth last relaxation response. Whole body. Whole body, -- feel the whole physical body and feel any changes that occur in the whole physical body. .... whole body, -- the whole body all at once.

### INDFULNESS OF BREATH

The NEXT PRACTICE is called Mindfulness of the breath. The breath and breathing is very important. The relaxation can be deepened by awareness and mindfulness of the breath.

The breath is the doorway to our emotional self. Our rate of breathing, that is the number of breaths we take per minute is a biofeedback to our state of relaxation or our state of alertness. The purpose of this practice is gradually to gain control of the breathing process. But we can only attain control after we have become aware, so the purpose of this part of the exercise is mindfulness of breath, and awareness of breath. Just become aware of the natural flow of the breath in the physical body. Gradually take control using the power of the mind, the power of visualization, the power of imagination. Gradually take control of the breathing process. We visualise the central alignment of the body from the head through the spine out between the feet and we imagine that the breath is being drawn up from the direction of the feet towards the head and that the breath goes out of the head, down the spine, out past the feet, along the central alignment. The first part of the practice is drawing the breath in and out along the central alignment. Just slowly draw the breath up into the body and slowly let the breath go out of the head down the spine and visualise it, imagine it, moving out between the feet ..... Gradually becoming aware of the harmony of the breath, slow, deep, rhythmic breathing. Now we intensify the breathing by visualising three areas in which the breath can be. First the abdomen -- the chest -- and the whole physical body, using the same practice of breathing in along that central alignment towards the head, breathing out from the head down the spinal column and now we intensify the practice by each time we breath in expand the abdomen, expand the chest, expand the whole physical body. Feel the whole body expand and then just

let the breath go out of the head down the spinal column, out between the feet. This is known as the Three Part Breathing. Expand the abdomen, physically expand the abdomen, physically expand the chest, physically feel the whole body, expand with the breath and then allow the breath to move out of the body feeling as though the body is contracting towards the spine, and then feel the breath move out of the body .... Maintaining that practice, expanding the whole physical body at the end of the breath and feeling the expansion and then just let the breath go and feel how the breath becomes slow, rhythmic, harmonious. Abdomen ..... - chest - ..... whole physical body, -- whole physical body, -- expand the whole physical body and then just let the breath go..... Feeling the whole body expand, -- first the abdomen, then the chest, then the whole physical body, feel the whole physical body expand and then just let the breath go, slow deep rhythmic breathing ....

Now just let the natural breath come and go in a slow deep rhythmic way, just observing the breath coming and going, no specific attention to the breath, just pay attention to the natural breathing movement, feel each inhalation, each exhalation, listen to the breath, slowly fill your lungs and feel the breathing out. Let your breathing become normal and regular, breathe in and out, gently, rhythmically, don't force your breathing, don't try deliberately to make it slow, just keep your own rhythm breathing in and out gently and evenly.....

#### ROTATION OF CONSCIOUSNESS

In the next part of the practice we will be conducting a practice known as ROTATION OF CONSCIOUSNESS. In this prac-

tice the mind is to jump quickly from point to point around the physical body. The mind is not to be allowed to stop, the mind is not to be allowed to move ahead or to fall behind, just jump quickly from point to point around the physical body.

First, become aware of the right arm, the whole extent of the right arm. Now focus your awareness and become aware of your right hand thumb, just the right hand thumb. Now allow the mind to jump quickly from point to point starting from the right hand thumb, second finger, third, fourth, fifth, palm, wrist, elbow, shoulder, armpit, the whole of the right arm; feel the whole of the right arm absolutely still, absolutely relaxed. Waist, hip, thigh, knee, calf, ankle, heel, sole, right toe, 1, 2, 3, 4, 5, the whole of the right leg absolutely still, absolutely relaxed, and now the whole of the right side of the body, feel the whole right side of the body absolutely still, absolutely relaxed.

Left hand thumb, second finger, third, fourth, fifth, palm, wrist, elbow, shoulder, armpit, whole of the left arm, feel the whole of the left arm alone, absolutely still, absolutely relaxed; waist, hip, thigh, knee, calf, ankle, heel, sole, left toes 1, 2, 3, 4, 5, whole of the left leg absolutely still, absolutely relaxed, just the left leg alone, now the whole of the left side of the body absolutely still, immobile, completely relaxed.

Right shoulder, left shoulder, right buttock, left buttock, spine, whole of the back, whole of the back, whole of the back, whole of the back absolutely relaxed. Back of the head, top of the head, forehead, right eyebrow, left eyebrow,

centre of the eyebrows, nose, nose tip, right eye, left eye, right cheek, left cheek, right ear, left ear, upper lip, lower lip, both together, chin, throat, whole of the face, feel the whole of the face absolutely still, immobile, perfectly relaxed; centre of the chest, left chest, right chest, abdomen, navel, whole front of the body, feel the whole front of the body absolutely still, absolutely relaxed. Right leg, left leg, both legs still, absolutely relaxed. Right arm, left arm still, immobile, absolutely relaxed. Trunk, head, whole body, feel the whole body absolutely still, perfectly relaxed.

AWARENENESS  
OF  
SOUND

Now become aware of any sound, anywhere in the environment. Just allow the mind to experience sounds. Notice the physical body is absolutely still. The whole body becomes a receptacle for sound. Feel sound on the physical body and hear sound at the point where sound reaches the ears. See sound as though you were looking at a television screen on the back of the forehead. Any sound that you hear visualise it clearly, be aware that you can feel sound with the body, you can hear sound with your ears, you can see sound with the mind. Be aware sound also has texture, taste and smell -- just be the centre of sound -- ..... No attachment, no detachment, just awareness of sound, be aware that your body is now completely and totally relaxed, -- no physical movement, no thinking, no sleeping, just be aware of the state of relaxation.

VISUALIZATION

In the next part of the technique we use the techniques of VISUALIZATION to release the tensions in the mind itself.

Just allow the mind to become very, very still -- try not to concentrate on any particular thought, let your thoughts just float by. Imagine that you are looking at a television screen in the back of the forehead, just become the onlooker to thought, be the witness, the observer of your own thought style and let them come, let them go, on the television screen of the mind itself. Do not concentrate, do not become attached to any particular thought. Let yourself become detached from the mind itself so that the mind is in a state of total relaxation. Thoughts come and thoughts go. No thinking, no concentration, no attachment, no detachment to any particular thought. Allow thoughts, feelings, experiences to come and go and be the witness of all that is in the body; all that is in the mind; and be the witness of your own breath and your own breathing, just let the observer, the witness, the onlooker of thought itself, be calm, relaxed, neither attached nor detached.....

Now picture in your mind a very calm and beautiful lake. The sun is shining down on that lake. Your mind is the lake-- allow it to be very, very still. Nothing must disturb the surface of the lake of your own consciousness. Feel the experience of space. The lake is so still that you can see right through the lake, through the lake -- look into the lake and see it as a large, open space with the sun beating down into the space. There is warmth, there is peace, there is calm, there is joy. These are the only feelings that you can experience. Feelings of peace, calm, joy, warmth, energy. No thought will disturb the state of that lake. No disturbance is allowed to enter into that space. Keep that feeling of open-

ness, of spaciousness, of light, warmth, energy, experience those feelings. Marge with them; surrender yourself totally to these experiences and these feelings and feel wave after wave of relaxation pouring over you. Be absolutely aware of the external environment; be absolutely aware of the internal environment of peace, -- of space, -- tranquility, -- joy, -- calm. Do not let anything in the external awareness disturb anything that is your internal awareness of tranquility, peace and joy. Just be aware that the external environment is there but do not let it disturb that internal experience and feeling of calm, you, tranquility and peace.....

STOP

..... and in that stopping be totally aware of peace.....

#### AWARENESS

When the natural processes take over, keep that attitude of peace. Be totally aware; aware of the body; aware of the external reality; aware in the inhalation, exhalation; and in that awareness know total peace. Know that there is a difference between awareness and consciousness. Awareness is the experience which comes with stopping, with the cessation of everything. Consciousness occurs when the awareness becomes attached to the breathing, attached to the outside world; attached to the body, attached to thoughts, emotions. So now become aware of the breathing process and the consciousness as it is attached to the breathing consciousness.

RESOLVE

Deepen the breathing; think of your resolve; think of any resolve that you wish to achieve. Anything at all that you wish to achieve. Reduce it to as few words as possible, preferably only three or four words, which become a positive statement. At this point repeat your resolve three times --

NOW ....

PRESENT TIME

Deepen the breathing, become aware of who you are, and where you are. Be aware of your body, your physical body lying on the carpet in this room. Breathe in and out deeply, stretch your fingers, stretch your toes, stretch them right out. As you breathe in the next time, stretch the whole body right out,-- fingers, toes, whole body. Intensify the stretch until your whole body is taut like a bow-string. Now just relax, completely relax and rest. Be aware of the feeling of relaxation.

Remember this is your perfect right. It is your perfect right to be in this state at all times. You have achieved this yourself and the state of relaxation is now memory. Like any other memory it can be recaptured any time, any place, anywhere, under any conditions. This state is yours to reclaim any time you have a need to be relaxed. Whilst you are lying there remember the most pleasant experience you had during this relaxation and as you remember be aware of memory.

Peace, relaxation, harmony, stillness ---- and when you are ready, slowly open your eyes. Adjust to the external reality. Slowly sit up and be aware.

## TAPE TRANSCRIPT 4 - SYNERGISM

BREATH AWARENESS - COUNTINGPosture

- Check - hands  
 - feet  
 - head - gently rotate  
 - central alignment - head, spine, out between the feet  
 - shoulder and back  
 - head , face, lips  
 - whole body, whole body, whole body

Relaxation Response - Awareness - passive self-monitoring

1. Skin - surface of skin itself - exposed - covered
  - sensations on surface of skin - itching - crawling  
 - ignore
  - whole surface of skin - BE AWARE
2. Muscles - major muscle groups in body
  - calves, thighs, buttocks, abdomen, chest back
  - lower arms, upper arms, shoulders, neck, jaw, cheeks, face
  - BE AWARE of all the major muscle groups at once
3. Breathing - no interference with breath - no control of breath
  - AWARE only of breathing in - breathing out
4. Heart - BE AWARE of heart space
5. Pulse - BE AWARE of a pulse - anywhere in the body
6. Forehead - forehead cool - feel the blood leave the hands
  - each time the breath draws in feel this response
  - breathe in BE AWARE of changes which take place
7. Temperature - there are two systems in body - one warm,  
 one cool

- Group One - COOL - toes, kneecaps, fingers  
ears, forehead
- Group Two - WARM - soles of feet, thighs,  
abdomen lips, mouth, eyes
- BE AWARE of these differences in temperature

8. Whole body, Whole body, Whole body, Whole body, Whole body,  
Whole body, whole body. Passive awareness of the whole  
body, the whole physical body.

Again we'll check the relaxation response --- checking  
the skin, the surface of skin without the clothes, ... the  
major muscle groups; calves, thighs, abdomen, chest, back,  
arms, shoulders, neck, chin, eyes, face. Now the breathing;  
be aware of the breathing ... just awareness of the breathing  
without interference in the breathing process .... feel the  
pressure of the blood through the body each time the heart  
beats .... be aware of the heart beat and the pulse; check  
the eyes in their sockets, the movement of the eyes, eyelids.  
Check the temperature changes in the body between warm and  
cold. Checking the two groups -- toes, kneecaps, fingertips,  
nose, ears, front of the forehead, Group 1. Group 2 -- soles  
of the feet, calves, thighs, abdomen, lips, eyes.

Whole body, whole body awareness, the whole body all at once.

We deepen and intensify the relaxation response with atten-  
tion to the breath. Visualise the central alignment of the  
body -- head, spine, out between the feet, that central  
alignment -- draw the breath up between the feet, abdomen,  
chest, whole body. ... Let the breath go, -- down the spine,  
down that central alignment; breathing in slowly, deeply,  
and regularly. Use the mind, the will, the power of the

imagination and the visualisation to intensify the feeling of the movement of the breath, the expansion of the breath and the contraction and relaxation as the breath goes out of the body. .... Feel the total expansion of the body as you breathe in ... feel the relaxation as you breathe out -- feel the movement of the breath as it moves down the body, out between the feet.....

Breathe in -- expand -- expand the abdomen physically -- physically expand the chest -- feel the whole body expand -- feel the consciousness of the expansion in the head space. As you breathe out feel the breath let go. The next time you breathe in, breathe in through the left foot -- to the abdomen, out through the right foot, to the right foot itself, -- filling the right foot with the breath.

Imagine that there is a hole in the base of the throat-- breathe through that point deeply -- breathing in and breathing out -- as though there were a hole in the base of the throat. ... Listen to the sound of your own breath as you breathe in and breathe out. ....

Use the power of the mind, the power of the imagination to draw the breath through the left foot, up the left leg into the abdomen --feeling the passage of the breath clearly, hearing it, seeing it, feeling it, and as you breathe out, breathe out down the hollow right leg to the right foot.

When the breath stops breathing out, move the mind slowly from the right foot to the left foot and allow the breath to breathe itself in. Clearly visualise the triangle of the

breath -- left foot -- abdomen -- right foot -- left foot  
 again. Counting the breath .... \*, \*, \*, \*, \*, \*, \*, \*, \*, \*,  
 \*, \*, \*, \*, \*, \*, \*, \*, \*, \*, \*, \* ....., \*, \*, \*, \*, \*, \*, \*,  
 see how long it takes the breath \* to \* \* \* move \* \* from \*  
 the \* left foot to the abdomen \* \* \* \* abdomen to \* the \*  
 right \* foot \* \* \* ...\* \* \* and when the breath stops,  
 count how long it takes the mind to move from the right  
 foot to the left foot before the breathing starts again,  
 \* \* \* \* \* \* \* listen to the sound of your own breath as  
 your breathe in \* \* \* ...

Visualise clearly the triangle of the breath and count how  
 long it takes the breath to go along two sides, and the  
 mind to go along the bottom \* \* \* \* .....\*\*\* Change \*\*\*  
 Left hand -- heart space - right hand and repeat the prac-  
 tice \* \* \* \* \*

Listen to the sound of your breath, feel the movement of the  
 breath along the left arm -- into the heart space, out to  
 the right arm .... stop ..... just be aware of the breath  
 without interfering with the breath.

No attempt to control the breath, just let the breath come  
 and go -- just be aware of the breathing process .....

Be the centre of experience and awareness -- be the centre  
 of feelings -- of thoughts -- of sound -- just the centre of  
 absolute awareness. Be aware you are not the body -- repeat  
 to yourself: "I am not the body", and be aware that you  
 are not the body. Be aware that you are not the breathing,  
 say to yourself "I am not the breathing", and be detached  
 from it. Be the observer of the breath, and of the breathing

process -- Be aware -- "I am not the breathing". Be the centre of the mind stuff watching the visions, the images, the thoughts, feelings, experiences.

No attachment - no detachment -- no liking, no disliking -- no sleeping, no thinking, -- pure awareness.

Just the centre of your own experience and awareness  
 .... Feel the freedom, and the peace, and the serenity that comes with just being and just being aware of being ...  
 feel the coolness of the 'in' breath, the warmth of the 'out' breath..... Breathe so subtly that a feather held just below the nose would not be disturbed by your breathing in or breathing out. This is the subtle breath that does not move in or out of the nostrils .... It moves inside of them ... feel the coolness as you breathe in -- and be aware that in the subtle breath there is no breathing in or breathing out -- the breath breathes. Do not disturb the feather. .... The body moves, but the breath stays in the nostrils ... This is the subtle breath - the breath beyond breathing....  
 Do not allow the body process of breathing to interfere with the subtle breathe.... Be aware that the body moves but not the breath. The breath is suspended in the nostrils ....  
 ..... STOP .....

No thing, no attachment, no detachment, just awareness and the freedom of that awareness.

Use the power of mind and the power of visualisation to think of your favourite scene. It maybe the mountains, a beach, it may be the ocean, a stream, a lake. Whatever it

is visualise it clearly. Be there -- alone --. Experience it fully -- the fragrance, -- the vision, -- the colours, -- the place. It is yours alone -- for you alone..... Be there ... and intensify the vision of that place -- see it clearly....

Now dismiss it and think of your resolve. Repeat it to yourself three times positively -- Now! Remember anything you wish to achieve, any resolve you make at the end of relaxation can be achieved.

Think now of your relaxation. Think of the nicest experience that you had during that relaxation. Recall it, clearly and vividly. That experience is now a memory. It is your perfect right to be that way.

Wherever you are, whatever you are doing; you can recall it anytime, anywhere, anyplace -- at will.

Bring the breath back into the body -- stretch the fingers; stretch the toes; stretch the whole body; deepen the breath. Be aware of who you are, where you are, where you are lying, feel the feeling of your body. Relax for a moment ... and in your own time, sit up, open your eyes -- and face this way.

## TAPE TRANSCRIPT 10 - SYNERGISM

"STOP" TECHNIQUE - 40 MINUTES

Check your feet,... hands,... head. Slowly rotate the head until you find the centre point. Visualise clearly the central alignment of the body. Make any final adjustments to the physical position. Once you have made any final adjustments, no further physical movement whatsoever.

No thinking,.... no sleeping,... no physical movement. Be aware of practice, the practice of relaxation. Be aware only of the technique. Feel the physical changes as they occur in the body --any physical changes. Feel the whole body relaxing in this posture.

Deepen and intensify the awareness of the breath,... breathing up the central alignment of the body,... expand the abdomen, ... expand the chest,... as you breathe out, follow the breath past the feet. Long, slow rhythmic breathing .... breathing up and down that central alignment. Expand the abdomen, ... expand the chest,... feel the physical expansion of the whole body as you breathe in. Feel the relaxation as you breathe out, feel the movement of the breath in the body.

Use the mind, ... the will, .... the power of the imagination,... the power of visualisation, to breathe in and out. Use the mind and the body together. Physically expand the abdomen, physically expand the chest,... physically feel the whole body expand. Use the mind to follow the breath up and down the body. Actually feel the movement of the mind with the breath up and down the body.

Intensify the feeling by using the snoring breath. The breath in the base of the throat. Allow the tongue to curl and just touch the palate,.... Really intensify the sound of your own breath, as you breathe through the base of the throat.

Be aware of the movement of the breath, the sound of the breath, the feeling of the breath as it moves up and down the body. The feeling of expansion as you breathe in, the feeling of contraction and movement down the spine and out of the body as you breathe out. Tongue relaxed but curled against the palate to allow the saliva to lubricate the throat.

Try to hear the difference in the sound between and in breath and the out breath.

STOP.

Just be aware, ... be aware of the whole environment,-- be the centre of your own mind stuff. No thinking,... no sleeping,... just awareness.

Now, draw the breath from the left foot to the centre of the head,... breathing only in the left nostril. As you breathe out, breathe out only through the right nostril. Visualise the breath coming from the direction of the left foot, the full length of the body into the left nostril, into the centre of the head space. Each time you breathe out, feel the centre of the head space. Allow the breath to move out of the right nostril, down the right side of the body, out past the right foot. Visualise clearly that triangle.

The breath will come from somewhere beyond the left foot, ... the breath will go somewhere beyond the right foot. When the breath stops beyond the right foot, just be aware of the mind slowly moving from the end point of the breath to the start of the new breath from right to left somewhere beyond the feet. Be aware of that triangle -- left foot, head centre, right foot, but be aware that the breath is somewhere beyond both feet.

No sound on the breath, just let the breath come and go deeply.

Now count the breath on the in breath, -- the out breath. Count the distance between the out breath and the start of the in breath, -- the distance the mind must travel from where the breath stops to where the breath starts. (At this stage tap out a beat at one second intervals to time the breath).

STOP

Just be the centre of your own awareness. Just observe the coming and going of your own breath. Observe the coolness in the nostrils as you breathe in, the warmth in the nostrils as you breathe out.

Now breathe in the left nostril -- out right nostril -- feeling the coolness of the breath of the left nostril only. The warmth of breath of the right nostril only. Be aware of nothing else but the movement of the breath in the nostrils, the feeling of coolness in the left nostril, -- warmth in the right.

Now change -- feel the coolness in the right nostril, the warmth in the left. Now alternate, breathing in left,

out right, in right, out left, -- feeling the coolness as you breathe in, -- the warmth as you breathe out the alternate nostril.

STOP

Be aware. Just be the centre of your own awareness. Feel the coolness of the in breath, ... the warmth of the out breath, ... but be not a part of it, be aware of it. Just feel the breath coming and going in the body, -- in the nostrils. Just observe ..... feel the coolness of the in breath, the warmth of the out breath. No attempt to interfere with the breath, just be aware of it.

Be aware that we are about to rotate the consciousness, allow the mind to move quickly from point to point around the body as each point is mentioned.

Starting with the right hand thumb, ... second finger, ... third, ... fourth, ... fifth, ... palm, ... wrist, ... elbow, ... shoulder, ... arm-pit, ... waist, ... hip, ... thigh, ... knee, ... calf, ... ankle, ... heel, ... sole, ... right toes, 1, ... 2 ... 3 ... 4 ... 5 ..., left hand thumb, ... second finger, ... 3rd, ... 4th, ..., 5th, ... palm, ... wrist, ... elbow, ... shoulder, ... arm-pit, ... waist, ... hip, ... thigh, ... knee, ... calf, ... ankle, ... heel, ... sole, ... left toes, 1 ... 2 ... 3 ... 4 ... 5 ... right shoulder, ... left shoulder, ...; right buttock, ... left buttock, ... spine, ... back of the head, ... top of the head, ... forehead, ... centre of the eyebrow, ... right eyebrow, ... left eyebrow, ... nose, ... nosetip, ... right eye, ... left eye, right cheek, ... left cheek, ... right ear, ... left ear, ... upper lip, ... lower lip, ... both together, ... chin, ... throat, ... chest, ...

right chest, ... left chest, ... centre of the chest, abdomen, ... navel, ... right leg, ... left leg, ... right arm, ... left arm, ... trunk, ... head, ... whole body, (7 times), right hand, thumb, etc.

Feel the heaviness of the whole body sinking, ... feel the right arm, ... left arm, ... right leg, ... left leg, ... heavy trunk, ... heavy, -- head heavy, whole body heavy. See the body heavy, lying on the floor under the hot sun. Feel the hot pavement under you, feel the heat of the whole body. Intensify the feeling of heat, intensify the sight of the sun. Feel the hot pavement, feel the heat of the whole body. Feel the body sweating. See the whole body as though it were made of margarine or butter, Yellow -- feel the heat, see the body melting. It is made of butter, see the right thumb melting, ... second finger, ... 3rd, 4th, 5th, ... palm ... wrist. See the whole of the right hand melting, ... elbow, shoulder, whole of the right arm melting, armpit, ... waist, ... hip, ... thigh, ... knee, ... calf, ... ankle, heel, sole, ... right toe 1, 2, 3, 4, 5. The whole of the right body melting. See it disappearing into melting butter. The left thumb, 2nd finger, 3rd, 4th, 5th, arm, ... wrist, ... the whole of the left hand melting, ... elbow, ... shoulder, ... armpit, ... waist, hip, ... thigh, ... knee, ... calf, ... ankle, heel, sole, ... left toes 1, 2, 3, 4, 5, ... The whole of the left side of the body melting. Right shoulder, ... left shoulder, ... right buttock, ... left buttock, ... spine, ... head, ... back of the head, ... top of the head, ... forehead. Right eyebrow, ... left eyebrow, ... centre of the eyebrow, ... nose, ... nose-tip,

right eye,... left eye,... feel them melting. Right cheek,... left cheek,... right ear,... left ear,... feel the ears slipping away from the head as they melt into butter -- into oil.

Upper lip,... lower lip,... both together,... chin,... throat,... feel all the muscles on the face,-- jaw, the nose, feel them all melting away. See them clearly melting away, see them clearly melting away. Feel them sliding off the face of the bone structure, chin,... throat,... right chest, left chest,... centre of the chest,... abdomen,... naval,... feel the whole front of the body,.. feel the muscles on the whole front of the body, feel them all melting like big slabs of butter and just dropping away into a pool of oil. See the whole of the right leg melted,... left leg,... right arm, left arm... trunk,... head,... the whole body melted. A big pool of oil. Feel the freedom.

STOP

You are clearly not the physical body. See the spine clearly. Top of the spine .... base of the spine. See it like a long cane with a deamond on top. What is at the bottom? See the colour clearly. Visualise clearly where the naval will be in the spine and place there a jewel. See the colour clearly. The heart centre... where will it be in the spine? Place a jewel there... see it clearly. What is its colour? The throat centre ... where will it be in the spine? See it clearly. The top of the spinal column, the very tip, place there a diamond sparkling in the sunshine. Myriads of colours and yet sparkling like a clear clean diamond. Each

time I mention a part of the spine see the jewel you have placed there clearly. Top, ... throat centre, ... heart centre, ... naval centre, ... base of the spine, ... naval centre, ... heart centre, ... throat centre, ... top of the spine. Now see the whole spine clearly, with all the jewels in it. See the colours clearly. This is the centre of your being. The jewel on the top is the command centre.

STOP

Think of your resolve. Issue that as a command from the command centre 3 times clearly. Now. Any command you give yourself in deep relaxation will be obeyed. Slowly deepen the breathing, ... bring your awareness back into the physical body. See your physical body lying on the carpet. See yourself clearly lying on the carpet in this room. Bring yourself back into the awareness of your physical body. Stretch your fingers, ... stretch your toes, ... stretch your whole body. Stretch your arms over your head, -- and stretch the whole body right out, ... and then just relax. Feel the feeling of relaxation. Remember that feeling is your perfect right..... In this attitude of relaxation you can handle any reality. Just think of your relaxation for a moment..... Enjoy the feeling. Remember that memory can be recalled any time, anywhere and under any conditions.

Slowly sit up, open your eyes and face this way.

## TAPE TRANSCRIPT 11 - SYNERGISM

AWARENESS - 45 MINUTESPosture

- Check - hands  
 - feet  
 - head - gently rotate  
 - central alignment - head, spine, out between the feet  
 - shoulder and back  
 - head, face, lips  
 - whole body, whole body, whole body

Relaxation Response - Awareness - passive self-monitoring

1. Skin - surface of skin itself - exposed - covered
  - sensations on surface of skin - itching - crawling
  - ignore
  - whole surface of skin - BE AWARE
2. Muscles - major muscle groups in body
  - calves, thighs, buttocks, abdomen, chest, back
  - lower arms, upper arms, shoulders, neck, jaw, cheeks, face
  - BE AWARE of all the major muscle groups at once
3. Breathing - no interference with breath - no control of breath
  - AWARE only of breathing in -- breathing out
4. Heart - BE AWARE of heart space
5. Pulse - BE AWARE of a pulse - anywhere in the body
6. Forehead - forehead cool - feel the blood leave the hands
  - each time the breath draw in feel this response
  - breathe in BE AWARE of changes which take place
7. Temperature - there are two systems in body - one warm, one cool

- Group One - COOL - toes, kneecaps, fingers  
ears, forehead
- Group two - WARM - soles of feet, thighs,  
abdomen, lips, mouth, eyes
- BE AWARE of these differences in temperature

8. Whole body, Whole body, Whole body, Whole body, Whole body,  
Whole body, Whole body. Passive awareness of the whole  
body, the whole physical body.

All these natural physiological conditions take place with-  
out any intervention by you, without any conscious manipulation  
by you, your only function in this phase is to become aware of  
each of those responses as they occur.

Mentally keep checking skin, muscles, breathing, heart rate,  
pulse rate, forehead, body temperature. Be aware that the  
mind can do all of that at the same time, or, each of these  
individually. Just be generally aware of the whole condition  
of the body as it is lying on the carpet.

Whole body, whole body, whole body, whole body, whole body,  
whole body, whole body.

At this point we are interested in the change in the  
functions of the body, -- the physiological changes that take  
place as a natural response to the posture in which you have  
placed your physical body.

Just become aware of those changes as they occur, no  
thinking; no sleeping; awareness only of the changes --  
skin, muscles, breathing, heart rate, pulse rate, forehead,  
body temperature. Whole body, whole body, whole body, whole  
body, whole body, whole body, whole body. Each time a part  
of the body is mentioned, each time a response system is men-

tioned just check it with the mind.

This is called the Self-Monitoring process. In order to monitor it, it is necessary to have a passive attitude. Monitoring is not a conscious event, it is a passivity in which the mind is, or becomes aware of each of the functions as they are mentioned: -- skin, muscles, heart rate, pulse rate, forehead, body temperature.

Each time the word 'skin' is mentioned, feel the surface of the skin, especially any of the exposed portions of the skin, but feel the skin inside your clothes also. The surface of the skin of the body.

In the monitoring or Self-Monitoring part of this exercise the aim is Awareness - just be passively aware - Awareness of the parts that are mentioned ... of the response systems that are involved, and the changes in those response systems as they occur naturally.

It is a technique of passive awareness. Self-monitoring is an Awareness experience - check -- feet, hands, head, spine, whole body, whole body, whole body, the whole body all at once; -- the skin, skin resistance.

Muscles, the muscle tone, -- feel all the muscles beneath the skin.

Breathing - become aware of the breathing and where the breathing is, and the feeling of the breathing. At this stage the breathing is in the body. Feel where the breathing is in the body and then each time you breathe out become aware of the heart rate. Intensify the experience of the heart rate.

Now the pulse -- wherever the pulse may appear, be aware

of it and note its location. It may be in the heart, or it may be in any other part of the body.

Posture: Once more we check feet, the angle the feet make with the ground; -- the fingers, the curl of the fingers, the angle the feet make with the ground, -- the fingers, the curl of the fingers, the head, the state of the head, the neck, the shoulders, the spine, and the whole body all at once. Just feel the whole body.

Relaxation Response: The skin, the surface of the skin, just the surface of the skin, not the clothes, not the blankets, just the surface of the skin.

Now the muscles underneath the skin, -- feel the major muscle areas: calves, -- thighs, -- buttocks, -- chest, -- back, -- shoulders, -- biceps, -- and then all those at once, just feel all the muscle systems in the body.

Now become aware of the breathing, and aware of the heart rate.

Each time you breathe out, become aware of the pulse, either the pulse of the heart itself beating, or a pulse anywhere in the body. Now the forehead - the coolness of the forehead, the whole feeling of the forehead.

Back to the breathing, breathing in through the nostrils, both nostrils at once, feel the warmth as you breathe in, the coolness as you breathe out.

Now we deepen the relaxation response by breathing in and breathing out under control. Each time you breathe in, draw the breath up that central alignment, from beyond the feet into the abdomen, into the chest, into the whole body.

Physically expand the abdomen, expand the chest, -- feel the whole body expand as you reach the last part of the breath. As you breathe out the breath should just respond to the breathing out, the control at this stage is on the breathing in. When you breathe out, the breathing out should take place of its own accord. Expand the whole body, feel the whole body expand, feel the tension of the whole body, hold the expansion, hold the expansion, hold the expansion, and then just let go, and just feel the intense relief as you just let go.

You are not breathing out, the breath breathes itself out. Each time you breathe in, mentally check: feet, calves, knees, thighs, abdomen; expand the abdomen, the chest .... expand the chest, the whole body ... feel the whole body expanding and feel the breath rise up into the head as though you are drawing all the tension of the whole body into the head space. Hold that tension there until you feel all the tension in the whole body, then, when all of it is there and you are conscious of it all in the head space, just let it go.

Follow the breath, with the mind, out of the head space, down the spinal column, out along that central alignment. The key is in that breathing in and drawing the tension of the body up into the mind space, then get rid of it, let it go, give it up and feel that intense feeling of relief as you just let go the breath.

Almost explosively, let go the breath. Awareness only of that expansion and that feeling of tension in the head space. As the whole tension of the body is drawn into the head

space with the breath, feel the incredible increase of tension as you keep breathing in and breathing in, and breathing in -- expanding the whole body, expanding the whole body, breathing in, expanding, expanding, not holding the breath, but just breathing in until you can breathe in no more, hold it, feel that expansion of the body, the tension of the body, and then just let go, completely let go the breath.

There are two experiences involved, the feeling of the physical movement of the breath up the body and down the body, that is one experience. The second experience is the experience of tension as you breathe in and the intense feeling of relief as you let go the breath, the breathing out occurs naturally, just let the breath go.

Once you let go of the breath naturally you will find the stillness of the breath at the end of the breath and you may not even wish to breathe in.

Don't breath in ... let the breathing in come of its own accord, but once you feel the breath coming up past your ankles, your calves, your knees, your thighs, once it reaches the abdomen, then expand the abdomen, physically expand the chest, physically expand the whole body. Really take control once the breath reaches the abdomen. The experiences of the movement of the breath and then the expansion and the contraction of the breath. These are the two major experiences.

STOP.

Just be aware of sounds, of feelings, of experiences, 'just be in the centre of your own head space ... mind space ... feel the freedom, the peace, the quiet.

If sounds come, don't put a label to them, don't identify with them, just be aware of sound, be the centre of your own head space, let the sound surround you, don't go to the sound, just

BE AWARE.

Scent, sound. What sights are there on the screen of the forehead? Just visualise as though you are looking at a television screen on the back of the forehead. Are there any pictures? Any scenes? Any thoughts? Just be aware of them. Are there any feelings in the body? Is there any liking or disliking of anything? BE AWARE.

Anything at all in the head space? thoughts? feelings? visions? experiences? Just be totally aware. But, be aware also that you are separate from them, just be the centre of the awareness of your own head space.

Now be aware of the breathing. Breathe in through the nose and breathe down the spine. As you breathe out be aware that the breath comes back up the spine into the centre of the head space, as you breathe in and down, feel the physical experience of the expansion of the breath as you breathe down the spine.

As you breathe out be aware that it feels like a released elastic band, back into the head space, just be aware of the breathing in and the breathing out, breathing in through

the nose, into the centre of the head space, breathing out down the spine.

See how far down the spine you can go with the breath, with the breathing process. As you breathe in, expand the breath and feel the feeling of expansion. As you expand the breath down your own spinal column, see if you can reach the roots of the spine. Be aware of the whole of the spine.

As you breathe out feel the breath come into the head space.

Now change.

Breathe as though breathing through every pore and fibre in your being, as you breathe in breathe as though breathing through every pore and fibre of your being, into the head space.

As you breathe out just be aware of the head space, as you breathe in, feel the big sphere of the head space. Fill with the breath as you breathe through every pore and fibre of your being, every skin follicle, every part of your body breathes in and fills the head space. As you breathe out feel the head space as though it is completely empty. You are in the centre of that. Just be aware of the head space full and the head space empty, and the experience of the head space empty.

Stop.

Be Aware.

No thinking, no sleeping, no physical movement. Pure awareness. Be the centre of sound, of feeling, of thoughts, visions.

Be aware that your awareness can be anywhere, the heels where they touch the carpet, backs of the hands, the back of the head, see those five points all at once. Be aware that you can feel each of those points individually.

Now the back of the head, shoulders, elbows, backs of the hands, buttocks, calves, heels, back of the head, shoulders, elbows, back of the hands, buttocks, calves, heels, the whole body, feel the whole body at once. Feel the environment in the room, the boundaries of the room, be aware of the whole house.

Now the nose tip, heels, backs of the hands, back of the head, nose tip, back of the head, nose tip. The centre of these two points. Be aware that the awareness can be everywhere and no where, it can check every point of the body.

Think of the whole body. Now think of the nose tip, back of the head, the centre point between those two, now the centre of the eyebrows, back of the head, where it touches the carpet, the centre point between those two; left ear, right ear, centre point between those two, the centre of the forehead, back of the head where it touches the carpet, centre point.

Just be aware of the centre point, and be aware that this is the focus of awareness, the command centre, half way or midway between the centre of the eyebrows, the back of the head where it touches the carpet and both ears.

That is the centre point. It is the centre of the Awareness.

It is the command centre from which all the orders in the body, in the mind, in the emotions, emanate.

Be aware of that point and notice that at that point you are the centre of awareness, the centre of sound, feeling, vision, experience and from that point the awareness can move anywhere.

Back of the head, shoulders, elbows, back of the hands, buttocks, thighs, calves, heels, footsoles. Footsoles, feel only the soles of the feet and feel the warmth in the foot soles.

Each time you breathe in, each time you breathe out, breathe out as though filling your feet with air.

Fill your feet with your own breath, and feel the warmth. Intensify and visualise that feeling of warmth. Use the imagination, the visualisation, the will, to intensify the feeling of warmth in the soles of the feet.

As though you are standing on a hot pavement in the sun, feel the heat in the soles of the feet.

Now feel the palms of the hands intensify the feeling of the palms of the hands as you breathe in, as though breathing in through the centre point of the palm, and when you breathe out fill both hands at once with the breath and the feeling of the heat.

Intensify the feeling of heat in the hands, use the will, the power of imagination, the power of visualisation to intensify that feeling.

Think of the sun, or a fire, use your own imagination to intensify the feeling of heat in the hands. Now each time you breathe in feel the coolness and each time you breathe

out feel the warmth in the nostrils themselves. Feel the coolness as you breathe in and the warmth as you breathe out. Now feel the whole body lying on a beach in the hot sun. Visualise the beach, visualise the hot sun, feel the warmth on the body. Be aware of the whole body - WARM.

Hear the sound of the ocean. The ocean is the sound of your own breath as you breathe in and out. Intensify the feeling of warmth. Intensify your visualisation of the sun, use your imagination and you will create a whole picture of the beach, the sun, -- the water, the waves, -- the blue sky. Feel the heat of the body, the warmth of the sun, the sound of your own breath. Visualise the sun perfectly. The sky, the sand, the waves. Be aware of everything you see.

This is your private beach, your private ocean, your private sun. Draw in the rays of the sun, each time you breathe in. Intensify the feeling of your whole body being filled with the life force of the sun, the golden rays of the sun. Fill the whole body with the light, warmth, life, life force each time you breathe in and draw from the sun. Become aware of the coolness of the breath in the nostrils. Each time you breathe in fill the whole body with the breath. Expand the whole body with the breath, become aware of the whole body. Stretch the physical body, stretch the fingers, stretch the toes, stretch the whole body out, stretch the whole body right out, relax.

Think of your RESOLVE.

State your resolve to yourself three times now.....

Any resolve you make during your relaxation technique, any resolve you make at the end of any relaxation or meditation, can be achieved.

Now relax.

Think of the feeling of relaxation. Restore that feeling of relaxation, be aware that that is now a memory. It is your perfect right. It can be recalled anytime anywhere, in any circumstance.

Slowly sit up and face this way and open your eyes.

## TAKE HOME INSTRUCTIONS

## WEEK

- 1 Instructions for Self-Monitoring Schedules
- 2 Pre-sessional Instructions
- 3 Simple Aide Memoire - Relaxation
- 4 Simple Breathing Technique
- 5 Ten-step Guide to 5-min Relaxation
- 6 Synergism - Treatment Modules
- 7 Relaxation Response - Rr
- 8 Outline of Nervous System

TAKE HOME INSTRUCTION SHEET NO 1Instructions for Self-Monitoring Schedules (S-MS)

1. Each week collect an S-MS
2. Blood Pressure: Everyone has blood pressure. Each time the heart pumps blood, pressure enables oxygen and other necessary substances to circulate into every tissue and vital organ in the body.

Many things cause the blood pressure to go up and down during the course of both day and night. It can rise with excitement or fear, fall due to exercise or be affected by hormonal changes and other body events.

High blood pressure however, when sustained over a long time can cause serious damage to the heart, brain, arteries, eyes and kidneys. Sustained high blood pressure can be caused by stress, anxiety and worry, just as much as by heredity or disease problems related to hypertension. In 90 percent of cases, the cause of high blood pressure is not found.

It used to be thought that high blood pressure was the result of "executive stress". In fact serious cases of high blood pressure can be found in children, and almost as many women suffer from the effects of high blood pressure as men. It affects all walks of life.

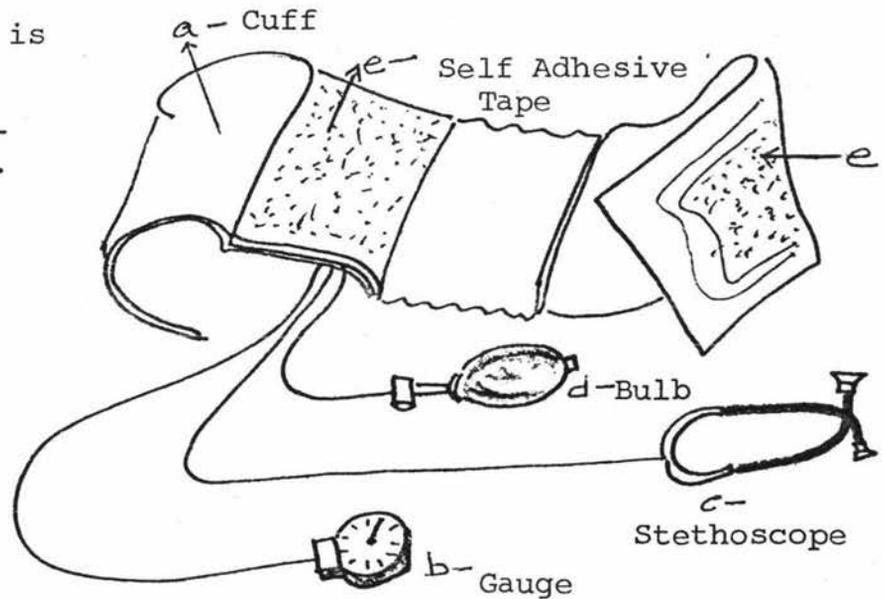
It also used to be thought (even as recently as 1974) that high blood pressure was a life-long disease which would only respond to drug therapy. This is not entirely the case. There has been significant reduction in high blood pressure as a result of one particularly successful technique called SYNERGISTIC RELAXATION and SELF CONTROL based on a medical study conducted by Dr. Chandra Patel at the world famous hypertension clinic in Norwich Park, England.

You are being invited to participate in what could be for you a very important event. All you are required to do is:

- Self monitoring of blood pressure
- Self monitoring of Pulse Rate (PR)
- Self monitoring of Respiration Rate (RR)
- Attitude monitoring
- Weight monitoring

Familiarization:

The blood pressure cusp is fully assembled. Do not attempt to disconnect the components. Just familiarize yourself with the unit.

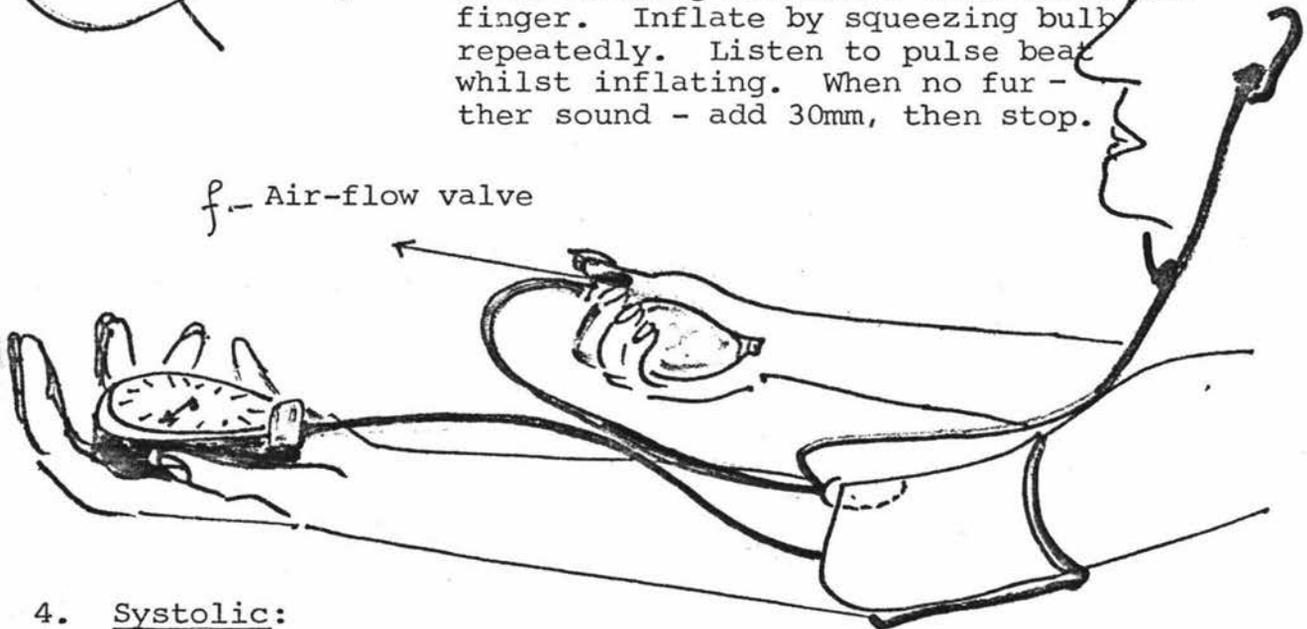
2. Fitting:

Place the cuff over wither arm. Rest and relax yourself. The pressure cup should be on the inside of the arm just above the elbow. Fit it snugly but not tight. Press together the self-adhesive tape. Keep the arm at the same level as the heart. Hold the gauge in one hand (as shown) and the inflating bulb in the other.

3. Inflating:

Close the air-flow valve (f) on the bulb, turning clockwise with thumb and finger. Inflate by squeezing bulb repeatedly. Listen to pulse beat whilst inflating. When no further sound - add 30mm, then stop.

f.- Air-flow valve

4. Systolic:

Open air-flow valve and listen. The first two consecutive faint rhythmic thumps of heart beat is systolic - Read carefully.

5. Diastolic:

Allow pressure to drop slowly. Listen carefully. From sharp thuds sounds will become faint swishing sound. Note precise point where sounds fade away - read carefully.

Pulse Rate (PR): Practice finding a pulse. Once located take it for either one minute (most accurate) or take it for 15 seconds and multiply by four. Enter this PR twice per day, preferably at the same time each morning and each evening. Generally speaking the PR falls between 40 - 140/min.

Respiration RATE (RR): A complete breath involves inspiration and expiration as one cycle. Record how many cycles you breathe for one minute. Enter this RR twice per day, preferably at the same time each morning and each evening. Generally the RR falls between 1-30/min.

Attitude: At the end of each day try to assess generally how you felt. A number of reasons are given. These may not represent your feelings accurately. Enter in a new number if this is the case, and record as simply as possible what this number represents for you. Enter the number you have chosen in an appropriate column alongside the rubric "Today I felt".

Weight: If desired, a daily weight chart can be kept showing the weight on arising in the morning, and the weight before going to bed, in the evening. Show this weight in kilos.

#### REMEMBER

The best preventative medicine is:

1. Check your blood pressure regularly.
2. Follow a healthy habit regarding moderation in
  - food
  - drink
  - smoking
  - exercise
  - rest
  - recreation
3. Monitor daily your
  - a) Pulse Rate (PR)
  - b) Respiration Rate (RR)
  - c) Weight

		RANGE								X
BLOOD PRESSURE	Sys-tolic	160								AM
		95								PM
	Dias-tolic	120								AM
		80								PM
PULSE		140								AM
		40								PM
BREATHING		30								AM
		1								PM
TODAY I FELT	Very relaxed									
	Rather relaxed									
	Relaxed									
	Rather tense									
	Very tense									
			MON	TUES	WED	THURS	FRI	SAT	SUN	

REASONS

RELAXED

TENSE

1. Using SR Techniques
2. Feeling Alive
3. Feeling Successful
4. Feeling Joyful
5. Experience of Authenticity

1. Irritable/Angry
2. Fatigued/Tired
3. Hard Work
4. NOT Successful
5. Depressed

## Appendix B

TAKE HOME INSTRUCTION SHEET NO 2

Do not practice any exercise on a full stomach. Allow at least  $1\frac{1}{2}$  hours after a light meal before doing the exercise. Make sure that you are comfortable, warm and have no constricting clothes, ties or belts. Remove your shoes and if applicable, spectacles, for better results. Lie on a firm bed or on a blanket on the floor. If you are not used to lying flat on the floor you may find this uncomfortable to start with. If so, use a small pillow under your head and a folded towel or cushion behind your knees or under your lower back. With practice you should have no difficulty in lying flat.

In the morning, practice breathing exercises for 2-3 minutes followed by deep relaxation, as you have been instructed, for 5-10 minutes. Repeat this in the evening for a longer period if practical - say 10 - 15 minutes. You can do mini-relaxation and breathing exercises during the day, but we will talk about this later.

All the techniques, especially the deep breathing exercise and meditation have a powerful effect on the body and therefore it follows that they must be used properly and with care as you would use any tool or machinery. The programme is quite simple and is worked out specially for people with high blood pressure. It should also help your body feel fresh and free from fatigue, your lungs invigorated and your mind feel calm and serene. The price is 10-15 minutes twice a day and some efforts to change your atti-

tudes and reactions to life situations in a more appropriate manner.

The next time you are in a situation where you are angry, hurt, frustrated or upset, remember your relaxation technique.

#### THE CHOICE IS YOURS

##### YOU CAN CHOOSE TO BE RELAXED OR TENSE

You only have responsibility for your condition, not the person, the situation or the event which is disturbing you or causing you tension at that time.

##### BE RESPONSIBLE

That is - decide for yourself the condition you want to be in. Ask yourself

WHAT IS THE APPROPRIATE OF GOOD RESPONSE IN THIS SITUATION?

If you feel the best and most appropriate response would be to have a calm 'cool' attitude, instead of allowing the other person or event determine YOUR response,

##### CHANGE YOUR RESPONSE

Take a deep breath, and let it out slowly. Whatever you do, don't take a deep breath and count to ten, that only makes you more tense. Take a deep breath, let it out as slowly as you can, then recall the memory of your relaxed state after relaxation. Gradually settle your breathing down and relax,

##### THEN BEHAVE APPROPRIATELY

TAKE HOME INSTRUCTION SHEET NO 3Physical relaxation

I feel very quiet

My right leg is heavy

My left leg is heavy

Both my legs are heavy and relaxed

My feet, ankles, knees, thighs and hips are heavy and relaxed.

My right arm is heavy

My left arm is heavy

Both my arms are heavy and relaxed

My hands, forearms, elbows and upper arms are heavy and relaxed.

My shoulders and neck are heavy and relaxed

My jaw is heavy and relaxed

My face is relaxed

My eyes are relaxed and calm

My forehead is cool and relaxed

Emotional Relaxation

Slow deep rhythmic breathing

Be aware of the breath

Feel the inhalation and exhalation

Breathe in - cool

Breathe out - warm

In - out

Gently slowly rhythmically

Mental relaxation

Peace

Relaxation

Harmony

Stillness

Be still

Be quiet

Be Relaxed

My breathing is gentle and regular

I feel very deeply relaxed

My mind feels relaxed and peaceful

TAKE HOME INSTRUCTION SHEET NO 4SIMPLE BREATHING TECHNIQUE

Close the eyes. Relax the face, jaw, lips, eyes, forehead. NOW Adjust your body so that you are sitting comfortably in your chair. Check that your feet are firmly planted so that they are not going to disturb you, and that they are relaxed. Check your hands so that they rest either on the arms of the chair, alongside your body, or crossed on your lap. Ensure both legs, feet, arms, and hands are relaxed.

Now, completely relax the whole body. Check the head so that it is either resting on the back of the chair or on the chest. No tension. No physical tension in any part of the body.

NOW: Become aware of the rise and fall of the natural breath. The natural breath as it breathes in and out. Note the breath, where it enters the body at the nostrils and goes out again. Practice this awareness for a few moments - watch the breath with the mind (Repeat gently for 1-2 minutes).

\_ Breathing in - watch the breath coming in

- Breathing out - watch the breath going out

Breathe in - Breathe out, slow rhythmic breathing.

NOW - each time you breathe out, use the imagination to imagine that the outgoing breath is filling the whole body. Fill your whole body with your own breath each time you breathe out. Imagine your body is a balloon. Breathe into it and fill it with each breath out.

Now each time you breathe out fill your hands and your

feet with your own external breath - the out breath. Feel the warmth in the hands as you fill them with the outgoing breath. Simultaneously fill the feet with your own breath. Continue the practice (Repeat 1-2 mins). Breathe in - Nostrils, Breathe out - hands warm feet.

Intensify the experience of breathing in - Awareness of the Nostrils Breathing out - awareness of the warmth in the hands. Hands only on the breath out. Breathe warmth into the hands each time you breathe out. Intensify the warmth.

Slowly return your awareness to the natural breath.

Become aware of the whole body.

Stretch the whole body. Stretch the hands and arms, legs, fingers, toes. Whole body stretch.

Relax the whole body

Open the eyes.

Remember that this technique can be practiced anywhere. It is a simple relaxation technique. Eventually the aim is to be able to do the technique with the eyes open and sitting relaxed.

Very few people are aware of you and your breath. Very few will ever be aware of your breathing. Therefore this technique can be used during

Interviews,

Talking in groups,

Talking in social situations

Resting in a car, bus, plane or train

In fact, anywhere at all, anytime at all.

Try to practice the technique in some of these circumstances until you only have to become aware of the breath, relax the breath, breathe into the warmth of the hand, you are relaxed.

TAKE HOME INSTRUCTION SHEET NO 5RELAXATIONTen Step Guide

1. Sit down, lie down or just relax the whole body (Savasan)  
(Do this part whenever you feel tense anytime anywhere  
for 5-6 seconds)
  2. Breathe gently for about 30-40 seconds.
  3. Imagine/visualise the sun above your head - intensify  
the experience. Light, warmth SUN.
  4. Imagine the body as a hollow vessel.
  5. As you breathe IN - feel the breath travel up the nostrils  
into the centre of the eyebrows. Feel warmth, experience  
light - create the illusion of the sun in the centre of  
the eyebrows
  6. As you breath OUT imagine the light and warmth of the  
sun expand through the whole body. Experience warmth,  
see light through the whole body. Feel, experience - See.
  7. Breathe In - Feel the body contract to the eyebrow centre.  
Feel warmth - experience light - eyebrow centre full of  
LIGHT.
  - \*. Breathe Out - Feel the body expand - whole body expanding/  
Experience warmth - see light throughout the whole body.
  9. STOP! - experience a drifting floating sensation  
- imagine clouds - light, white and drift in the  
cotton wool experience  
- floating - drifting - timeless
  10. Return to present time - Check the natural breath. Deepen  
the natural breath.
- Check - who you are - repeat your name  
- where you are - feel the floor/carpet  
- what you are doing - open your eyes and look  
around - stretch the whole body.
- Locate - sit up, look around, focus on real objects

TAKE HOME INSTRUCTION SHEET NO 6

Synergism - Treatment Modules

Motivation	1. Rationale
Somatic	2. Quiet Environment
	3. Physiological tension Release
	4. Posture
Attentional	5. Passive attitude
	6. Self-Monitoring
Affective	7. Breathing
Cognitive	8. Rotation { Consciousness Breath Awareness
	9. Self Control { Imagery Fantasy Visualisation
	10. Awareness
Reality Test (in vivo)	11. Present Time
	12. CA-SC

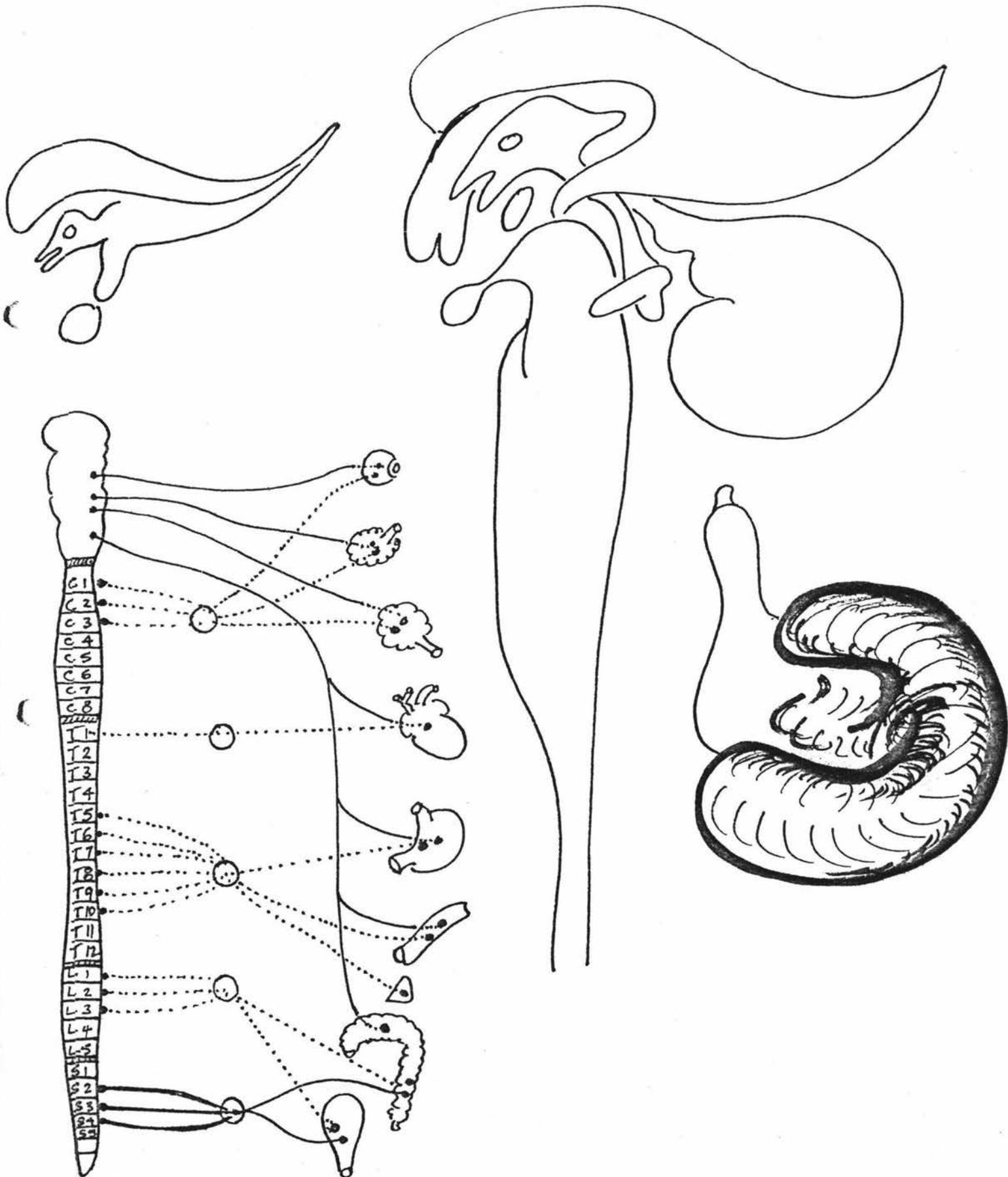
TAKE HOME INSTRUCTION SHEET NO 7

Relaxation Response Rr

- 
- |    |        |              |                                    |
|----|--------|--------------|------------------------------------|
| 1. | G.S.R. | Skin         | Proprioceptive Awareness           |
| 2. | D.M.R. | Muscles      | Decreased muscle tone              |
| 3. | R.R.   | Respiration  | Respiration rate                   |
| 4. | H.R.   | Heart        | Heart rate                         |
| 5. | B.P.   | Pulse        | Pulse rate                         |
| 6. | R.V.R. | Frontalis    | Respiratory vasomotor response     |
| 7. | Temp.  | Skin Airways | Digital temperature control        |
| 8. | W.B.R. | Whole Body   | Whole Body, Whole Body, Whole Body |
-

TAKE HOME INSTRUCTION SHEET NO 8

Outline of the Nervous System



## APPENDIX C

Rationale - Sessional Instructions

## Week

- 1 Synergistic Relaxation I - Introduction
- 2 Synergistic Relaxation II - Basic Therapy Model
- 3 Synergistic Relaxation III - Sequence of Instruction
- 4 Synergism - A philosophy of the PERSON
- 5 Arousal - The neurophysiology of arousal
- 6 Stress - The Silent Killer
- 7 The POI - Concepts
- 8 Biofeedback - What is it?

## Rationale for SR

### 1. Synergistic Relaxation I - Introduction

#### Definition

Relaxation is difficult to define. It has often been associated with day dreaming, a catnap, forty winks or a 'siesta'. Suggestions to train for relaxation often meet with the response "My husband doesn't need to relax, he can just drop off to sleep whenever he wants to."

#### General

Relaxation is not merely a technique for insomnia, nor is it to be associated with sleep. It is an awareness technique by which at a gross level, physical, emotional and mental relaxation can be induced. It requires a person to maintain an attitude of consciousness and awareness. On the other hand, sleep is an unconscious state.

#### Physical Relaxation

The physical body can easily be seen as a repository of tension, and physically tense people are often referred to as "uptight", or "rigid" people. There are many ways to induce physical relaxation. The tense/relax technique of Jacobson's progressive muscle relaxation is only one of a large repertoire of physical relaxation techniques. These include the whole range of sport and competitive body movement from 5BX, PT, and Aerobics to football, rugby and hockey. On a more subtle level, physical relaxation can be achieved through yoga, tai-chi, and akido which are essentially non-competitive. Passive body relaxation can be achieved through massage, shiatsu, acupressure, rolfing, Reichian Therapy and Alexander techniques.

There is a vast range of active and passive body relaxation techniques. This is probably the easiest level to assess and at the same time, the most difficult. Various devices can be used to assess the state of the physical body, but of all these, the human mind is the most precise. The techniques of relaxation recommended follow a process of synergistic development. "Synergism" is a precise and methodological way of proceeding from one point to another in such a way that each step is established by the step preceding it. Synergistic techniques proceed in a con-

secutive step by step progression, so that the final technique can be seen as the logical summation of each of the preceding steps.

The purpose is to develop awareness and sensitivity initially to the body. Once 'awareness' is achieved we can 'sense' the tension in the body at any point. The mind becomes it's own barometer of the tension state of the physical body.

### Self-Monitoring

Once this form of awareness is achieved, it is possible to monitor the various systems in the body. At the physical level this means the bony structure of the body and the muscles and tendon systems attached to it. The process of physical relaxation actually begins with this awareness and self-monitoring. Relaxation, at the physical level, is the use of memory and visualization to induce relaxation into the tissues of the body.

As can be seen this is a systemized process not normally associated with the word relaxation. A paradox is involved. Relaxation as a synergistic technology has little to do with sleep or catnaps. Yet these "experiences" are used in order to achieve relaxation.

### Sleep

Sleep is taken by the average person to be a simple, natural affair. And it is, when the purpose is only to go to sleep. Many people attach little importance to the function of sleep. Often sleep is preceded by thinking, reading or watching television. Many do not know the moment that sleep actually occurs. Many assume that tiredness is the only prerequisite for sleep.

The practice of relaxation has nothing to do with learning how to sleep. Relaxation techniques are techniques of awareness, or acute mindfulness.

A paradox is involved.

Acute mindfulness occurs when the conditions of the mind are relaxed. Three prerequisites ensure these conditions:

1. Physical ad-just-ment (relaxation)
2. Emotional at-tune-ment (harmony)
3. Mental at-one-ment (self-awareness)

To achieve these conditions it is often necessary to start to learn the techniques of awareness concerning sleep itself. Acute mindfulness is achieved when the mind is aware that the body is asleep. This, for many people, is a dimension of consciousness rarely explored.

Without delving too deeply into the mechanisms of sleep, relaxation is a series of techniques to develop awareness of the sleep condition.

In order to sleep, the physical body tends to first relax. This is a prerequisite to the mind taking over important automatic and regulatory functions. The mind does not sleep. Body movements, autonomic nervous system functions and nervous energy release systems (e.g. dreams) are complex.

Synergistic Relaxation is a complex learning process, which involves physical, emotional and mental techniques. The aim is awareness. This awareness is three-fold. As each technique is developed a person is taught to discriminate between the various aspects of the mind:-

- the physical
- the emotional, and
- the mental.

Initially, most people experience sleeping. This is because the deepest form of relaxation is normally associated with unconsciousness, or sleep. Gradually awareness is developed, so that a person experiences sleep as a conscious process. In S-R the person will probably sleep during the first few sessions.

Sleep occurs on the borderline between external and internal awareness. This shift precipitates a highly suggestive mind-state which is used in meditation, hypnosis, auto-suggestion and sleep-learning techniques, and which occurs in drug induced states of consciousness.

There is a difference between Synergistic Relaxation (S-R) techniques and these others. In S-R the person is in control at all times. No attempt is made to develop, induce or enforce any belief system. S-R is a learning process.

S-R is different to other relaxation systems in that it applies step-by-step techniques which take a person in a graduated but additive way through relaxation into the awareness conditions linked to meditation.

The process is similar to that described for body relaxation. Initially the aim is to develop awareness

of the sleep condition itself. Through these S-R techniques a person becomes sensitive to the memory of what sleep (or deep relaxation) actually feels like. It is initially a pleasant, relaxed experience, but an experience of mindfulness and clarity nevertheless. This memory becomes part of the waking experience and at that stage can be integrated with other memories easy to recall.

The S-R technology then develops the ability to carry this through into every day life experiences as a memory which can be induced at will. At the physical level, it is used in combination with the self-monitoring techniques. When the 'mind' picks up tension in the body, other techniques are used to recall the memory of the relaxation state which is then superimposed over the tension state already noted. Physical relaxation, induced in this way by the mind, is far superior to the other physical exercise-oriented relaxation techniques.

A number of commonly used terms need to be explained in the context of the S-R techniques of relaxation:

Awareness functions as the integrator for all the impressions flowing up the spinal column. These impressions are not only external but also carry messages and experiences from the internal mechanisms of the physical body. Experiences are also stored in the major plexii of the central nervous system itself. The experiences within the brain itself are highly specialized and integrated. Recent evidence relating to the left and right hemispheres has touched only the periphery of this specialization. The hypothalamus, limbic system, cerebrum and other specific organs (e.g. pituitary) each contain specific experiences. The selective triggering of these is often responsible for the drug related or 'spiritual' experience. Much of the understanding of the function and specifics of awareness can be found in the knowledge gleaned from neuropsychology, neuro-anatomy and biofeedback.

Reality is generally acknowledged to be the perceptions encountered in the 'normal' waking condition. In this condition there are many opportunities to use the experiences gained whilst practicing the S-R techniques. The aim of S-R is to move inwards to self-monitoring and the inner "realities", to self-control of the outer real REALITY.

Tension has been claimed as the opposite of relaxation. In S-R the two are considered complementary. Tension is not necessarily bad or harmful. The difference lies in our ability to use tension appropriately. Some tension of the calf muscle is essential for walking. Too much or too little tension causes the extremes seen in paralysis or cramp. The aim of S-R is functional efficiency, in physical, emotional and mental worlds.

### Physical Adjustment

Nervous energy and often mental trauma can be held in the body as muscular tension. Techniques of shiatsu, acupresure, massage, Rolfing, Riechian Therapy, Alexander techniques, acupuncture and many others are used to release this stored nervous energy. S-R uses these technologies and other to release inappropriately stored tension. The mind is used as the tool to search out these 'tense spots'. The body can also be trained through yoga, tai-chi, swimming and other non-competitive activities, to more appropriately use natural body functions to maintain an optimal body state.

### Emotional Attunement

Emotional energy is best witnessed by observation of the breath. Inappropriate emotional states can cause breathlessness or exaggerated breathing, leading in extreme conditions to hypercapnia or hyperoxygenation. Both these states are used in meditation techniques to alter the consciousness. S-R techniques develop awareness of the breath, and the altered states of consciousness associated with these.

### Mental At-One-Ment

Mindfulness is the essence of S-R.

The mind is a complex computer which stands at the door of the spiritual. It is the receptor of the external senses.

The mind can be used as a self-monitoring device to give a biofeedback-like playback of our condition. It can function as an awareness device to integrate all responses. The mind can then operate as a 'selector' or attenuator which can select the appropriate response and finally it can decide to take responsibility for our choice of behaviour.

Response to the real world determines the person we are to ourselves and to others. An inappropriate response may hurt others physically, emotionally or as a psychologic/psychic trauma. The results of our own inappropriate behaviour may hurt us along the same dimensions.

Response - ability, implies two options:

ONE Awareness assumes responsibility for whatever choice has been selected. The aware person recognises that every behaviour implies the choice between appropriate and inappropriate behaviour. The first

option of response-ability is therefore the development of response-AWARENESS.

To be responsible in this sense implies being response-ABLE. That is, the ability to be aware of the responses that are occurring in one's system. This means the total personal 'eco-system'.

Often people feel in control of a situation, and yet, immediately afterwards have felt completely drained of energy, or have a need to displace the anger and hostility felt in one situation into another, e.g. kick the dog at home, or bark at the wife or the children. Both the control situation and the after-event have been inappropriately dealt with. In one there has been suppressed tension, anger or even excitement. In the other there has been a displacement of this to the discomfort of whoever happens to be in the way.

S-R allows both situations to be appropriately dealt with. It leads to real awareness and real control. In this sense, control is the selection of the right and proper behaviour, rather than the suppression of tension. It still doesn't admit expression of anger or hostility to the boss or in a situation requiring control. This would still be inappropriate. Rather, it recognises the internal mechanisms which normally escape our notice. S-R then, allows a relaxation technique to operate which hopefully identifies the real source of tension. It may be a memory, a symbol, a displacement or any other mechanism. Once identified it can be dealt with. If not identified a relaxation technique exists to reduce the inappropriate tension.

AWARENESS is therefore, the first option.

TWO Self-monitoring implies the monitoring of response-AWARENESS. The monitoring of the sequence Stimulus-response involves the identification of two forms of response. These two responses can be categorized as appropriate and inappropriate. To yell at the boss may be inappropriate but so also to yell at the wife and children in certain circumstances.

Often people function as automatons, yet think they are in control. Few people are actually in touch with the precise mechanisms upon which most of our behaviour is determined.

A person who wants to be truly effective and highly functional will accept the challenge presented here. The person who wishes to fully experience autonomy, control and a high degree of personal effectiveness will demonstrate this by reducing the frequency of inappropriate responses.

The second option is therefore clear. To develop the ABILITY to respond to the ecological environment in a maximally effective and appropriate way. In simple terms, to be SELF-DETERMINED and therefore SELF-RESPONSE-ABLE. To be self-determined means that no longer do friends, family, bosses, situations or events dictate the way in which each person responds. This is not insensitivity, in fact it demands a degree of responsiveness which few people attain.

The second option is therefore, to be response-ABLE.

Often responsibility is taken for others. Taking responsibility for others can take the form of healing, therapy and spiritual or social responsibility. It can also involve the presumptive abuse of another person's right to be responsible.

S-R attempts to approach the problem of both awareness and response-ability. Awareness (or mindfulness) is the first step. By developing an acute awareness of the mind/body functioning, it is possible to constantly monitor the appropriate/inappropriate response dimension.

Self-awareness and self-monitoring states lead to the development of more appropriate response-ability.

Both options involve CHOICE. The first choice is whether to be AWARE or not. The second choice is to be ABLE to make right choices.

### Coping Skills \*

Once a person has decided to opt to be response-ABLE, the next step is to identify any skills areas in which a deficiency may exist. These range from assertion, dating, interpersonal, interview and many other skills repetoires.

Coping skills refer to the skills repetoires a person already has and may consider highly appropriate. They can also refer to the deficient skills which may have to be learned or re-learned. Coping skills relate to the acutal behaviours that a person considers will optimize the full benefits of any situation. It implies the ability to cope adequately with any situation. Coping skills involve the use of behaviours and attitudes by which normally stressful situations have the stress inducing elements reduced, alleviated or prevented by conscious means. Awareness of these elements, and the use of techniques consciously aimed at producing the most potent behavioural response constitute a coping skill.

The response-able person constantly reviews the coping skills repertoire. It is a process of continuous growth.

S-R is a system of developing appropriate responding, using coping skills so that the various forms of energy-- physical, emotional and mental, are given proper expression. As a result, work motivation improves, leisure time is fully and creatively explored, study and intellectual pursuits can be maximized and life becomes more meaningful.

S-R allows the responsible person to act with initiative more appropriately.

S-R also attempts to teach the differentiation of experience which often identifies the self-report of any experience. No experience is denied. In fact it is intensified with full and complete awareness. The experiential dimension often becomes an alternate reality which makes the 'normal' more real.

Rationale for SR

2. Synergistic Relaxation II - Basic Therapy Model

Current reviews reveal the pattern of therapy which emerges. The most successful techniques in each of the following areas are clearly the multi-faceted strategies. There are many post-1975 books advocating multiple-technique strategies for the treatment of:

- |                                   |  |           |
|-----------------------------------|--|-----------|
| 1. Psychophysiological Disorders: | Vascular Tension<br>Asthma<br>Gastro-intestinal disorders<br>Cardio-vascular disease                           | Headaches |
| 2. Stress and Neurosis:           | Phobias<br>Obsessive compulsive disorders<br>Hysteria  |           |
| 3. Anxiety and Social Skills:     | Assertion training<br>Alcohol Abuse<br>Drug Abuse<br>Smoking<br>Weight Control<br>Interview/Job Hunting Skills |           |

In each of these three areas most of the significant research is post-1975. A review of this whole area indicates that the following treatment model will prove the most effective.

Technique	Component	Mode
Relaxation Induction	1. Rationale	Motivational
	2. Quiet Environment	
	3. Physiological Tension Release	Somatic
Relaxation Technique	4. Posture	
	5. Passive Attitude	Attentional
	6. Self-Monitoring	
	7. Breathing	Emotional
	8. Rotation of Consciousness	
	9. Self-Control	Cognitive
	10. Awareness	
In vivo S-M	11. Present time	
	12. CA-SC	Reality

As can be seen this is a multi-modal treatment package. The total package is SYNERGISM. Each treatment package or session is called a battery. Every Synergistic Battery consists of the same key components. There are twelve batteries in all, for which a separate taped programme is offered, for each battery. Each battery consists of one x 45 minute taped programme.

These Tapes are listed as follows:

Tape

- 1 Basic Technique - Synergism
- 2 Body Awareness - Stillness
- 3 Relaxation Responses - 8 RR's
- 4 Breath Awareness - Counting
- 5 Breath Awareness - Psychic Passages
- 6 Breath Awareness - Psychic Centres
- 7 Body Awareness - Rotation of Consciousness
- 8 Sensory Awareness - Psychic Sound
- 9 Visualization - Meditation on Truth
- 10 CA-SC - "Stop" Psychic Symbol
- 11 Awareness - Silent Witness
- 12 Visualization - Breath of God

A basic assumption is that the regular practice of relaxation has a therapeutic effect. The effects of relaxation are complex, involving factors such as compliance, regular practice, placebo and mode specific responses.

Synergism is an overall rubric used to describe this intervention strategy. It involves a twelve component technology based on an Existential (Tantra) philosophy.

The optimum approach aims towards a marriage of the two professions of psychology and medicine. Synergism uses relaxation and meditation techniques as behavioural intervention strategies. The focus is on the use of these techniques and strategies to improve the psychophysiological health of the whole body. The medical specialist is often the first to diagnose and/or treat the presenting problem. The physician must take 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 have a psycho-physiological etiology,

suggesting anxiety, stress, emotional disorders or neurotic behaviour. 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.

Synergism is a non-pharmacological intervention strategy and is essentially a long-term procedure. Its purpose is supportive and adjunctive to standard medical processes. In Synergism a client-centred and holistic approach is 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.

The teaching of appropriate responding and adaptive coping involves extensive use of relaxation, skills training, and is often 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 the best Self Management strategy. 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.

It is considered that in evaluations 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 statistically significant, but which are capable of bringing about worthwhile and lasting improvements in a person's life. Quality of life therefore, becomes the key issue.

## Rationale for SR

### 3. Synergistic Relaxation III - Sequence of Instruction

The Basic Technique consists of 12 components as identified in SR II. The first three of these are inductive procedures. The remainder are relaxation techniques.

#### Relaxation Induction

1. Rationale. The whole of this section is devoted to this topic.
2. Quiet Environment. Where possible this is provided.
3. Physiological Tension Release (PTR). This can involve Massage, Shiatsu, Reflexology, Yoga or any such techniques which create physical tension release. These include Tai-Chi, Dancing, Swimming and other sports. The technique chosen is person specific. The aim is reduction of physical tension.

#### Relaxation Techniques

##### 4. Posture - Body Awareness

##### Check Points

Hands      Feet  
Head  
Central Alignment  
Shoulder and  
back  
Whole body

5. Passive Attitude. This is the actual attitude of relaxation itself. It is a non-specific generalized awareness. It is the waiting attitude without anticipation.
6. Self-Monitoring. This is achieved by a passive attitude. Concentration is not required. A focussing of attention is allowed to occur so that the Rr is monitored.

Relaxation Response (Rr). There are eight gross responses which the body makes when the posture in 4 above is adopted.

- Skin (GSR)
- Muscle groups (EMG or PTR)
- Breathing (RR)
- Heart (HR)
- Pulse (PR)
- Forehead/eyes (RVR)
- Temperature (RVR)
- Whole Body (x7)

7. Mindfulness of breath. The breath is the doorway to the inner SELF of emotions, feelings, thoughts, images, fantasy and spiritual SELF. Three techniques are important:

- Counting
- Rotation (Psychic Passages)
- Sensitivity (Psychic Centres)

8. Rotation of Consciousness. This has been developed from a tantric meditation technique called Yoga Nidra, which was initiated by Satyananda (1975). It is a body awareness technique, which helps a person become extremely sensitive to the body.
9. Self-Control. This is achieved through the manipulation of will, imagination, fantasy and sensitivity to HR/BP and RR. Techniques of visualization are used to develop specific abilities. These techniques can also develop sensitivity and awareness along many other dimensions of consciousness. There are three primary functions.
- Release tensions and past experiences
  - Develop awareness of mind stuff e.g. thoughts, images, symbols and feelings etc.
  - Condition relaxation through
    - a) thoughts of peace, harmony, joy etc.
    - b) visualizations of harmony e.g. lake
    - c) attitude of "calm"
10. Awareness. This is an experience, which is concluded with a statement of Resolve.
11. Present Time. The breath and body awareness (tense-relax) are synchronised to return to present time awareness. This is important.
12. CA-SC. A number of different techniques are used.

Rationale for SR4. SYNERGISM - A new paradigm of the PERSON

A new paradigm of the person is emerging from the socio-cultural traumas of the 1960's and 1970's. "This paradigm conceptualizes the healthy person as an individual who can pilot his or her own existential fate in the here and now environment, and who can have far greater self-regulatory control over his or her own body than here-to-fore imagined. (Shaniro and Zifferblatt, 1976, p.519)." One characteristic of the potentializing, self-aware sensitive person seems to be a "search" for a religious identity. Life style changes occur within an existential framework. Synergism is central to awareness and SELFHOOD.

The rationale for this paradigm is drawn from an eclectic environment embracing the esoteric teachings of eastern and western occultism, psychology, medical science, sociology, Shamanistic practices, psychic healing, anthropology, charismatic experiences and other domains of human intra-psyche and inter-psyche growth, sensitivity and awareness.

"New Age" psychology has caused a form of "Cultural Shock" among psychologists. New theories and therapies replace old ones at a rapid rate. This phenomena is not unique to psychology. The difference in the present era is that society seems to be in rapid transition.

Self-control techniques involve a constellation of strategies tailored to specific problem areas. Within this framework the oriental strategies of growth, sensitivity and awareness seem to fit comfortably. In keeping with this structure it is nevertheless necessary "to give mind a role in nature that has here-to-fore not been acceptable in modern science (Green, E. and

Green A., 1973, p.1)" Many criticisms of modern psychology seem to suggest that the "official" dogmas of psychology are of no use in this domain. (Sadhu, 1976, p.33). This is not true. No attempt should be made to dispense with knowledge gained.

William James (1975) was neither the first nor the most prolific of western psychologists to study the phenomena related to "The Varieties of Religious Experience." Nor are the oriental esotericists unique. Some of the techniques outline in Patanjali's yoga sutras (Taimni, 1975) are also to be found in the exercises of St. Ignatius of Loyola, (Mottola, 1964) of St. Teresa of Avila, St. John of the Cross and are to be found in a small book produced by an anonymous English priest who lived during the latter half of the fourteenth century. (Walters, 1976)

A systematic examination of many of these techniques was conducted by Sargent (1976). His Maudsley lecture in 1967 was concerned with the physiology of Faith. Others have followed this trail (Lee et al., 1977). The 1960's and 1970's heralded a new research interest in the concept of consciousness. Biofeedback, altered states of awareness, sensitivity training, encounter, mindexpanding drugs, Eastern religions, para-psychology esoteric psychologies and interest in shamanism, the occult tarot, I Ching, Ying-Yang, and the diverse fields of neurophysiology, physics, philosophy, medicine and clinical psychology, all added new life to theories of consciousness, awareness and existential experience. The disciplines concerned with subjective inner experiences were given a fresh impetus, subsequent to these inputs.

Technology is essential.

Traditional abnormal psychology texts in the past were not concerned with attempting to reconcile their material with normal experience. This is no longer the case. The psychology of anomalous experience is now a valid research area. For this breakthrough Szasz, Laing, and others are to be consulted. Pioneers such as these have exhaustively documented the "esoteric" experiences of mental patients, and "normals." Oriental esoteric literature does not accept the traditional boundaries between abnormal and anomalous (Reed, 1974) subjective experience. Neither does the western literature which concerns itself with religious leaders (Pope John XXIII, 1965), saints (Ward, 1973), mystics (Steiner, 1971), or anthropologists (Eliade, 1977). It seems that in these domains, it has long been safe to treat the abnormal as normal. Only in psychology does a prohibition seem to have restricted honourable research until recently. This has no doubt been due to the excessive demand of "objectivity" and lack of sophisticated and sensitive measuring devices. The advent of biofeedback changed this. The book by the Greens (1978) is only one which indicates the changes occurring. Technology has arrived.

Whilst abnormal patients have been looked at from new frames of reference, normals have also been documented and researched by Maslow, Ornstein, Naranjo, Kamiya, Shostrom, White, Tart, Lilly and others from the reference of transcendent man. This is a new frame of reference. Instead of the Freudian and medical orientation of sickness, anxiety and fixation, man is perceived by New Age psychologists in the increasingly existential

framework of Nietzsche, Kierkegaard, Sartre and Camus. The new psychotherapy of Frankl (1978) is only one aspect of this new existential framework. In these new psychotherapies, the existential concepts of alienation choice, being, self-responsibility, commitment, awareness sensitivity and growth, take on new meaning. These new therapies suggest man is a self-responding, transcendent being unlimited in potential and is not a skin encapsulated ego. Human technologies invaded the West.

Contemporary psychologists like Laing, Lilly, Maslow, Ornstein and Tant believe in the essential human potentiality of being. Their language is esoteric. They state that the normal state is one of alienation. Man has abdicated ecstasy for the mechanistic attachment to the world. They extol the paradox of being. Like Nietzsche they stalk the edge of madness, imbibing, LSD, floating in "free-space" or involving themselves in oriental mysticism. They claim that New Age psychologist stands on the razors edge at the interface between the socio-culturally accepted and the altered States. Consciousness awareness and freedom is the only worthwhile "One Quest" (Naranjo, 1974). Human and machine technologies made significant breakthroughs.

Like The Tradition these new psychologists are an esoteric breed, and each recognises the esoteric of the other (Bharati, 1975). Despite the fact that the techniques of both seem to be diverse, come from different cultures, used for different philosophic purpose, and may on the surface contain different sets of assumptions, yet each respectfully acknowledges the other.

The source of anomalous experience is the same. No "New Psychology" is advocated. Just an awareness of the old, measured by a new technical awareness.

By looking at the behaviors in each, by looking at the neuro-psycho-physiology involved, systematic investigation of all these systems is fruitful. Man is essentially the same in neuropsychophysiological terms. Racial differences are only skin deep. The deep underlying neuro-psycho-physiological structures are identical. Many of the supposed distinctions are philosophical and semantic. Meditation and relaxation fit this paradigm. Both are a series of neuro-psycho-physiological events caused by the manipulation of specific human technologies. (No attempt should be made to remove meditation from the realm of mystical practice, but the jargon which makes understanding difficult should be recognised for what it is. Often a distinctive of jargon is a part of what increases its effectiveness for those who are more comfortable operating within this type of framework).

Each neuro-psycho-physiological technology has a unique jargon. The orientalist talks in terms of chakras, the western occultist in Kabbalistic symbolism, the medic talks of taboo whereas the medical man refers to a medical jargon relating to the human systems. The unique contribution of the anthropologist and psychologist could be to stand at this semantic interface. Alternative life-styles are a necessary and possibly positive functional element within society. The benefits of intensive therapies should however not be left to a select few. Meditation and relaxation have therapeutic value. (Shapiro and

Zifferblatt, 1976) For this use the technology of meditation and relaxation needs to be removed from the emotional sectarianism that plagues our society. Healing forces abound in the world. Paranormal healing is "an idea whose time has come (Meek, 1977, p.55)". The technologies of meditation and relaxation lend themselves to the selfmanipulation of these vital healing energies.

The attitudes of people towards healing have changed. The attitudes of the medical profession are changing. Religion is not surprised. Charismatics have long been aware of the Pentecostal, and the Church of Christian-Science, has long advocated the validity of self healing. The characteristics of healers, and the healing process are extremely well documented. "These studies show that removal of stress is a strong factor in overcoming and often in preventing illness (Meek, 1977, p.49)". Edgar Cayce, the sleeping prophet in the U.S.A. often announced "..... the simplicity of the individual to apply that which may be gained from his own subconscious, his subliminal self, unconscious forces or cosmic consciousness. Call it by whatever name, the individual may choose ..... (Regush, 1977, p.55)" These forces, this kind of manipulation, this whole area of self-healing is one of the commitments of meditation and relaxation based on the adage "physician - heal thyself". The book Prana Vidya is a meditation technology based on the healing process, (Satyananda, 1974). Yoga Nidra is a sophisticated synergistic relaxation process, (Satyananda, 1974). Together they form a synergistic system.

It is difficult in an existential climate to be specific.

Relaxation and meditation are the basic technologies of healing techniques and psychologic therapies. Change is central to Existentialism. Expansion and contraction experiences are the essence of TANTRA. These technologies have been extensively incorporated into Synergistic Relaxation\* to promote personal growth in existential terms and sensitivity and awareness of the intrapsychic and inter-psychic human domains. Specific techniques may be drawn from an extensive range of personal experience. In the domain of relaxation and meditation experiential exposure is an advantage. Meditation and relaxation are therapies and healing systems in their own right. They constitute a start point or end point for many other therapies involved in attitude change, health or modifications to lifestyle.

In the framework of the New Age psycho-therapies psychology can add a new dimension to Meditation techniques. There is no requirement to abdicate either the formal study or technologies extant in Psychology. "Current research suggests that the technique of formal meditation can be converted into a more powerful clinical intervention strategy, by making its performance contingent on certain antecedent cues, and by coupling it with covert self-imagery, covert self-statement, and focussed breathing (Shaniro and Zifferblatt, 1976, p.527)". These are basic techniques in any effective meditation or relaxation strategy. The aquisition of formal meditation behavior,

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coupled with effective behavioural self-management techniques offers a powerful psycho-therapeutic tool. Effective behavioural coping strategies and meditation/relaxation technology are not just complimentary. Effective meditation/relaxation techniques offer synergistic development. Synergism in this sense refers to the fact that a critical advance in meditation over standard practice relates to the fact that the technologies proceed from simple to complex effects, along an additive, progressive continuum. Behavioural coping strategies offer a jargon (semantic differential) for analysing and researching the most effective synergistic combinations.

The purpose of Synergistic Relaxation is to combine their many diverse areas, technologies and meditation systems currently extant into one technology. A technology of human growth, awareness, sensitivity and healing. There is basically one human structure, and the neuro-psycho-physiology of this human frame is almost identical regardless of race, creed or physiognomy.

Synergism is a new paradigm for a person. It presents a wholistic view of a human being with an existential framework. It uses science to discriminate error. It uses technology and modern science both as a tool and as a vehicle. It leads to a new paradigm of the person, and claims the human right to joy and happiness. The healthy person can be the existential pilot of self destiny. The bounds of self-regulatory control have only just started being explored. These is a new brand of adventurer and pioneer abroad in the world today. The saints and mystics have shown the way. Great religious leaders have always claimed this right for the ordinary person. It is time

the ordinary person claimed this extra ordinary right - to be perfect.

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## Rationale for SR

### 5. Arousal - The neurophysiology of Arousal

Three components of the human arousal system have been identified. (Fig. 1) The first deals with actual autonomic arousal. The next component is concerned with the arbitrary feedback of arousal. The human response mechanisms tend to be very selective with the information which actually impinges upon it. People live in a selectively filtered world of subjective awareness. The final component concerns the attributions or cognitive cues given to stress and arousal. This last component is probably the most important. Trauma (stimulus intensity) and the stressor (response frequency) and their interaction, do not of themselves necessarily constitute stress. Stress occurs as a result of the attributions for arousal. Attributions are cognitive events. The key to cognitive events relates to attitude.

The concepts of stress and arousal are often synonymous. In most of the literature surrounding these two concepts, the definitions tend to be imprecise, elusive and diffuse. Three scientists stand at the forefront of research into these topics. Selye (1950) developed a theory of non-specific stress. Berlyne (1960) provided the framework of arousal theory, and the neuro-physiological processes involved in arousal. Gray's (1976) work has led to a three arousal model (Fowles, 1980).

#### 1. Stress Theory:

Selye (1950) considers that stress is a syndrome. It is a non-specific phenomena involving a constellation of responses to stressors. Selye recognised the biological reaction to direct (specific) physiological challenge, but took the important step of stating that stress was the residual response which functioned as a common set of responses (non-specific) to all stressors. He identified stressors as a set of changes which involved the cortical endocrinal and visceral systems. In his view, stressors constituted a triad of stress responses inducing changes in these three systems, (1) hypertrophy of the adrenal cortices, (2) atrophy of the thymus, and (3) gastric ulceration. The sequence of events was generalised by Selye (1950) in the General Adaptation Syndrome (GAS) with its stages of alarm, resistance and exhaustion.

Nevertheless, central to the work of Selye (1950) is an assumption of arousal (alarm). Stress is seen as an event to which some adaptation is made in the form of resistance (sensitivity) or exhaustion (habituation). To attempt to describe stress in strictly behavioural terms (stimulus-response) without recognition of the intervening arousal mechanisms presents an erroneous and misleading view of stress. Human beings have a great degree of individual variation in response to stress.

Most human stress mechanisms are highly specific. However, the simultaneous occurrence of other often competing responses interact to result in a great variation in individual stress responses. Motivation, group support, group pressure, prior

experience, adaptation, conditioning expectations, competency, peers, associates, superiors and a host of other variables all interact to affect the human response system. For every stimulus variable there is a continuum of responding from arousal to response activation, involving excitation and habituation. At every moment of life this continuum is actively engaged. Stress is only one response system.

Selye (1950) defined stress in terms of systemic stress, and his thesis falls short due to the complex nature of stress in human subjects. He made an assumption of a unity in the total psychophysiological system which is now regarded as an over-simplification. His GAS is still a useful concept, but his limitation of stressors to the three systems outlined by him, are not entirely correct. Later sophistication in stress theory had to depend on developments in technology.

Appley and Turnbull (1967, p.401) make an important contribution when summarizing their assessment of stress factors:

- 1) there is a great variation in individual differences;
- 2) there is a lack of correlation between neurophysiological, autonomic and behavioural measures;
- 3) there are significant situational differences, and this variation is greatest between the laboratory and in vivo situation;
- 4) Stress is an ecological/environmental variable in which the social context is a major component;
- 5) stress is interactive between environments, people and situations;
- 6) internal or "private events" are the critical variable.

The cognitive functions involved are complex, and largely defied analysis until the advent of sophisticated technology and the parallel development of biofeedback devices. The contemporary focus of stress research emphasises particularly the role of cognitive events. Stress reactions are a function of cognitive control. The responses made in reaction to stress are a function of the attributions made to the stress reaction. The key therefore, in therapy, is response control (Janis, 1958).

Individual variation occurs because of genetic predisposition, life experience, equipment, specific skills training, psychosocial support systems and a host of other mitigating factors. Some people are able to perform effectively under stress conditions that far exceed other people's capabilities and sometimes one's own expectations.

A concise view of stress is that it occurs when a person is called upon to respond to situations for which no previous learning experience exists or for which no adequate coping response is immediately available. In the measurement of stress the critical feature is not the absence of a coping mechanism. It is the effect on each individual of the consequences of failing to cope which determines the nature of stress.

Stress intensity is a measure of the importance placed by each individual, on the personal issues involved in each stress situation. This is dependent on the importance of "consequences of failure" to each individual (Janis, 1958). Insofar as stress is concerned therefore, the attributions or cognitive "runinations" about the event are critical. In therapy, it is these cognitive beliefs which have to be dealt with. Behaviour may be symptomatic but the cognitive behaviour, that is the private events, are the focus of therapy. In dealing with the cognitive events the cognitive restructuring to reduce attributions of stress can be generalized across situations. It is the cognitively induced stress rather than the phobia, or the inappropriate behavioural event which when treated is more effective in reducing the overt incidents which are maladaptive.

Summary: Because stress varies so widely in its effect across individuals, situations and events its measurement is dependent across all the correlates of stress. Measurement and identification of stress and the validation across measures is complex and dependent on multiple measures. The symptoms of stress are specific, as noted by Selye (1950), but there is lack of correlation across available measures.

## 2. Arousal Theory

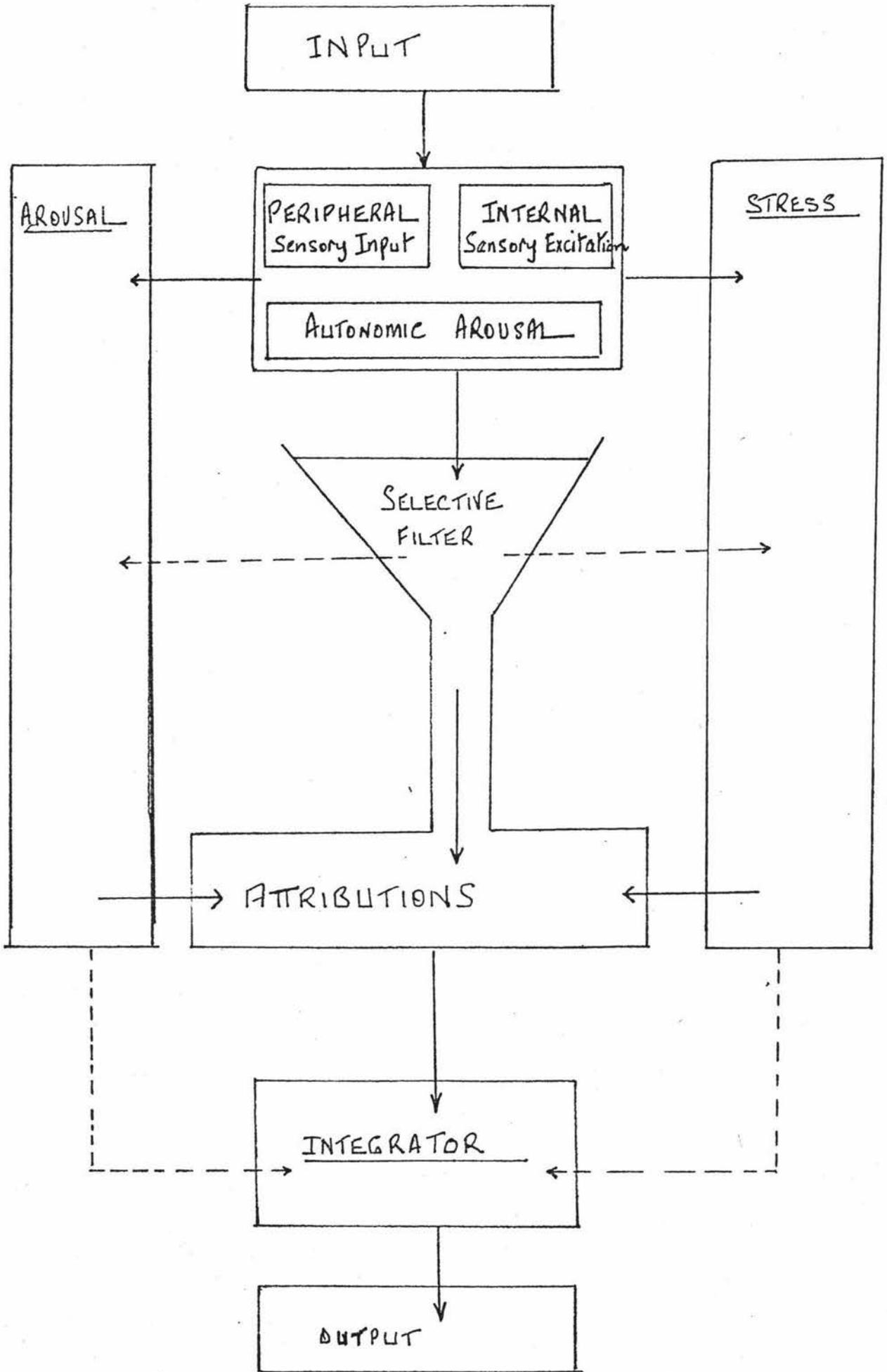
Arousal is a much wider concept and in fact stress can be subsumed under the larger umbrella of arousal theory. Stress refers primarily to negative effects on the neuro-endocrinal psychophysiological systems. It is aversive or negative in the sense of tissue damage, painful stimulation, or response to toxins. Arousal on the other hand, deals with the actual mechanisms by which all events are recorded, filtered, analysed, integrated and dealt with, in the human organism. The stimulators of arousal constitute the external and internal events by which a person acts. They can be measured in behavioural, as well as neuropsychophysiological terms. In fact, arousal is essential to behaviour. The search for the basis of arousal demands identification of the processes by which responses occur.

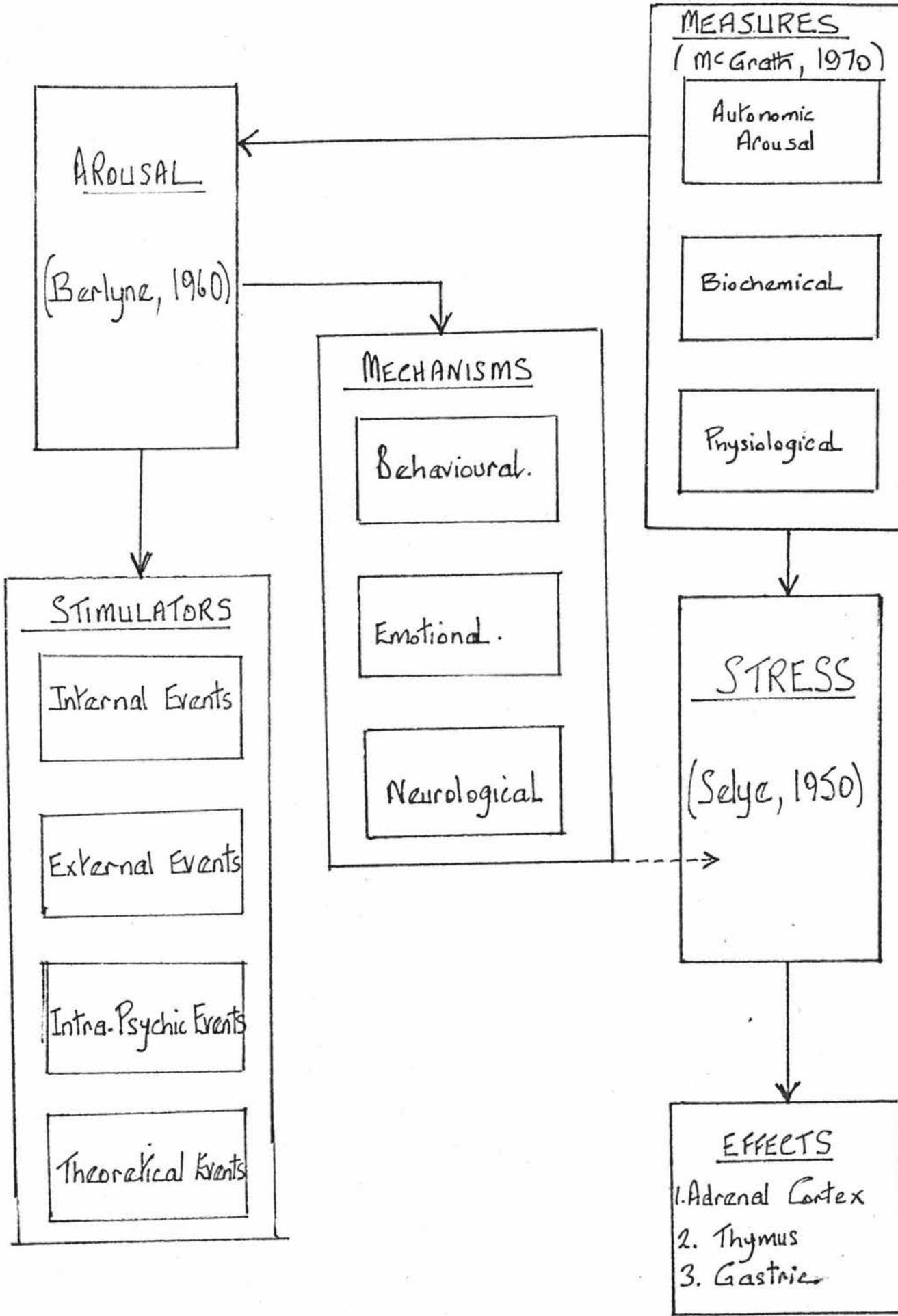
The interconnection of, and the distinction between the stimulus-response (S-R) systems and the arousal systems has been identified by Groves and Thompson (1970). When, for example, a motor response is evoked, both systems are activated. When a response occurs the amplitude may increase (sensitize) or decrease (habituate). The first involves the arousal system and habituation occurs in the S-R system. These researchers also identified habituation as phasic, on which frequency of stimulation has a marked effect. Sensitization is tonic, and stimulus intensity has the major effect. This dual process theory is a convenient framework for the analysis of arousal/stress concepts.

The distinction between the S-R and arousal system is important. The literature is replete with attempts to monitor arousal with physiological measures. Often there is a lack of correlation between the various measures of arousal (Lacey,

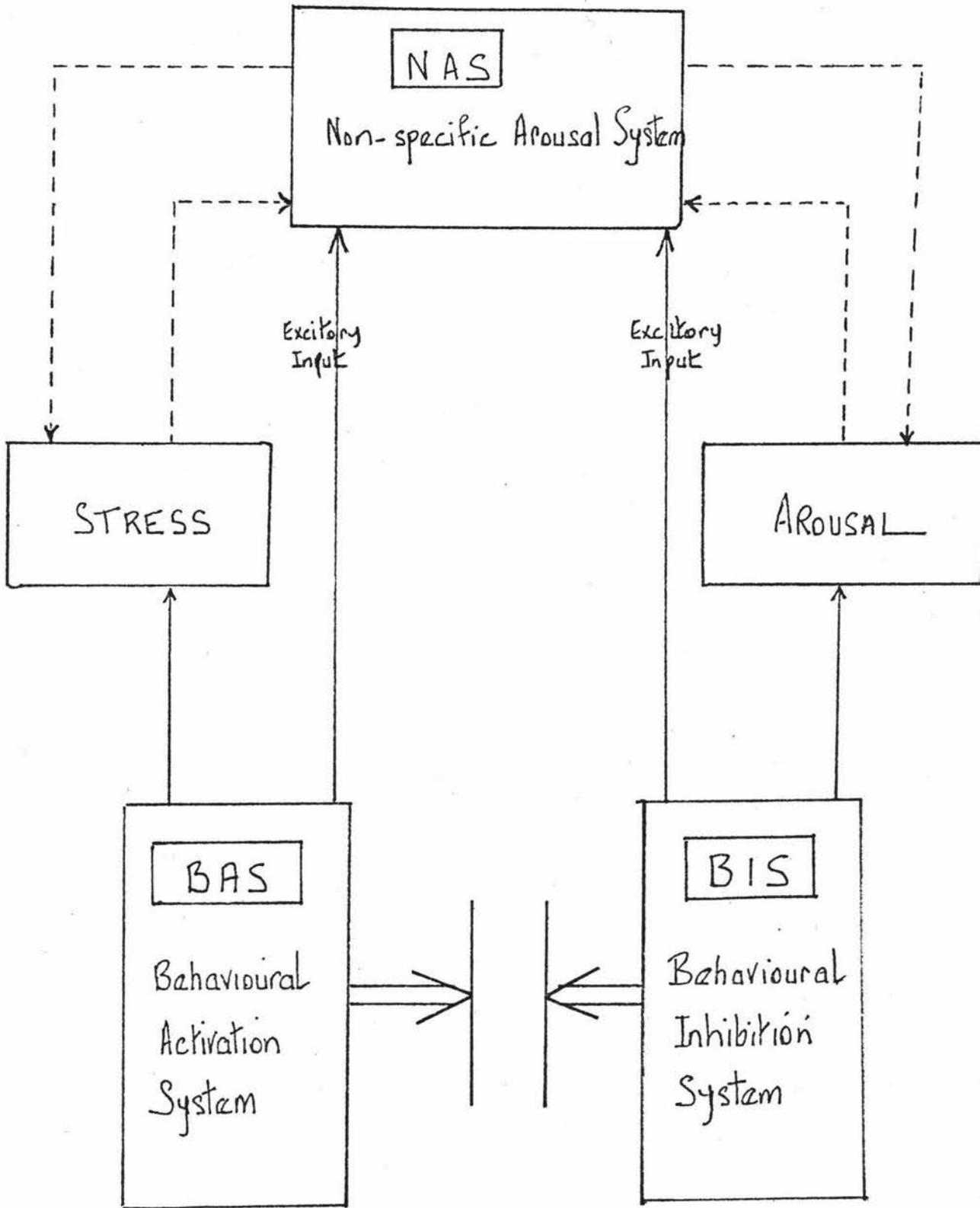
1967). Disassociations between the S-R and arousal systems are both possible and probable. When the subject is given repeated stimulation this would tend to emphasise the differences between sensitization and habituation, leading to disassociation (Groves and Thompson, 1970).

THE HUMAN STRESS / AROUSAL SYSTEM (Simplified)





# THE THREE AROUSAL MODEL (Fowles, 1980)



 Mutually antagonistic systems.

## Rationale for SR

### 6. STRESS - The silent killer

#### The Problem

The pace of modern life is blamed for the incidence of stress. Often stress is associated as being synonymous with tension. The issues are not this clear. What is clear, is that at least 70% of all patients in doctors' surgeries are suffering problems whose origins have been unrelieved stress.

Stress has been found to account for hypertension, cardiovascular disease, ulcers, diabetes, asthma, migraine, headaches and some kidney problems. They can quite rightly be referred to as the "stress diseases". The problem of stress is that it results in actual physical disabilities as well as being the major cause of anxiety neuroses and phobias. Unrelieved stress results in frustration, anger, hysteria and emotional outbursts; as well as depression, free floating anxiety and apathy. All of these results constitute the ways in which people inappropriately cope with stress.

When relaxation is first introduced to a person, often the first reaction reflects a concern that somehow the change will affect the quality of life. The change may upset the delicate balance of the life style. What is not recognised is that this has already occurred in a silent, secret insidious way. Stress has already entered most lives and is dictating behaviour without anyone recognising that the problem is stress rather than it's reduction. Often the first a person knows about stress is when some vital organ breaks down or starts to deteriorate in such a way that medical intervention in the form of surgery or drugs, becomes necessary.

The natural response to unpleasant events, is to avoid the 'stimulus event'. People do not want to feel pain by choice. Sorrow, humiliation, sadness, fear and fright are all inner pains. The feelings associated with these inner pains are not considered an appropriate response in our society. Boys are not to cry, girls are not to express anger. These are social pressures which prevent the adequate expression of inner pain. As a result of social restraints feelings become repressed. Intense feelings can be blocked out of consciousness completely. "Pain-blocking" as a response to social constraints, are a primary cause of disease leading to the "stress diseases".

Human beings are complex creatures. These repressed and 'blocking off' procedures become the coping mechanisms for a whole host of personal pains and we cease to recognise our dis-ease. This dis-ease is within us. Since it does not appear on the surface, society approves.

How stress, social pressure and emotional tensions are dealt with internally is poorly understood. So long as it does not appear on the surface, a person is "under control". Underneath this 'conscious' facade of control, of 'cool', and

of apparent success the statistical reality of dis-ease' indicating that 70-80% of society is suffering from repressed feelings of hurt, frustration, tension, pain and social constraints. This is not a dramatic pronouncement. It is a proven medical fact. It accounts for a whole array of the dis-eases of modern society.

Medicine and often psychology misses this connection. Very few treatment programs are geared to actually deal with STRESS as the precipitant of the "stress diseases". Medicine is largely concerned with the physiological mechanisms which are affected by this dis-ease. That is, the overt symptoms of stress. Medical interventions involve the use of drugs, placebo, surgery and the other many techniques of modern medicine. Psychology attempts to address itself to the emotional mechanisms in the same way that medicine has successfully limited itself to the physiologic. What both miss is that stress is not necessarily a causative event in the same sense as the physical manifestations of illness. It seems the modern trend in psychological medicine is moving towards this.

The medical situation is a little easier if a person is bleeding internally, this is a hemorrhage. The cause of this may be A, B, C or D. So the doctor looks for this event, hopefully finds it and cures the problem. If a person suffers from an obsession, or from hysteria the solution is much more difficult. The psychologist attempts to find the cause, only to find that what actually has occurred is that the tip of an iceberg has broken through the facade of control and socially approved responses. The defence system has been penetrated from the inside. Often the behaviourally oriented, or Freudian psychologist feels the problem has been adequately dealt with when the symptoms have disappeared. This is wrong - the fences have been mended, a plaster or perhaps even a bandage has been applied over the wound. Time itself, will help heal. Also the incredible recuperative ability of the mind may attend to the outburst and bring the dis-ease under a new system of controls. But the main point of the dis-ease has been entirely overlooked. The surface problem may only indicate the deeper trauma of stress.

The underlying dis-ease is often not attended to. The reason for the dis-ease is, that the function of awareness has been blunted and blighted by stress, social pressure, and emotional tension. To cope with modern stress, a radical change is needed. This has been translated into 'alter-nate cultures', the 'hippy' movement and other rebellions against society. What these movements fail to realize is that 'society' is an amorphous mass of individual human beings each of whom (or at least 70-80% of whom) are caught up in the same round of dis-ease and internal pain. Often the direction of blame is the establishment, the wealthy, the politicians, the executives, etc., etc.

The facts are that the socio-economic posture of a man or a woman does not determine whether they are responding appropriately to stress at all. Dis-ease in the form of stress and the related physical symptoms is affecting all

sectors of society. Janitors, truck drivers, laundry attendants, hippies, punk rockers, swamis, factory workers, florists and salesmen all suffer from the same 'stress diseases'. There are as many unstressed executives, bank managers, presidents, politicians and aristocrats as there are unstressed gurus. Stress does not respect prestige and wealth any more than poverty, and it does not favour life-style unless accompanied by certain other factors. Stress is not the private domain of the jet-set executives. Young people on the ashram or alternate culture circuit are subject to the same manifestations of stress. In the "drop out" culture one inappropriate stress response is drug abuse. Young people in this subculture take drugs for essentially the same reasons as others. To seek pleasure and avoid pain. In both cases the results are the same though the 'pain' perceived by each may be different. Whereas in the mainline culture it is called drug abuse, in the sub-cultures it is called "hip" or "cool" or other words to express social approval. Either way it is an inappropriate response to the internalized "pains" resulting from stress.

What has not been recognised about stress in modern society is that stress is cumulative. That is, whereas one particular event may actually trigger off anger, a hysterical outburst or a nervous breakdown, this event in itself may not even be the cause. Stress causes a whole range of tension reactions which can stretch sometimes over many years. Some researchers suggest that birth and pre-birth traumas can also be the cause of the later development of stress effects. Whether true or not the cause of the actual 'stress disease' or stress reaction is rarely the precipitating event. More often, it is a string of stress events of life traumas, stretching over a long time, which is the real cause. Stress is a "cluster" of events rather than a single precipitating event.

#### Stress Reaction

An important way to understand stress, is to understand the processes involved. Any external event is dealt with in an identical way. People suffer stress because the normal reaction to stress, social pressure and emotional tensions, is poorly understood.

Central to understanding these processes is a condition known as "Arousal". Human beings are constantly in an arousal state. The mind is bombarded by information from the nervous system, the muscular system and through the senses. We only know our world through these complex impressions. When human beings are denied this "feedback" as in sensory deprivation, the mind creates it's own feedback in the form of dreams, hallucinations and hypnogogic images which are more real than the "real" world. The point being made is that the mind feeds on the impressions of the arousal system. It is not normal for the mind to be in any but an arousal state.

Naturally, all these impressions have to be integrated, filtered and given priorities, otherwise a person could not

carry out the simplest action or response. In neurotics and psychotics this process has broken down. "Normal" people are able to integrate this mass of information and respond in socially appropriate ways. The "orienting response" mechanism is a mechanism for sorting out priorities, so that the ordinary business of living and surviving can go on. People receive more input however than they are ever aware of. Orienting response is a survival mechanism.

This "survival" mechanism presents problems. Man as an industrialized, urban scientifically-oriented animal is a recent arrival in terms of human physiological development. The survival skills are still related to hunting, fishing, farming and immediate protection of self and family from physical threat. Man as a modern social animal in a complex human society is an even more recent phenomena. Man's survival mechanisms have not reached the sophistication of the cortex. The survival response mechanisms are still geared to fear, flight and fright. They are not tuned to the sophisticated cortical strategies related to complex human interaction, social controls and social etiquette.

When the survival mechanisms are activated, the muscles contract, the internal organs start to produce adrenalin or other activating hormones, and emergency supplies of oxygen are given to the tissues by increase in heart pumping rate. The gut stops, the blood is diverted to emergency sites so that the skin blanches. The physiologic stress response is dramatic and obvious.

The problem is that when the threatening event is less obvious the response remains the same. In socially or emotionally threatening situations the physiologic response system is often identical. If a person is apprehensive or worried about a job, meeting someone new, interviewing a manager or feels threatened, overpowered or awed by another person, the heart rate increases, the blood pressure goes up and the muscles tense. If a person is anxious, or emotionally upset by an argument, by a family trauma, by loss of a loved one or a myriad of seemingly ordinary but anxiety provoking events, then the fear flight fright response is activated in all its response systems. A person is more often than not totally unaware of these internal responses.

Most people respond to social or emotional pressure with increased muscle tension. This is felt as butterflies, knots or general anxiety. Most people do not consciously recognise even these symptoms, or think they are normal. Even considerable muscle tension may not be detected. This is because people have different tolerance to pain. Muscle cramps and knots do cause pain responses but different people react differently.

A major problem is that social and emotional tension is often sustained. Children cannot escape from overbearing parents any more than parents can escape from overdemanding children. Muscle fibres physiologically "adapt" to states of increased tension. The internal regulators don't relax

and what occurs is an ever increasing spiral of tension. The problem which results is that, before a person is able to detect tension or stress within their own body the stress has to overcome the even greater resistance caused by the build up of accumulated stress already in the body. The problem has to be acute before the response mechanisms can override the existing tension, and relay the problem to the brain.

There is a complex response system in the human body and the problem of stress is not nearly so simple. What is obvious from stress research is that stress does accumulate, and the precipitating event is rarely the real cause of the hysteria or "stress disease". A person under sustained social or emotional stress is in a state of continually increasing muscular tension and the associated damaging internal response reaction. Most people who have not learned to monitor and control their responses are in this state.

This state results in psychophysiological disorders like cardiovascular disease, hypertension, ulcers, asthma and headaches or migraines. Psychological disorders such as anxiety, tension, neuroses and phobias are another result. Stress in fact accounts for many illnesses and diseases for which the treatment often does not include treatment for stress. It involves all people from all walks of life. Some people are more 'prone' than others but all sectors of society are affected.

## Appendix C

RATIONALE FOR SR

The POI - Concepts

Number of Items	Scale Number	Symbol	Description	Number of Items	Scale Number	Symbol	Description
<b>I. Ratio Scores</b>				26	10	Sa	<b>SELF ACCEPTANCE</b> Measures affirmation or acceptance of self in spite of weaknesses or deficiencies
23	1/2	$T_I/T_C$	<b>TIME RATIO</b> Time Incompetence/ Time Competence - measures degree to which one is "present" oriented	16	11	Nc	<b>NATURE OF MAN</b> Measures degree of the constructive view of the nature of man, masculinity, femininity
127	3/4	O/I	<b>SUPPORT RATIO</b> Other/Inner - measures whether reactivity orientation is basically toward others or self	9	12	Sy	<b>SYNERGY</b> Measures ability to be synergistic, to transcend dichotomies
<b>II. Sub-Scales</b>				25	13	A	<b>ACCEPTANCE OF AGGRESSION</b> Measures ability to accept one's natural aggressiveness as opposed to defensiveness, denial, and repression of aggression
26	5	SAV	<b>SELF-ACTUALIZING VALUE</b> Measures affirmation of primary values of self-actualizing persons.	28	14	C	<b>CAPACITY FOR INTIMATE CONTACT</b> Measures ability to develop contactful intimate relationships with other human beings, unencumbered by expectations and obligations
32	6	Ex	<b>EXISTENTIALITY</b> Measures ability to situationally or existentially react without rigid adherence to principles	16	9	Sr	<b>SELF REGARD</b> Measures affirmation of self because of worth or strength
23	7	Fr	<b>FEELING REACTIVITY</b> Measures sensitivity of responsiveness to one's own needs and feelings				
18	8	S	<b>SPONTANEITY</b> Measures freedom to react spontaneously or to be oneself				

Figure 1. Scoring Categories for the Personal Orientation Inventory.

## COMPLEMENTARY SCALES

It has been found that interpretation is facilitated if the counselor considers the subscales in pairs (as is shown on the Profile Sheet) complementing SAV (Scale 5) with Ex (Scale 6), Fr (Scale 7) with S (Scale 8) and so on as elucidated below. These paired scales seem to be synergistic and represent the balancing that is critical to self-actualization. Descriptions of these sub-scales, numbered to correspond with their appropriate scoring key, are as follows:

## (5) SAV—Self-Actualizing Values

SAV (Scale 5) was derived from Maslow's concept of self-actualizing people. A high score suggests that the individual holds and lives by values of self-actualizing people, and a low score suggests the rejection of values of self-actualizing people. Items in this scale cut across many characteristics but a representative SAV item stem is 38, "I live in terms of my wants, likes, dislikes and values."

## (6) Ex—Existentiality

Complementing SAV (Scale 5), the Existentiality scale measures one's flexibility in applying such values or principles to one's life. It is a measure of one's ability to use good judgment in applying these general principles. Higher scores reflect flexibility in application of values. People who get low scores tend to hold values so rigidly that they may become compulsive or dogmatic.

VALUING: Paired Interpretation of Scales 5 and 6: Scale 5 (SAV) measures the degree to which one's values are like self-actualizing people. Scale 6 (Ex) measures the degree of flexibility in the application of values to living and therefore, these two scales may be considered to reflect the general area of valuing.

## (7) Fr—Feeling Reactivity

A high score measures sensitivity to one's own needs and feelings. A low score shows insensitivity to one's own needs and feelings.

## (8) S—Spontaneity

A high score measures the ability to express feelings in spontaneous action. A low score indicates that one is fearful of expressing feelings behaviorally.

FEELING: Paired Interpretation of Scales 7 and 8:

Scale 7 (Fr) measures sensitivity to needs and feelings within one's self, and Scale 8 (S) measures the ability to express feelings behaviorally, thus these scales may be considered to reflect the area of feeling.

## (9) Sr—Self-Regard

A high score measures the ability to like one's self because of one's strength as a person. A low score indicates low self worth.

## (10) Sa—Self-Acceptance

A high score measures acceptance of one's self in spite of one's weaknesses or deficiencies. A low score indicates inability to accept one's weaknesses. It is more difficult to achieve self-acceptance than self-regard. Self-actualizing requires both.

SELF-PERCEPTION: Paired Interpretation of Scales 9 and 10:

Scale 9 (Sr) measures the ability to like one's self because of one's strengths and Scale 10 (Sa) measures the ability to like one's self in spite of one's weaknesses. Therefore these two scales may be considered to reflect the general area of self-perception.

## (11) Nc—Nature of Man, Constructive

A high score means that one sees man as essentially good. He can resolve the goodness-evil, masculine-feminine, selfishness-unselfishness and spirituality-sensuality dichotomies in the nature of man. A high score, therefore, measures the self-actualizing ability to be synergistic in understanding of human nature. A low score means that one sees man as essentially evil or bad and is not synergistic.

## (12) Sy—Synergy

A high score is a measure of the ability to see opposites of life as meaningfully related. A low score means that one sees opposites of life as antagonistic. When one is synergistic one sees that work and play are not different, that lust and love, selfishness and unselfishness, and other dichotomies are not really opposites at all.

AWARENESS: Paired Interpretation of Scales 11 and 12:

Scale 11 (Nc) measures the good-bad dichotomy in man and Scale 12 (Sy) measures the ability to relate all objects of life meaningfully. They may thereby be considered to be complementary scales reflecting the general area of awareness.

## (13) A—Acceptance of Aggression

A high score measures the ability to accept anger or aggression within one's self as natural. A low score means that one denies having such feelings.

## (14) C—Capacity for Intimate Contact

A high score measures the person's ability to develop meaningful, contactful, relationships with other human beings. A low score means one has difficulty with warm inter-personal relationships. Making contact may be defined as the ability to develop and maintain an "I-Thou" relationship in the here-and-now and the ability to meaningfully touch another human being. We know that intimate contact seems to be encumbered by expectations and obligations. Thus, it can be said that the climate to establish good contact is best when the individual does not over-respond to, nor does he utilize, inter-personal demand expectations and obligations. Other measured dimensions which facilitate contact are the ability to express vs. impress, being vs. pleasing, and the ability to relate intensely to another person either aggressively or tenderly.

Table 5

POI Scale Means, Standard Deviations and Comparison of Differences Between Samples Nominated as "Self-Actualizing," "Normal" and "Non-Self-Actualizing."

POI Scale	Sym- bol	Self-actualizing (29)		Normal Adult (158)		Non-Self- actualizing (34)		Mean Diff. SA-NSA	CR
		Mean	SD	Mean	SD	Mean	SD		
Time Competence	T <sub>C</sub>	18.9	2.5	17.7	2.8	15.8	3.6	3.1	4.0**
Inner Directed	I	92.9	11.5	87.2	13.6	75.8	16.2	17.1	4.9**
Self Actualizing Value	SAV	20.7	3.6	20.2	3.0	18.0	3.7	2.7	2.9**
Existentiality	Ex	24.8	3.5	21.8	5.1	18.9	5.4	5.9	5.1**
Feeling Reactivity	Fr	16.3	2.8	15.7	3.3	14.3	3.8	2.0	2.4*
Spontaneity	S	12.7	2.9	11.6	3.0	9.8	3.4	2.9	3.6**
Self Regard	Sr	12.9	1.9	12.0	2.7	10.2	3.3	2.7	4.0**
Self Acceptance	Sa	18.9	3.5	17.1	4.0	14.2	4.0	4.7	5.0**
Nature of Man	Nc	12.3	2.2	12.4	1.9	11.3	2.0	1.0	2.0
Synergy	Sy	7.6	1.2	7.3	1.2	6.2	1.9	1.4	3.7**
Acceptance of Aggression	A	17.6	3.1	16.6	3.7	14.7	3.5	2.9	3.5**
Capacity for In- timate Contact	C	20.2	3.4	18.8	4.6	16.5	4.3	3.7	5.0**
Ratio Scores									
Time T <sub>C</sub> /T <sub>I</sub>		7.7		5.1		2.9			
Support I/O		3.3		2.5		1.4			

\*Significant at the .05 confidence level. \*\*Significant at the .01 confidence level.

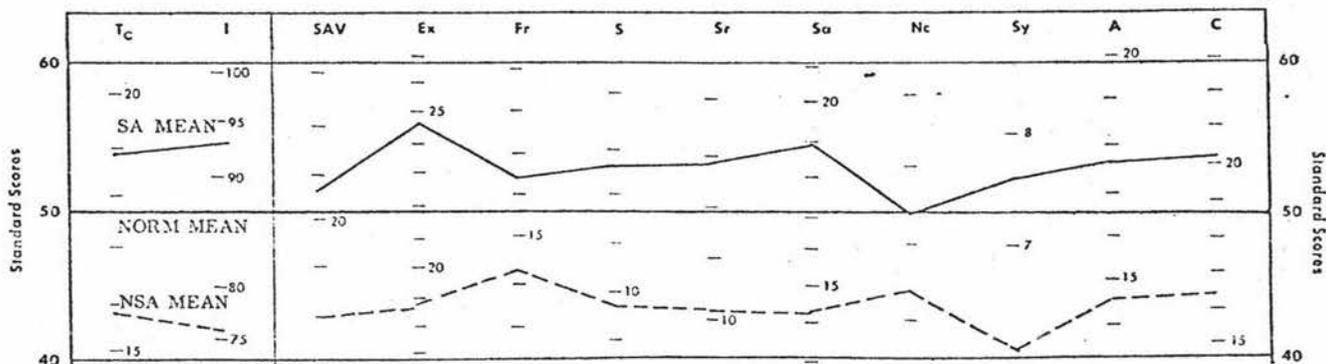


Figure 12. Profiles Based on Mean POI Scores for a Self-Actualizing (SA) and a Non-Self-Actualizing (NSA) Sample.

## RATIONALE FOR SR

## 8. BIOFEEDBACK - WHAT IS IT?

In the early sixties, an American psychologist, Neal Miller, astonished the medical world by his experiments on rats to show that the concept of voluntary control over internal functions like heart rate, blood pressure, digestion salivation was in fact a reality. We could learn to control these functions like we could learn to walk, swim or ride a bicycle. The idea itself, although it sounds provocative, was not entirely new. Russian scientists, like Pavlov, had already demonstrated in the early part of this century this kind of control in animals by a procedure known as classical conditioning. If an animal like a dog is exposed to a natural stimulus, such as the sight of food, salivation will be induced. If this natural stimulus (food) is now paired with an artificial stimulus like the sound of a gong and the animal is repeatedly exposed to these paired stimuli, eventually it would become possible to induce salivation in the dog by exposing it to only the sound of a gong. The sound now becomes the conditioned stimulus and the response of the dog to salivate at the presentation of the sound is called the conditioned response. As one needs an innate stimulus for this type of conditioning (like food for salivation) the concept only had limited possibilities in learning to control complex internal functions. What sort of stimuli or rewards can one use for increasing or decreasing blood pressure or increasing and decreasing movement of the bowel? To have any value at all in medical application of this concept, it seems that one

must learn to control many processes for only a few types of possible rewards.

Operant Conditioning: We know that animals in a circus learn to do many tricks because their trainer uses food as a reward for learning the correct trick or because they fear punishment if they fail to learn the trick quickly. Scientists used this principle with considerable success in making rats control many physiological functions. In one of the initial experiments the rats learned to control their heart rates. It is perfectly possible to increase or decrease the heart rate by increasing or decreasing tension in the muscles. In order to prove that this was a real control over the heart rate and not a cheating by muscular manoeuvring the rats were paralysed with a drug called curare. The drug also paralyses the breathing muscles so the animals were maintained on artificial respiration. The muscles for swallowing were also paralysed so food could not serve as the reward. So, the experimenters rewarded the rats by electrically stimulating the pleasure centre of the brain. In order to get their rewards, believe it or not, the rats very quickly learned to increase as well as decrease their heart rates.

Naturally, the scientists set up more experiments to see if rats could control other functions, and, amazingly enough, they proved very adept and learnt almost anything that was rewarded. In some experiments an escape from punishment, like electric shock to their tails, was used as a reinforcing stimulus for performing the correct physiological skill. The rats not only could learn to increase or decrease their bowel movements, increase or decrease the amount of urine

formation, increase or decrease their blood pressure and perform feats like blushing in one ear but not in the other simultaneously, but they could also remember what they had learnt, when tested a few months later. The implications of these results were so provocative and so urgent that human experiments had started even before the animal experiment were replicated.

Our muscles and joints are controlled by the brain and spinal cord via a number of nerves. This is called the voluntary nervous system because we have a deliberate control over the movements. We learn to control our movements and all the muscular skills by trial and error. Our usual five senses supply us with the information we need for this learning. For example, we can be instructed on how to ride a bicycle, we can see how other people ride bicycles and then we try it. If we fall down, we try again until we eventually master that skill of riding the bicycle. However, our internal organs are supplied by a different nervous system called the autonomic nervous system. It is called autonomic because we have no voluntary control over it. The highest centre of this system is in the brain area called the hypothalamus. From here two types of nerve fibres originate and supply our internal organs. The sympathetic nerves control functions that get us ready for action and generally excite us while the parasympathetic nerves control the opposite functions and generally speaking calm us down.

Having obtained the results in animals mentioned above, scientists all over the world began to feel that perhaps it is possible to learn to control the functions controlled by

this involuntary or autonomic nervous system. In the words of Miller, the humans were surely "as smart as the rats". However, before we can learn to control our internal physiological processes, we must be able to sense or feel that process, just as we must see or feel the positions of our fingers before we can learn to play a piano. Unfortunately, we do not sense our blood pressure, heart rate, brain wave pattern and so on, and often we forget to discriminate fine sensory perception from our muscles, generally known as the muscle tone. However, it was not difficult with our advanced technology to develop electronic machines to sense these physiological processes. These instruments have three main components. 1. Sensing electrodes connected to various parts of the body. 2. Amplifier which processes the information obtained through the sensing electrodes and convert it into meaningful information. 3. The information displayed through visual or sound signals. For example, the visual signal could come as a light or a graph or numbers displayed suitably on the machine, or a screen and audio-signals may be displayed as bleeps or clicks or a sound of certain tone. The signals change as changes occur in the physiological process under consideration. For example, the machine that senses and processes muscle tone information, and light becomes dim or the tone becomes lower or the clicks fewer as the tension in the muscle falls.

#### Biofeedback - What it is

Biofeedback is simply a feeding back of biological information to the person whose biology it is.

A person is connected to the instrument that displays the physiological function he is to control. He is asked to

change the signal in the desired direction by means of mental or volitional strategies. When a correct signal is produced, the person immediately realises that he has changed that particular physiological function in the correct direction. This knowledge of success acts as a strong reward for the human subject and immediately reinforces his efforts to produce correct signals all the time. As the learning progresses, the machine can be set at higher and higher levels to make the task more and more difficult. This is called a shaping procedure. In this way, he can learn to slow the heart, reduce blood pressure, alter brain wave patterns, reduce muscle tone or generally reduce the arousal state. In fact, it is already showing promise in the field of tension headaches, migraine, high blood pressure, epilepsy and so on. The list of the diseases where this concept of biofeedback can be applied is growing bigger and bigger. I have been doing research in high blood pressure. My main concern has been to develop a non-drug treatment which could in some cases replace the drug treatment while in other instances it could beneficially be added to the conventional treatment.

## Appendix D

## FORMS AND QUESTIONNAIRES

<u>Form</u>	Page
POI Personal Orientation Inventory	
IPAT-SAQ Anxiety Scale Questionnaire	
SMS Self-Monitoring Schedule	

PSYCHOLOGY DEPARTMENT  
MADISEY UNIVERSITY

# POI

## PERSONAL ORIENTATION INVENTORY

EVERETT L. SHOSTROM, Ph.D.

### DIRECTIONS

This inventory consists of pairs of numbered statements. Read each statement and decide which of the two paired statements most consistently applies to you.

You are to mark your answers on the answer sheet you have. Look at the example of the answer sheet shown at the right. If the first statement of the pair is TRUE or MOSTLY TRUE as applied to you, blacken between the lines in the column headed "a". (See Example Item 1 at right.) If the second statement of the pair is TRUE or MOSTLY TRUE as applied to you, blacken between the lines in the column headed "b". (See Example Item 2 at right.) If neither statement applies to you, or if they refer to something you don't know about, make no answer on the answer sheet. Remember to give YOUR OWN opinion of yourself and do not leave any blank spaces if you can avoid it.

Section of Answer Column Correctly Marked	
	a      b
1.	<input checked="" type="checkbox"/> <input type="checkbox"/>
	a      b
2.	<input type="checkbox"/> <input checked="" type="checkbox"/>

In marking your answers on the answer sheet, be sure that the number of the statement agrees with the number on the answer sheet. Make your marks heavy and black. Erase completely any answer you wish to change. Do not make any marks in this booklet.

Remember, try to make some answer to every statement.

Before you begin the inventory, be sure you put your name, your sex, your age, and the other information called for in the space provided on the answer sheet.

NOW OPEN THE BOOKLET AND START WITH QUESTION 1.

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1. a. I am bound by the principle of fairness.  
b. I am not absolutely bound by the principle of fairness.
2. a. When a friend does me a favor, I feel that I must return it.  
b. When a friend does me a favor, I do not feel that I must return it.
3. a. I feel I must always tell the truth.  
b. I do not always tell the truth.
4. a. No matter how hard I try, my feelings are often hurt.  
b. If I manage the situation right, I can avoid being hurt.
5. a. I feel that I must strive for perfection in everything that I undertake.  
b. I do not feel that I must strive for perfection in everything that I undertake.
6. a. I often make my decisions spontaneously.  
b. I seldom make my decisions spontaneously.
7. a. I am afraid to be myself.  
b. I am not afraid to be myself.
8. a. I feel obligated when a stranger does me a favor.  
b. I do not feel obligated when a stranger does me a favor.
9. a. I feel that I have a right to expect others to do what I want of them.  
b. I do not feel that I have a right to expect others to do what I want of them.
10. a. I live by values which are in agreement with others.  
b. I live by values which are primarily based on my own feelings.
11. a. I am concerned with self-improvement at all times.  
b. I am not concerned with self-improvement at all times.
12. a. I feel guilty when I am selfish.  
b. I don't feel guilty when I am selfish.
13. a. I have no objection to getting angry.  
b. Anger is something I try to avoid.
14. a. For me, anything is possible if I believe in myself.  
b. I have a lot of natural limitations even though I believe in myself.
15. a. I put others' interests before my own.  
b. I do not put others' interests before my own.
16. a. I sometimes feel embarrassed by compliments.  
b. I am not embarrassed by compliments.
17. a. I believe it is important to accept others as they are.  
b. I believe it is important to understand why others are as they are.
18. a. I can put off until tomorrow what I ought to do today.  
b. I don't put off until tomorrow what I ought to do today.
19. a. I can give without requiring the other person to appreciate what I give.  
b. I have a right to expect the other person to appreciate what I give.
20. a. My moral values are dictated by society.  
b. My moral values are self-determined.
21. a. I do what others expect of me.  
b. I feel free to not do what others expect of me.
22. a. I accept my weaknesses.  
b. I don't accept my weaknesses.
23. a. In order to grow emotionally, it is necessary to know why I act as I do.  
b. In order to grow emotionally, it is not necessary to know why I act as I do.
24. a. Sometimes I am cross when I am not feeling well.  
b. I am hardly ever cross.

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25. a. It is necessary that others approve of what I do.  
b. It is not always necessary that others approve of what I do.
26. a. I am afraid of making mistakes.  
b. I am not afraid of making mistakes.
27. a. I trust the decisions I make spontaneously.  
b. I do not trust the decisions I make spontaneously.
28. a. My feelings of self-worth depend on how much I accomplish.  
b. My feelings of self-worth do not depend on how much I accomplish.
29. a. I fear failure.  
b. I don't fear failure.
30. a. My moral values are determined, for the most part, by the thoughts, feelings and decisions of others.  
b. My moral values are not determined, for the most part, by the thoughts, feelings and decisions of others.
31. a. It is possible to live life in terms of what I want to do.  
b. It is not possible to live life in terms of what I want to do.
32. a. I can cope with the ups and downs of life.  
b. I cannot cope with the ups and downs of life.
33. a. I believe in saying what I feel in dealing with others.  
b. I do not believe in saying what I feel in dealing with others.
34. a. Children should realize that they do not have the same rights and privileges as adults.  
b. It is not important to make an issue of rights and privileges.
35. a. I can "stick my neck out" in my relations with others.  
b. I avoid "sticking my neck out" in my relations with others.
36. a. I believe the pursuit of self-interest is opposed to interest in others.  
b. I believe the pursuit of self-interest is not opposed to interest in others.
37. a. I find that I have rejected many of the moral values I was taught.  
b. I have not rejected any of the moral values I was taught.
38. a. I live in terms of my wants, likes, dislikes and values.  
b. I do not live in terms of my wants, likes, dislikes and values.
39. a. I trust my ability to size up a situation.  
b. I do not trust my ability to size up a situation.
40. a. I believe I have an innate capacity to cope with life.  
b. I do not believe I have an innate capacity to cope with life.
41. a. I must justify my actions in the pursuit of my own interests.  
b. I need not justify my actions in the pursuit of my own interests.
42. a. I am bothered by fears of being inadequate.  
b. I am not bothered by fears of being inadequate.
43. a. I believe that man is essentially good and can be trusted.  
b. I believe that man is essentially evil and cannot be trusted.
44. a. I live by the rules and standards of society.  
b. I do not always need to live by the rules and standards of society.
45. a. I am bound by my duties and obligations to others.  
b. I am not bound by my duties and obligations to others.
46. a. Reasons are needed to justify my feelings.  
b. Reasons are not needed to justify my feelings.

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47. a. There are times when just being silent is the best way I can express my feelings.  
b. I find it difficult to express my feelings by just being silent.
48. a. I often feel it necessary to defend my past actions.  
b. I do not feel it necessary to defend my past actions.
49. a. I like everyone I know.  
b. I do not like everyone I know.
50. a. Criticism threatens my self-esteem.  
b. Criticism does not threaten my self-esteem.
51. a. I believe that knowledge of what is right makes people act right.  
b. I do not believe that knowledge of what is right necessarily makes people act right.
52. a. I am afraid to be angry at those I love.  
b. I feel free to be angry at those I love.
53. a. My basic responsibility is to be aware of my own needs.  
b. My basic responsibility is to be aware of others' needs.
54. a. Impressing others is most important.  
b. Expressing myself is most important.
55. a. To feel right, I need always to please others.  
b. I can feel right without always having to please others.
56. a. I will risk a friendship in order to say or do what I believe is right.  
b. I will not risk a friendship just to say or do what is right.
57. a. I feel bound to keep the promises I make.  
b. I do not always feel bound to keep the promises I make.
58. a. I must avoid sorrow at all costs.  
b. It is not necessary for me to avoid sorrow.
59. a. I strive always to predict what will happen in the future.  
b. I do not feel it necessary always to predict what will happen in the future.
60. a. It is important that others accept my point of view.  
b. It is not necessary for others to accept my point of view.
61. a. I only feel free to express warm feelings to my friends.  
b. I feel free to express both warm and hostile feelings to my friends.
62. a. There are many times when it is more important to express feelings than to carefully evaluate the situation.  
b. There are very few times when it is more important to express feelings than to carefully evaluate the situation.
63. a. I welcome criticism as an opportunity for growth.  
b. I do not welcome criticism as an opportunity for growth.
64. a. Appearances are all-important.  
b. Appearances are not terribly important.
65. a. I hardly ever gossip.  
b. I gossip a little at times.
66. a. I feel free to reveal my weaknesses among friends.  
b. I do not feel free to reveal my weaknesses among friends.
67. a. I should always assume responsibility for other people's feelings.  
b. I need not always assume responsibility for other people's feelings.
68. a. I feel free to be myself and bear the consequences.  
b. I do not feel free to be myself and bear the consequences.

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69. a. I already know all I need to know about my feelings.  
b. As life goes on, I continue to know more and more about my feelings.
70. a. I hesitate to show my weaknesses among strangers.  
b. I do not hesitate to show my weaknesses among strangers.
71. a. I will continue to grow only by setting my sights on a high-level, socially approved goal.  
b. I will continue to grow best by being myself.
72. a. I accept inconsistencies within myself.  
b. I cannot accept inconsistencies within myself.
73. a. Man is naturally cooperative.  
b. Man is naturally antagonistic.
74. a. I don't mind laughing at a dirty joke.  
b. I hardly ever laugh at a dirty joke.
75. a. Happiness is a by-product in human relationships.  
b. Happiness is an end in human relationships.
76. a. I only feel free to show friendly feelings to strangers.  
b. I feel free to show both friendly and unfriendly feelings to strangers.
77. a. I try to be sincere but I sometimes fail.  
b. I try to be sincere and I am sincere.
78. a. Self-interest is natural.  
b. Self-interest is unnatural.
79. a. A neutral party can measure a happy relationship by observation.  
b. A neutral party cannot measure a happy relationship by observation.
80. a. For me, work and play are the same.  
b. For me, work and play are opposites.
81. a. Two people will get along best if each concentrates on pleasing the other.  
b. Two people can get along best if each person feels free to express himself.
82. a. I have feelings of resentment about things that are past.  
b. I do not have feelings of resentment about things that are past.
83. a. I like only masculine men and feminine women.  
b. I like men and women who show masculinity as well as femininity.
84. a. I actively attempt to avoid embarrassment whenever I can.  
b. I do not actively attempt to avoid embarrassment.
85. a. I blame my parents for a lot of my troubles.  
b. I do not blame my parents for my troubles.
86. a. I feel that a person should be silly only at the right time and place.  
b. I can be silly when I feel like it.
87. a. People should always repent their wrongdoings.  
b. People need not always repent their wrongdoings.
88. a. I worry about the future.  
b. I do not worry about the future.
89. a. Kindness and ruthlessness must be opposites.  
b. Kindness and ruthlessness need not be opposites.
90. a. I prefer to save good things for future use.  
b. I prefer to use good things now.
91. a. People should always control their anger.  
b. People should express honestly-felt anger.

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92. a. The truly spiritual man is sometimes sensual.  
b. The truly spiritual man is never sensual.
93. a. I am able to express my feelings even when they sometimes result in undesirable consequences.  
b. I am unable to express my feelings if they are likely to result in undesirable consequences.
94. a. I am often ashamed of some of the emotions that I feel bubbling up within me.  
b. I do not feel ashamed of my emotions.
95. a. I have had mysterious or ecstatic experiences.  
b. I have never had mysterious or ecstatic experiences.
96. a. I am orthodoxly religious.  
b. I am not orthodoxly religious.
97. a. I am completely free of guilt.  
b. I am not free of guilt.
98. a. I have a problem in fusing sex and love.  
b. I have no problem in fusing sex and love.
99. a. I enjoy detachment and privacy.  
b. I do not enjoy detachment and privacy.
100. a. I feel dedicated to my work.  
b. I do not feel dedicated to my work.
101. a. I can express affection regardless of whether it is returned.  
b. I cannot express affection unless I am sure it will be returned.
102. a. Living for the future is as important as living for the moment.  
b. Only living for the moment is important.
103. a. It is better to be yourself.  
b. It is better to be popular.
104. a. Wishing and imagining can be bad.  
b. Wishing and imagining are always good.
105. a. I spend more time preparing to live.  
b. I spend more time actually living.
106. a. I am loved because I give love.  
b. I am loved because I am lovable.
107. a. When I really love myself, everybody will love me.  
b. When I really love myself, there will still be those who won't love me.
108. a. I can let other people control me.  
b. I can let other people control me if I am sure they will not continue to control me.
109. a. As they are, people sometimes annoy me.  
b. As they are, people do not annoy me.
110. a. Living for the future gives my life its primary meaning.  
b. Only when living for the future ties into living for the present does my life have meaning.
111. a. I follow diligently the motto, "Don't waste your time."  
b. I do not feel bound by the motto, "Don't waste your time."
112. a. What I have been in the past dictates the kind of person I will be.  
b. What I have been in the past does not necessarily dictate the kind of person I will be.
113. a. It is important to me how I live in the here and now.  
b. It is of little importance to me how I live in the here and now.
114. a. I have had an experience where life seemed just perfect.  
b. I have never had an experience where life seemed just perfect.
115. a. Evil is the result of frustration in trying to be good.  
b. Evil is an intrinsic part of human nature which fights good.

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116. a. A person can completely change his essential nature.  
b. A person can never change his essential nature.
117. a. I am afraid to be tender.  
b. I am not afraid to be tender.
118. a. I am assertive and affirming.  
b. I am not assertive and affirming.
119. a. Women should be trusting and yielding.  
b. Women should not be trusting and yielding.
120. a. I see myself as others see me.  
b. I do not see myself as others see me.
121. a. It is a good idea to think about your greatest potential.  
b. A person who thinks about his greatest potential gets conceited.
122. a. Men should be assertive and affirming.  
b. Men should not be assertive and affirming.
123. a. I am able to risk being myself.  
b. I am not able to risk being myself.
124. a. I feel the need to be doing something significant all of the time.  
b. I do not feel the need to be doing something significant all of the time.
125. a. I suffer from memories.  
b. I do not suffer from memories.
126. a. Men and women must be both yielding and assertive.  
b. Men and women must not be both yielding and assertive.
127. a. I like to participate actively in intense discussions.  
b. I do not like to participate actively in intense discussions.
128. a. I am self-sufficient.  
b. I am not self-sufficient.
129. a. I like to withdraw from others for extended periods of time.  
b. I do not like to withdraw from others for extended periods of time.
130. a. I always play fair.  
b. Sometimes I cheat a little.
131. a. Sometimes I feel so angry I want to destroy or hurt others.  
b. I never feel so angry that I want to destroy or hurt others.
132. a. I feel certain and secure in my relationships with others.  
b. I feel uncertain and insecure in my relationships with others.
133. a. I like to withdraw temporarily from others.  
b. I do not like to withdraw temporarily from others.
134. a. I can accept my mistakes.  
b. I cannot accept my mistakes.
135. a. I find some people who are stupid and uninteresting.  
b. I never find any people who are stupid and uninteresting.
136. a. I regret my past.  
b. I do not regret my past.
137. a. Being myself is helpful to others.  
b. Just being myself is not helpful to others.
138. a. I have had moments of intense happiness when I felt like I was experiencing a kind of ecstasy or bliss.  
b. I have not had moments of intense happiness when I felt like I was experiencing a kind of bliss.

139. a. People have an instinct for evil.  
b. People do not have an instinct for evil.
140. a. For me, the future usually seems hopeful.  
b. For me, the future often seems hopeless.
141. a. People are both good and evil.  
b. People are not both good and evil.
142. a. My past is a stepping stone for the future.  
b. My past is a handicap to my future.
143. a. "Killing time" is a problem for me.  
b. "Killing time" is not a problem for me.
144. a. For me, past, present and future is in meaningful continuity.  
b. For me, the present is an island, unrelated to the past and future.
145. a. My hope for the future depends on having friends.  
b. My hope for the future does not depend on having friends.
146. a. I can like people without having to approve of them.  
b. I cannot like people unless I also approve of them.
147. a. People are basically good.  
b. People are not basically good.
148. a. Honesty is always the best policy.  
b. There are times when honesty is not the best policy.
149. a. I can feel comfortable with less than a perfect performance.  
b. I feel uncomfortable with anything less than a perfect performance.
150. a. I can overcome any obstacles as long as I believe in myself.  
b. I cannot overcome every obstacle even if I believe in myself.

Name \_\_\_\_\_ Last \_\_\_\_\_ First \_\_\_\_\_ Middle \_\_\_\_\_  
 Age \_\_\_\_\_ Date \_\_\_\_\_ Sex  M  F  
 Married  Single  Divorced  Widowed   
 Number of years of school completed \_\_\_\_\_  
 Religious preference \_\_\_\_\_  
 Occupation \_\_\_\_\_

**SCORES**

- 0. NA \_\_\_\_\_
- 1. TI \_\_\_\_\_
- 2. TC \_\_\_\_\_
- 3. O \_\_\_\_\_
- 4. I \_\_\_\_\_
- 5. SAV \_\_\_\_\_
- 6. Ex \_\_\_\_\_
- 7. Fr \_\_\_\_\_
- 8. S \_\_\_\_\_
- 9. Sr \_\_\_\_\_
- 10. Sa \_\_\_\_\_
- 11. Nc \_\_\_\_\_
- 12. Sy \_\_\_\_\_
- 13. A \_\_\_\_\_
- 14. C \_\_\_\_\_

**PERSONAL ORIENTATION INVENTORY**



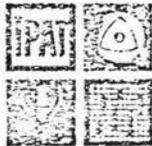
By  
**EVERETT L. SHOSTROM**

PUBLISHED BY  **EITS**

**EDUCATIONAL AND INDUSTRIAL TESTING SERVICE**

1	A	B	26	A	B	51	A	B	76	A	B	101	A	B	126	A	B
2			27			52			77			102			127		
3			28			53			78			103			128		
4			29			54			79			104			129		
5			30			55			80			105			130		
6	A	B	31	A	B	56	A	B	81	A	B	106	A	B	131	A	B
7			32			57			82			107			132		
8			33			58			83			108			133		
9			34			59			84			109			134		
10			35			60			85			110			135		
11	A	B	36	A	B	61	A	B	86	A	B	111	A	B	136	A	B
12			37			62			87			112			137		
13			38			63			88			113			138		
14			39			64			89			114			139		
15	A	B	40	A	B	65	A	B	90	A	B	115	A	B	140	A	B
16			41			66			91			116			141		
17			42			67			92			117			142		
18			43			68			93			118			143		
19			44			69			94			119			144		
20	A	B	45	A	B	70	A	B	95	A	B	120	A	B	145	A	B
21			46			71			96			121			146		
22			47			72			97			122			147		
23			48			73			98			123			148		
24			49			74			99			124			149		
25			50			75			100			125			150		





# SELF ANALYSIS FORM

NAME \_\_\_\_\_ TODAY'S DATE \_\_\_\_\_  
 First Middle Last  
 SEX \_\_\_\_\_ AGE \_\_\_\_\_ OTHER FACTS \_\_\_\_\_  
 (Write M or F) (Nearest Year) (Address, Occupation, etc., as instructed)

**CONFIDENTIAL**

Inside this booklet you will find forty questions, dealing with difficulties that most people experience at one time or another. It will help a lot in self-understanding if you check Yes, No, etc., to each, frankly and truthfully, to describe any problems you may have.

Start with the two simple examples just below, for practice. As you see, each inquiry is actually put in the form of a sentence. By putting a cross, X, in one of the three boxes on the right you show how it applies to you. Make your marks now.

1. I enjoy walking \_\_\_\_\_ Yes  Occasionally  No

A middle box is provided for when you cannot definitely say Yes or No. But use it as little as possible.

2. I would rather spend an evening:  
 (A) talking to people, (B) at a movie \_\_\_\_\_ A  In between  B

About half the items inside end in A and B choices like this. B is always on the right. Remember, use the "In between" or "Uncertain" box only if you cannot possibly decide on A or B.

Now:

1. Make sure you have put your name, and whatever else the examiner asks, in the place at the top of this page.
2. Never pass over an item but give some answer to every single one. Your answers will be entirely confidential.
3. Do not spend time pondering. Answer each immediately, the way you want to at this moment (not last week, or usually). You may have answered questions like this before; but answer them as you feel now.

Most people finish in five minutes; some, in ten. Hand in this form as soon as you are through with it, unless told to do otherwise. As soon as the examiner signals or tells you to, turn the page and begin.

**STOP HERE - WAIT FOR SIGNAL**

- A
1. I find that my interests, in people and amusements, tend to change fairly rapidly \_\_\_\_\_ True  In between  False
  2. If people think poorly of me I can still go on quite serenely in my own mind \_\_\_\_\_ True  In between  False
  3. I like to wait till I am sure that what I am saying is correct, before I put forward an argument. \_\_\_\_\_ Yes  In between  No
  4. I am inclined to let my actions get swayed by feelings of jealousy \_\_\_\_\_ Sometimes  Seldom  Never
  5. If I had my life to live over again I would:  
(A) plan very differently, (B) want it the same \_\_\_\_\_ A  In between  B
  6. I admire my parents in all important matters \_\_\_\_\_ Yes  In between  No
  7. I find it hard to "take 'no' for an answer", even when I know what I ask is impossible \_\_\_\_\_ True  In between  False
  8. I doubt the honesty of people who are more friendly than I would naturally expect them to be \_\_\_\_\_ True  In between  False
  9. In demanding and enforcing obedience my parents (or guardians) were: (A) always very reasonable, (B) often unreasonable \_\_\_\_\_ A  In between  B
  10. I need my friends more than they seem to need me \_\_\_\_\_ Rarely  Sometimes  Often
  11. I feel sure that I could "pull myself together" to deal with an emergency \_\_\_\_\_ Always  Often  Seldom
  12. As a child I was afraid of the dark \_\_\_\_\_ Often  Sometimes  Never
  13. People sometimes tell me that I show my excitement in voice and manner too obviously \_\_\_\_\_ Yes  Uncertain  No
  14. If people take advantage of my friendliness I:  
(A) soon forget and forgive, (B) resent it and hold it against them. \_\_\_\_\_ A  In between  B
  15. I find myself upset rather than helped by the kind of personal criticism that many people make \_\_\_\_\_ Often  Occasionally  Never
  16. Often I get angry with people too quickly \_\_\_\_\_ True  In between  False
  17. I feel restless as if I want something but do not know what \_\_\_\_\_ Very rarely  Sometimes  Often
  18. I sometimes doubt whether people I am talking to are really interested in what I am saying \_\_\_\_\_ True  In between  False
  19. I have always been free from any vague feelings of ill-health, such as obscure pains, digestive upsets, awareness of heart action, etc. \_\_\_\_\_ True  Uncertain  False
  20. In discussion with some people, I get so annoyed that I can hardly trust myself to speak \_\_\_\_\_ Sometimes  Rarely  Never

CONTINUE ON NEXT PAGE.

A Score

Do not  
write  
in this  
column

Q(-)

C(-)

L

O

Q

- |   | B                                 |   |                                       |
|---|-----------------------------------|---|---------------------------------------|
| 21. Through getting tense I use up more energy than most people in getting things done.....                             | True<br><input type="checkbox"/>  | Uncertain<br><input type="checkbox"/>   | False<br><input type="checkbox"/>     |
| 22. I make a point of not being absent-minded or forgetful of details.....  | True<br><input type="checkbox"/>  | Uncertain<br><input type="checkbox"/>   | False<br><input type="checkbox"/>     |
| 23. However difficult and unpleasant the obstacles, I always stick to my original intentions.....                       | Yes<br><input type="checkbox"/>   | In between<br><input type="checkbox"/>  | No<br><input type="checkbox"/>        |
| 24. I tend to get over-excited and "rattled" in upsetting situations.....   | Yes<br><input type="checkbox"/>   | In between<br><input type="checkbox"/>  | No<br><input type="checkbox"/>        |
| 25. I occasionally have vivid dreams that disturb my sleep.....   | Yes<br><input type="checkbox"/>   | In between<br><input type="checkbox"/>  | No<br><input type="checkbox"/>        |
| ( I always have enough energy when faced with difficulties.....   | Yes<br><input type="checkbox"/>   | In between<br><input type="checkbox"/>  | No<br><input type="checkbox"/>        |
| 27. I sometimes feel compelled to count things for no particular purpose.....   | True<br><input type="checkbox"/>  | Uncertain<br><input type="checkbox"/>   | False<br><input type="checkbox"/>     |
| 28. Most people are a little queer mentally, though they do not like to admit it.....                                   | True<br><input type="checkbox"/>  | Uncertain<br><input type="checkbox"/>   | False<br><input type="checkbox"/>     |
| 29. If I make an awkward social mistake I can soon forget it.....   | Yes<br><input type="checkbox"/>   | In between<br><input type="checkbox"/>  | No<br><input type="checkbox"/>        |
| 30. I feel grouchy and just do not want to see people:<br>(A) occasionally, (B) rather often.....                       | A<br><input type="checkbox"/>     | In between<br><input type="checkbox"/>  | B<br><input type="checkbox"/>         |
| 31. I am brought almost to tears by having things go wrong.....   | Never<br><input type="checkbox"/> | Very rarely<br><input type="checkbox"/> | Sometimes<br><input type="checkbox"/> |
| 32. In the midst of social groups I am nevertheless sometimes overcome by feelings of loneliness and worthlessness..... | Yes<br><input type="checkbox"/>   | In between<br><input type="checkbox"/>  | No<br><input type="checkbox"/>        |
| 33. I wake in the night and, through worry, have some difficulty in sleeping again.....                                 | Often<br><input type="checkbox"/> | Sometimes<br><input type="checkbox"/>   | Never<br><input type="checkbox"/>     |
| ( My spirits generally stay high no matter how many troubles I meet.....  | Yes<br><input type="checkbox"/>   | In between<br><input type="checkbox"/>  | No<br><input type="checkbox"/>        |
| 35. I sometimes get feelings of guilt or remorse over quite small matters.....  | Yes<br><input type="checkbox"/>   | In between<br><input type="checkbox"/>  | No<br><input type="checkbox"/>        |
| 36. My nerves get on edge so that certain sounds, e.g., a screechy hinge, are unbearable and give me the shivers.....   | Often<br><input type="checkbox"/> | Sometimes<br><input type="checkbox"/>   | Never<br><input type="checkbox"/>     |
| 37. If something badly upsets me I generally calm down again quite quickly.....   | True<br><input type="checkbox"/>  | Uncertain<br><input type="checkbox"/>   | False<br><input type="checkbox"/>     |
| 38. I tend to tremble or perspire when I think of a difficult task ahead.....   | Yes<br><input type="checkbox"/>   | In between<br><input type="checkbox"/>  | No<br><input type="checkbox"/>        |
| 39. I usually fall asleep quickly, in a few minutes, when I go to bed.....  | Yes<br><input type="checkbox"/>   | In between<br><input type="checkbox"/>  | No<br><input type="checkbox"/>        |
| 40. I sometimes get in a state of tension or turmoil as I think over my recent concerns and interests.....              | True<br><input type="checkbox"/>  | Uncertain<br><input type="checkbox"/>   | False<br><input type="checkbox"/>     |

STOP HERE.

BE SURE YOU HAVE ANSWERED EVERY QUESTION.

B Score

Do not  
write  
in this  
column

Q(-)

C(-)

L

O

Q

WEEKLY SELF MONITORING SCHEDULE

HOMEWORK ASSIGNMENT

		RANGE							X
BLOOD PRESSURE	Sys-tolic	180							AM
		95							PM
	Dias-tolic	120							AM
		80							PM
PULSE		140							AM
		40							PM
BREATHING		30							AM
		1							PM
TODAY I FELT	Very relaxed								
	Rather relaxed								
	Relaxed								
	Rather tense								
	Very tense								
			MON	TUES	WED	THURS	FRI	SAT	SUN

REASONS

RELAXED

TENSE

1. Using SR Techniques
2. Feeling Alive
3. Feeling Successful
4. Feeling Joyful
5. Experience of Authenticity

1. Irritable/Angry
2. Fatigued/Tired
3. Hard Work
4. NOT Successful
5. Depressed

## Appendix E

CODED IDENTIFICATION SHEET

AA 190162  
 AB 230961  
 ACD 231061  
 AC 191680  
 AD 280160  
 AD 020761  
 AF 231680  
 AH 180859  
 AJ 100661  
 AL 191680  
 AM 070832  
 AM 171680  
 AM 250462  
 AM 260961  
 AS 230662  
 AT 191680  
 BA 181680  
 BI 261062  
 C 160362  
 CB 010361  
 CE 181680  
 CM 030462  
 CE 240361  
 CM 091061  
 CM 181680  
 CMJ 361680  
 DB 211680  
 DI 061059  
 DI 120150  
 DJ 150859  
 DJ 211680  
 DM 080855  
 DM 251680  
 DR 181680  
 DR 211061  
 DR 290960  
 DS 080860  
 EA 291254  
 ED 100360  
 EJ 201680  
 FP 130659  
 FP 290662  
 FS 100461

GE 181680  
 GM 150559  
 GM 230661  
 GW 050462  
 HA 120561  
 JA 191680  
 JA 270746  
 JA 181680  
 JB 090758  
 JC 181680  
 JB 281161  
 JC 040850  
 JC 230261  
 JC 230362  
 JE 170362  
 JE 181680  
 JM 100662  
 JM 130162  
 JM 201480  
 JP 211680  
 KC 211680  
 KD 190762  
 KD 211061  
 KE 181680  
 KF 060162  
 KL 050557  
 KL 160263  
 KM 160262  
 KW 060961  
 LA 270457  
 LB 201680  
 LC 220761  
 LD 050861  
 LE 181680  
 LL 141246  
 MA 060561  
 MF 211680  
 MN 300362  
 MP 191680  
 MT 191680  
 NE 060162

NH 171262  
 NJ 290161  
 NS 030262  
 PC 191680  
 PD 191680  
 PG 080651  
 PJ 210661  
 PJ 301058  
 PM 150858  
 PM 160462  
 PM 201680  
 PT 011161  
 RA 151055  
 RA 191680  
 RC 170462  
 RD 181680  
 RJ 100757  
 RE 310854  
 RJ 220961  
 RM 191680  
 RN 201680  
 RS 250461  
 SA 140362  
 SA 181680  
 SB 181680  
 SC 201680  
 SC 281680  
 SD 191680  
 SG 181680  
 SH 201680  
 SJ 100460  
 SJ 121161  
 SJ 130760  
 SM 120360  
 SM 170761  
 SP 091061  
 SS 030761  
 SSM 010759  
 TC 181680  
 TE 140262  
 TF 060361  
 TJ 200161  
 TM 090462  
 VJ 181680  
 VR 181680

Additions

CM 290961  
 JF 311680

## Appendix F

ACTUAL INSTRUCTIONS TO PLACEBO

Tape Transcript

Detailed Instructions -Placebo Group

"The tape you will be using to learn the PSI technique contains approximately 20 minutes of material. The first few minutes are devoted, to an explanation of the way in which PSI works as a self regulatory technique, a mention of the research evidence supporting its value in this regard and a brief description of the technique itself. This is followed by a request to practice the technique for a few minutes in order to become familiar with it and then by some comments related to the experience you may have had. Some common questions often asked are then presented and answered. The instructions conclude by asking you to practice the technique again for 15-20 minutes followed by a few brief comments on this more lengthy experience.

In order to master this self regulatory skill, the best way in which to use the tape over the six weeks is as follows (please attempt to keep to this guide):

- 1) On the first day, follow the instructions carefully taking note of the explanatory remarks.
- 2) On the second and third days, listen again to the explanatory remarks and then go on to practice the technique as instructed for 15-20 minutes.
- 3) For the remaining of the first week practice the technique twice daily without using the tape.
- 4) During each of the following weeks (week 2-6) review the technique one day using the tape and on the remaining 6 days, practice the technique on your own.

These instructions are also repeated on the tape itself. If you make a commitment to follow them, you should have a good command of the technique by the end of the 6 weeks and you can expect to benefit accordingly.

The most productive attitude to have in using this technique is not to try hard to make anything happen. The practice of sitting quietly with eyes closed twice daily (without effort) will facilitate the self-regulatory skills referred to in this tape and supported by research findings."

## APPENDIX G

Follow-up Control Group: Experimental Group 1

(Non-starters/Assertion Training Group)

Follow-up Control Group: Experimental Group 1

Fifteen subjects originally responded to the on-campus advertisement for Assertion Training. At the initial briefing the Synergism programme was outlined with its rationale for treatment. Five females from the original respondent group elected not to continue. As part of the initial briefing every respondent completed the IPAT-SAQ.

At the conclusion of the Synergism treatment programme these five persons were once again contacted. Four agreed to complete an IPAT-SAQ post-test. The fifth female had attended a meditation programme and was not included for this reason. None of the other four females had undertaken any further treatment subsequent to the pre-test IPAT-SAQ.

At the time of the post-test the four females were also briefly questioned regarding their withdrawal from the proposed Synergism treatment programme. Each admitted that they were not sure that the Synergism treatment programme rationale and their understanding of their Assertion Training needs, were compatible. They perceived a need for Assertion Training rather than tension reduction.

These four subjects allowed for direct comparison as a Follow-up Control Group, with Experimental Group 1. All had responded to the same advertisement, and were a matching group with respect to self-perceptions of anxiety/stress as measured by the IPAT-SAQ, and in terms of population sample. The initial motivation for treatment change was also identical.

## APPENDIX H

## Synergism Treatment Programme

- Treatment Groups - Experimental Group 1
- Experimental Group 2

## Synergism - Treatment Procedure

Complete details of Synergism are contained in Chapter 4, Synergistic Relaxation (SR). Both Experimental Group 1 and Experimental Group 2 were Synergism Treatment groups. What follows is a synopsis of the actual treatment procedure used in both these experimental groups.

Synergistic Relaxation aims at first enabling a person to identify the components of cognitive, emotional and somatic stress. The process of self-monitoring of these components is an integral part of the teaching programme. Initial training is essentially concerned with identification, self-monitoring and awareness of choice.

Choice in this sense means re-education of a person's awareness to choose and discriminate between appropriate stress and tension as well as induction of the Relaxation Response.

Each person is educated in the processes of stress, the appropriateness of tension and the self-control strategies of stress reduction which are the central components in Synergistic Relaxation. Each person learns to discriminate between appropriate and inappropriate responding and to recognise the actual mechanisms involved in stress, in tension and relaxation.

Synergism is essentially a multi-modal research-oriented treatment programme. It was not taught under laboratory conditions. The emphasis was on longitudinal treatment in vivo.

The first element in the treatment procedure is the pro-

vision of a rationale. Live therapy sessions were conducted using the face validity of relaxed surroundings, lighting and environmental comforts which are suggestive of relaxation. Each client within each group was fully briefed concerning the rationale, purpose and evaluative methods used. Complete information (vide Patel (1976) example) was provided (See Annex A, B and C).

The purpose is to teach self-management skills and to validate the complete multi-modal therapy as an intervention technique for non-pharmacological treatment. Self-report methods were used as the primary evaluative tool, as well as behavioural assessment.

#### Rationale

This phase was continuous throughout the entire programme. At each session subjects were instructed in the procedures and treatment rationale. The first four sessions were devoted to the rationale of Synergism itself. Other factors included stress, arousal and anxiety reduction determinants. The rationale included the different ways emotions affect the body, the physiology of relaxation, concepts of feedback, biofeedback, self-control, imagery and respiration. Most of the data for rationale was provided by Chapters 2 and 4. Rationale is considered central to the educational/skills process. Details are contained in Appendix C.

#### Replicability of Research Design

To allow for complete replicability, full details of the actual treatment programme are contained in Appendices A, B and C.

- Annex A. Taped sessional Synergism treatment transcripts
- B. Take Home Instruction Sheets
- C. Rationale

Annex A, Details: Treatment Transcripts - Synergism (45 min relaxation sessions).

These were issued once per fortnight on the following

basis:	Issue	Tape
	1 Basic Synergism technique	1
	2. Breathing technique - Counting	4
	3. Rotation of Consciousness	7
	4. Awareness Technique - Self-monitoring	11

Note: Each session was conducted live. The transcripts and tapes were for in vivo and home consumption only.

Annex B, Details: Take Home Instruction Sheets - issued weekly.

Week

- 1 Instructions for SMS
- 2 Pre-sessional instructions
- 3 Simple Aide-Memorie - Relaxation
- 4 Simple Breathing Technique
- 5 Ten-step guide to 5-minute relaxation
- 6 Synergism - Treatment modules
- 7 Relaxation Response (Rr)
- 8 Outline of nervous system

Note: These instructions were an important in vivo CA-SC component. The purpose was to teach subjects the art of in vivo CA-SC relaxation.

Annex C, Details: Rationale - Sessional Instructions - discussed weekly.

- 1 Synergistic Relaxation (SR) - Basic Technique
- 2 SR - Introduction
- 3 SR - Sequence
- 4 SR - The philosophy
- 5 Arousal - neurophysiology
- 6 Stress - the silent killer
- 7 POI - Concepts
- 8 Biofeedback - what is it?

Note: These instructions were the key elements of the rationale. However, discussion of experiences and of in vivo coping strategies was encouraged at each session. This became an important reinforcement and motivational paradigm.

#### Synergism Battery

As explained in Chapter 4, each Synergism battery contains each key component identified in Chapter 2 e.g.:

#### Key Components

1. Rationale
2. Quiet Environment
3. Physiological Tension Reduction
4. Posture
5. Passive Attitude
6. Self Monitoring Rr
7. Breathing
8. Rotation of Consciousness
9. Self-control mechanisms
10. Awareness
11. Present Time
- 12.. CA-SC

### Cue-Associated Self-Monitoring (CA-SM)

Continuous emphasis was maintained throughout the programme on in vivo. Situations experienced by each subject in vivo from the commencement of the programme were discussed at each relaxation session. This aided in vivo generalization, as well as a CA-SM maintenance programme during the programme. The effect of this programme was twofold. One is that each session will retain maximum effectiveness by constant reinforcement. Another was to maintain high and measureable commitment to the programme. The client-centered emphasis is on self responsibility. This is imposed by the measures of the self-monitoring programme. The CA-SM procedures become an integral part of the measurement of the effectiveness of the programme. They provide each individual with a day-to-day evaluative check (using the SMS) as well as providing the researcher with important measurement data. This involved the subject in randomised, daily self-monitoring of HR, and respiration rate. The attitude measure incorporated, also helped reinforce behaviour and attitude modification.

The results of the multiplicity of daily self-monitoring procedures induced a sense of awareness of the environmental and interpersonal factors leading to anxiety stress or tension. Thus, relaxation became a conditioned cue-associated technique which will lead from self-monitoring to self-coping to self-control and self-management. These are the necessary pre-conditions for cue-associated self-coping CA-SC SR to generalize to the in vivo condition. The latter is the ultimate therapeutic aim of this research design.

### Follow-up and Maintenance Therapy Programme

It has long been recognised that maintenance of treatment effects cannot be assumed. Behavioural therapists have therefore generated a list of tactics to counter decline in therapy. Lack of skill maintenance is a serious problem in therapy. Skill levels decrease after training. Although this rarely reaches pre-training levels, the decrements which may result could have adverse therapeutic effects. More important, these decrements often can be blamed on the initial treatment programme, in the face of deterioration of health and self-coping ability.

There are five major domains of maintenance therapy. In brackets appears the Synergism technique appropriate or relevant to this aspect.

- a. maintenance in behaviour modification (weekly programme)
- b. behavioural self-control maintenance programmes (SMS)
- c. traditional maintenance mechanisms of:
  - feedback (weekly sessional discussions)
  - supervision (by experimenter)
  - observations (SMS and subsequent discussions)
- d. post-training ( emphasis on CA-SC in vivo)
- e. Follow-up evaluation (experimenter is freely available for follow-up and follow-up evaluation - this is part of the behavioural contract negotiated)

Lack of maintenance is a pervasive phenomena of critical importance after any intervention strategy. A self supervisory programme such as envisaged has obvious treatment gains. No treatment programme is complete without this maintenance component and systematic follow-up evaluation.

### In Vivo

The group was exhorted constantly, at the end of each tape, and at the end of each session, to conduct in vivo checks of their relaxation state. This involved being aware of environmental or interpersonal stimuli that were found to cause stress or anxiety. At these self-perceived times, they were to become aware of their breathing rate and general physiological condition. Initially this was to be a monitoring event only. As the programme progressed they were to consciously interrupt the self-perceived stress/anxiety state and induce relaxation using any or all of the techniques learned.

### In Vivo Generalization

A maintenance programme, for generalization to in vivo is essential. This consists of treatment packages CA-SC for all clients. All sessions will include taped programmes from which clients may take home tapes.

The treatment package ended with a standard debriefing format, indicating the experimental findings and suggested in vivo generalization techniques. Each client was asked to remain in bi-monthly contact, for follow-up purposes concerning effectiveness of in vivo generalization and to establish efficacy of self-monitoring techniques.

### Conclusion

The important initial goal is to establish a standard replicable form of SR as a relaxation technology. In itself Savasan (Patel, 1974) has been proven to be an effective intervention therapy for the reduction of systolic BP in essential

hypertension. The significant reduction of self-perceived anxiety is considered an essential and sufficient initial goal, and as such is the agreed initial goal of this particular research strategy. The thesis accompanying this research design includes component analysis of the techniques used by Datey et.al., (1969) and Patel (1974). These include analysis into the key components included in each Synergism battery.

## APPENDIX I

PCI RESULTS - EXPERIMENT TWO

## Experiment Two

### Experimental Group 1 - POI Results

In this experiment only Experimental Group 1 completed the pre- and post-test POI's. Therefore planned comparisons using a t ratio were used to identify the specific treatment effects along all ten sub-scales of the POI for this group. This form of analysis is justified by Keppell (1973, p.93) and Hays (1977, pp. 584-605).

Table 13 gives details of pre- and post-test mean scores, t values and df, for each of the ten POI sub-scales obtained by Experimental Group 1.

Shostrom details the POI scoring categories in Table 5 (Shostrom, 1966, p.24). Appendix C of this thesis contains a copy of this table (Appendix C, Week 7, POI Concepts). In this Table 5 Shostrom computes the difference between non-Self-Actualizers and Self-Actualizers. A similar method is shown in the Table 13 subtended. These difference scores were computed on the difference between pre- and post-test means on each of the ten sub-scales of the POI for Experimental Group 1.

Table 13

POI Mean Scores and Planned Comparisons: Experimental Group One (N = 10)

<u>Scale</u>	<u><math>\bar{X}</math> Scores</u>		<u>t Value</u>	<u>Sig.</u>	<u>df</u>	<u>Pre + Post Differences Scores</u>
	<u>Pre</u>	<u>Post</u>				
Te + I	87.4	105.2	-5.66	**	9	
POI	123.6	156.2	-6.87	**	9	
<u>Subscales</u>						
SAV	13.7	18.7	-3.41	**	9	3
Ex	18	24.6	-5.44	**	9	6.6
Fr	13.8	15.3	-2.00			1.5
S	9.5	13.0	-5.82	**	9	3.5
Sr	8	11.3	-3.64	**	9	2.3
Sa	14.5	17.1	-2.86	*	9	2.6
Nc	10.7	12.3	-2.02		9	1.6
Sy	5.4	7.3	-2.75	*	9	1.9
A	13.1	15.5	-3.58	**	9	2.0
C	16.9	21.1	-4.08	**	9	3.2

Level of significance \*\*  $p < 0.01$

\*  $p < 0.05$

#### POI T Values analysis

This analysis demonstrates that significant treatment effects have taken place across many of the attitudinal dimensions of the POI.

POI Profile - Experimental Group 1

Figure 6 is used for a number of reasons. The profile method used by Shostrom (1974), gives an immediate visual display of treatment effects. Since the scaled profile of 50 is representative of a statistically derived normal group (Shostrom, 1974) this allows direct comparison of pre- and post-treatment effects with a statistically derived normal group.

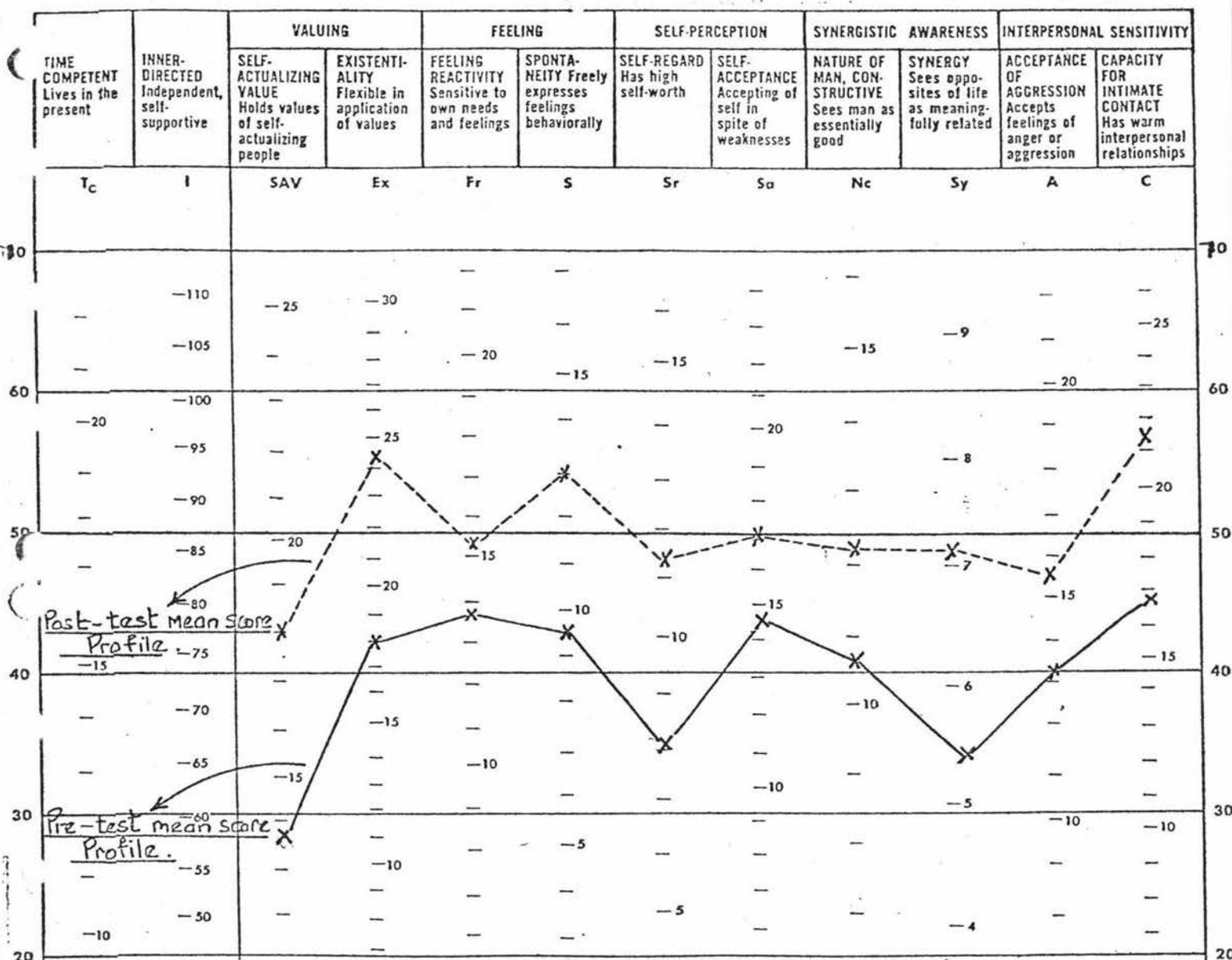


Figure 6: POI treatment profile - Experimental Group 1

NOTE: Three values are shown well above the scaled normal profile (=50) namely Ex (Existentiality), S (Spontaneity) and C (Capacity for intimate contact.)

POI: Profile of Pre-Post Means

This profile, used consistently throughout Shostrom (1974) demonstrates these effects even more dramatically. The normative mean (Shostrom, 1974, p.24) is shown at the median 50 line. It will be noted that three values are well above this median level, namely Ex = Existentiality; S = Spontaneity; C = Capacity for intimate contact. When the difference scores from Table 13 are computed and compared to the data included in Shostrom (1974, Table 5, p.24), four sub-scales show similar difference scores, being the three already indicated and SAV = Self Actualizing Values. The SAV scale is a central concept to Shostrom's POI.

## APPENDIX J

POI Scores - Experiment Three

POI Scores - Experiment Three

POI's were administered to both Experimental Group Two and the Placebo group in Experiment Three. The results are shown below.

Table 14

POI Mean Scores - Experiment Three

	Experimental 2 (n = 10)		Placebo (n = 10)	
	Pre	Post	Pre	Post
Tc + I	91.6	109.2	101.6	116
POI	137.6	160.3	149.2	164.2
SAV	17.7	19.9	18.5	20.9
Ex	22.3	24.4	22.7	24.7
Fr	13.9	16.7	15.3	17.5
S	11.6	13.9	12.7	13.7
Sr	9.0	11.9	10.9	12.5
Sa	14.8	18.3	16.8	18.1
Nc	10.4	11.2	11.3	11.1
Sy	6.5	7.3	6.9	7.6
A	13.6	16.3	15.8	17.3
C	17.8	20.4	18.3	20.8

## APPENDIX K

## FACTOR ANALYSIS

## Factor Analysis

Factor analysis is a method for reducing a large number of variables into a smaller number of presumed underlying unities called factors. Factors are usually derived from the intercorrelations among a number of variables and generally if no high correlations exist then no meaningful factors will emerge (Gorsuch, 1974; Gorsuch and Dreger, 1979). Factors are therefore theoretical constructs which reflect the variances shared by variables. Factor analysis is utilised in this thesis as a method not only for reducing the number of variables but also for discovering underlying relations between the variables and because it yields factor scores which can be used in subsequent multivariate analysis (Kerlinger & Pedhazur, 1973).

Intercorrelations between the scores on the POI variables were then computed using Pearson's Product moment method. The intercorrelations between the sub-scores were then further analysed employing the principle axis method of factor analysis (Nie, Hull, Jenkins, Steinbrenner & Brent, 1975; Gorsuch & Dreger, 1978). The number of factors to be extracted was determined using the criterion of eigenvalue equal to or greater than one as the minimum acceptable value for inclusion of a factor (Guttman, 1954; Kaiser, 1960; Gorsuch & Dreger, 1979). Two factors were isolated under the criterion and were retained for varimax rotation (Kaiser, 1970; Nei et al., 1974; Gorsuch \* Dreger, 1979). The factor loadings and the accounted variance of the factors obtained after varimax rotation are shown in Appendix L. The arbitrary criteria of 0.35000 was set for a factor loading to be significant (Kerlinger & Pedhazur, 1973; Child, 1970; Gorsuch 1974).

## APPENDIX L

POI Results: Varimax rotated Factor Matrix

All Treatment Groups

Table 15

POI Results: Varimax Rotated Factor Matrix - All Treatment Groups

Item*	Pre-test		Post-test		
	Eigen Value	Cumulative %	Eigen Value	Cumulative %	
Factor 1	6.02313	71.7	4.50300	53.8	
Factor 2	1.31301	87.3	1.67588	73.8	
* Note: An eigen cut-off value of 1.00000 was used to select Factors					
POI Vari- able	Pre - Test		Post - Test		Comments
	Factor 1	Factor 2	Factor 1	Factor 2	
SAV	0.40031	0.63484	0.70000	-0.03258	These variables: a) occurred in both conditions; b) consistently discriminated c) were highly loaded on one or other Factor
Ex	0.82170	0.35314	0.72860	0.40037	
C	0.89381	0.13554	0.21351	0.78624	
Sy	0.13690	0.91710			These variables only appeared once
S	0.58401	0.44013			
Sr	0.41819	0.44013	0.67921	0.51398	These variables did not discriminate sufficiently across Factors 1 and 2
Fr	0.52521	0.38908	0.41332	0.34671	

## APPENDIX M

POI Mean Scores - All Treatment Groups

Table 16

POI Mean Scores - All Treatment Groups

	Experiment 1		Experiment 2		Placebo	
	Pre	Post	Pre	Post	Pre	Post
Tc + I	87.4	105.2	91.6	109.2	101.6	116
POI	123.6	156.2	137.6	160.3	149.2	164.2
SAV	13.7	18.7	17.7	19.9	18.5	20.9
Ex	18	24.6	22.3	24.4	22.7	24.7
Fr	13.8	15.3	13.9	16.7	15.3	17.5
S	9.5	13.0	11.6	13.9	12.7	13.7
Sr	8	11.3	9.0	11.9	10.9	12.5
Sa	14.5	17.1	14.8	18.3	16.8	18.1
Nc	10.7	12.3	10.4	11.2	11.3	11.1
Sy	5.4	7.3	6.5	7.3	6.9	7.6
A	13.1	15.5	13.6	16.3	15.8	17.3
C	16.9	21.1	17.8	20.4	18.3	20.8

## APPENDIX N

POI Profiles - Experiment Three

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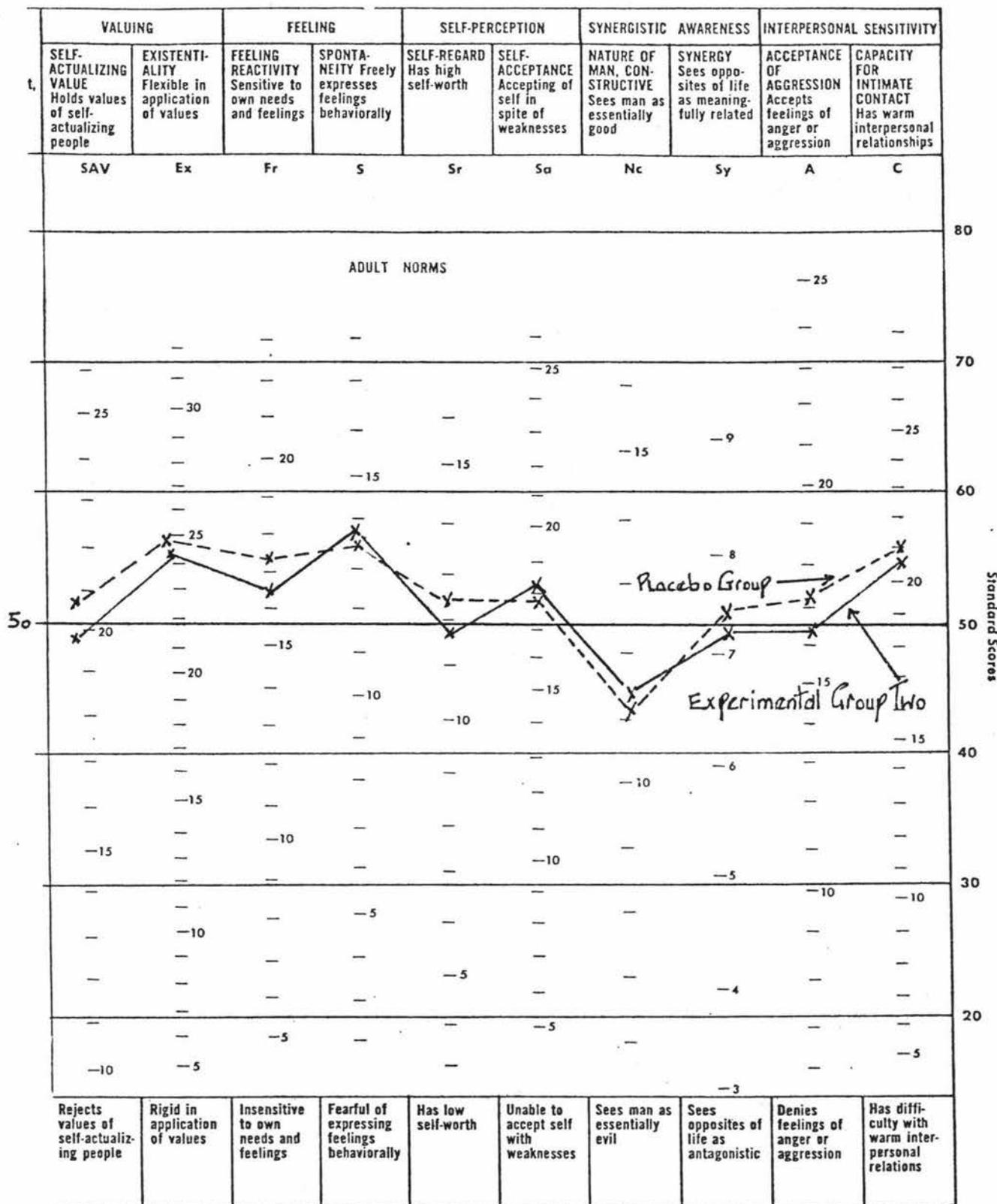


Figure 8: POI Post-test Profiles - Experiment Three  
(Note: Profiles are of mean scores in each group)



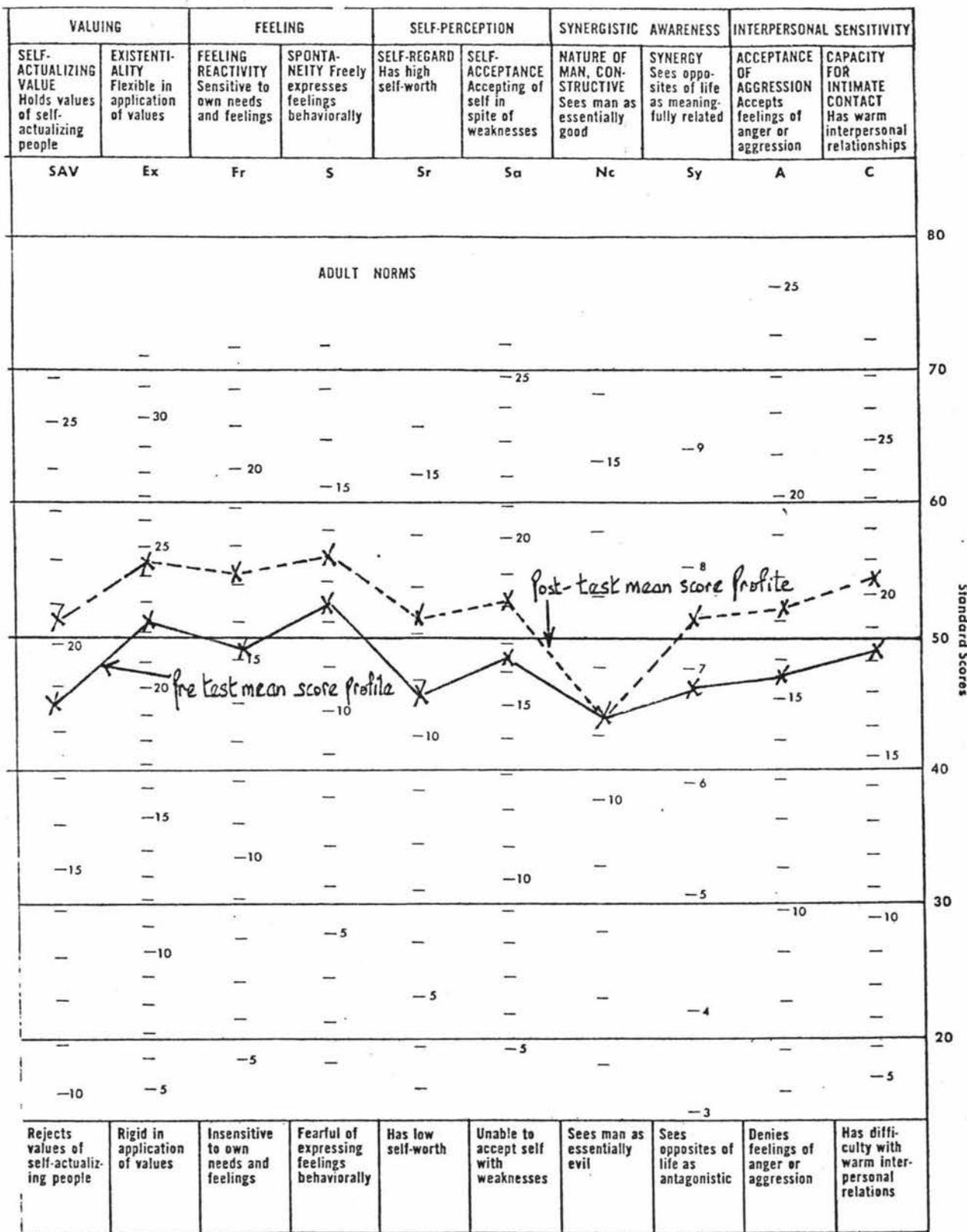


Figure 10: POI: Pre and Post-test Profile - Placebo Group

## APPENDIX O

Tables of t Values - All treatment groups

The t value summary which follows (Table 17) immediately makes the treatment outcomes clear. The Placebo group only achieved significance to a level of  $p < 0.05$  on each of the two major scales (Tc + I and POI) and on three of the subscales (SAV, Fr and Sy).

Both Experimental groups were significant on each major scale. Experimental Group 1 was significant on all scales ( $p < 0.01$ ). Experimental Group 2 was significant on the two major scales (Tc + I and POI). It can be seen that both experimental groups are more highly significant in treatment outcomes than the Placebo group, and Experimental Group 1 is the most significant, all scales showing significant treatment effects to the  $p < 0.01$  level except Fr and Nc, with Sa significant to the  $p < 0.05$  level.

Each treatment group can be summarised in terms of subscales -

Placebo ( $p < 0.05$ ) on SAV, Fr and Sy ( $= 3/10$  subscales)

Experimental Gp. 1 ( $p < 0.01$ ) on SAV, Ex, S, Sr, Sy, A, C ( $= 7$  subscales)  
and ( $p < 0.05$ ) on Sa (Total of  $8/10$  subscales)

Experimental Gp. 2 ( $p < 0.01$ ) on Fr, S, Sa ( $= 3$  subscales)  
and ( $p < 0.05$  on SAV, Ex, Sr, Sy, A, C ( $= 6$  subscales)  
(Total of  $9/10$  subscales)

When treatment outcome effects are analysed in this way the significance of Synergism compared to Placebo treatment can be seen more clearly. Experimental Group One has changed along the attitude dimensions specified by the POI, quite dramatically. Both Experimental groups show more significant

attitude change as measured by the POI, than that experienced by the Placebo group. These differences were not significant enough to be detected by analysis of variance using ANOVA.

Table 17

Table of T Values - Treatment Effects

N = 30	(n=10)			(n=10)			(n=10)		
	Experimental 1 (E1)			Experimental 2 (E2)			Placebo (PL)		
	Pre	Post	T Value	Pre	Post	T Value	Pre	Post	T Value
Tc + I	87.4	105.2	-7.84 **	91.6	109.2	-8.97 **	101.6	116.0	-2.53 *
POI	123.6	156.2	-6.87	137.6	160.3	-5.68 **	149.2	164.2	-2.35 *
SAV	13.7	18.7	-3.41 **	17.7	19.9	-3.03 **	18.5	20.9	-2.93 *
Ex	18.0	24.6	-5.44 **	22.3	24.4	-1.72 *	22.7	24.7	-2.15
Fr	13.8	15.3	-2.0	13.9	16.7	-4.73 **	15.3	17.5	-3.16 *
S	9.5	13.0	-5.82 **	11.6	13.9	-3.63 **	12.7	13.7	-1.32
Sr	8.0	11.3	-3.64 **	9.0	11.9	-3.18 **	10.9	12.5	-1.71
Sa	14.5	17.1	-2.86 *	14.8	18.3	-4.58 **	16.8	18.1	-0.77
Nc	10.7	12.3	-2.02	10.4	11.2	-1.10	11.3	11.1	0.48
Sy	5.4	7.3	-2.75 *	6.5	7.3	-1.63 *	6.9	7.6	-2.69 *
A	13.1	15.5	-3.58 **	13.6	16.3	-3.15 *	15.8	17.3	-1.63
C	16.9	21.1	-4.08 **	17.8	20.4	-1.73 *	18.3	20.8	-1.82

\*\* level of significance <0.01

\* level of significance <0.05

Table 18

Summary of Differences between Pre- and Post- POI (t Values)

Scales	Groups						
	EXPT. 1		EXPT. 2		PLACEBO		
	0.01	0.05	0.01	0.05	0.01	0.05	
Tc + I	**		**			**	Major Scales
POI	**		**			*	
Sub-total	2		2			2	
Total		2		2		2	
SAV	**		**				*
Ex	**			*			*
Fr			**				*
S	**		**				
Sr	**		**				Sub- Scales
Sa		*	**				
Nc							
Sy		*		*			*
A	**			*			
C	**			*			*
Sub-total	6	2	5	4		5	
Total		8		9		5	
Grand Total		10		11			

\*\*  $p < 0.01$ \*  $p < 0.05$

### Comparison of Combined Treatment Group Mean Scores

Shostrom (1974) and Auckett (1975) both have presented comparative data which is detailed.

Table 19 shows the mean ( $\bar{X}$ ) of three combined treatment mean scores from the data presented in this thesis (Expt. 1, Expt. 2 and Placebo) compared to the groups detailed in Shostrom (1974, p.24, also contained in Appendix C, Week 7). These combined treatment pre-test  $\bar{X}$ 's and post-test  $\bar{X}$ 's are compared to Shostrom (1974, p24) and Auckett (1975, pp.101-102).

It can be seen that Auckett's (1975) pre-test group is more aptly compared with a Shostrom (1974) Normal group and his post-test results more than favourably compare with the Self-Actualizing group.

The pre-test  $\bar{X}$ 's of this thesis compare more aptly with the non-Self-Actualizer's than the Auckett (1975) pre-test group.

The treatment effect has brought the combined treatment group  $\bar{X}$ 's (Expt. 1 plus Expt. 2) to a Normal level, and on most sub-scales: e.g. Tc + I, POI, I, Ex, Fr, S, Sa, and C the treatment scores are not only in excess of Normal parameters but are close, equal to and sometimes in excess of the Self-Actualizing group vide Shostrom (1974, p.24), and show some improvement over the Auckett (1975) meditation treatment.

This helps to emphasise the significance of treatment outcomes experienced by both Synergism Treatment groups.

Table 19

	<u>Pre-Test</u>			N=29 SA*	<u>Post-Test</u>		
	N=30 Mean $\bar{X}$ Pre-test	N=34 Non Self- Actualising College Stu- dents *	N=12 Auckett Pre		N=30 Mean $\bar{X}$ Post-test	N=158 Normal*	N=12 Auckett Med
Tc + I	93.5	91.6	106.16	111.8	110.1	104.9	111.17
POI	136.8	134.1	150.3	163.2	160.2	153.1	157.5
Tc	15.3	15.8	16.33	18.9	17.5	17.7	18.17
I	78.2	75.8	89.8	92.9	92.6	87.2	93.0
SAV	16.6	18.0	20.25	20.7	19.8	20.2	21.5
Ex	21	18.9	21.08	24.8	24.6	21.8	22.5
Fr	14.3	14.3	16.16	16.3	16.5	15.7	15.57
S	11.3	9.8	13.0	12.7	13.5	11.6	13.0
Sr	9.3	10.2	11.75	12.9	11.9	12.0	12.58
Sa	15.4	14.2	16.2	18.9	17.8	17.1	17.2
Nc	10.8	11.3	11.25	12.3	11.5	12.4	12.5
Sy	6.3	6.2	6.9	7.6	7.4	7.3	7.6
A	14.2	14.7	15.25	17.6	16.4	16.6	15.25
C	17.7	16.5	18.3	20.2	20.8	18.8	19.7

\* Shostrom, 1974 Self Actualized

## APPENDIX P

Experimental Group 2: Relaxation State -  
SMS Averaged Daily Scores

Table 20

Relaxation State - Averaged daily scores - Experimental Group 2

Subject	Breath							Week	Pulse						
1	20	22	23	21	24	22	23	1	93	66	66	57	60	58	62
	20	18	19	21	29	18	19	2	66	54	66	58	56	56	50
	14	13	10	9	14	12	14	3	60	66	60	60	60	74	76
	11	14	9	11	7	6	11	4	66	62	60	62	74	68	70
	9	10	8	10	10	10	10	5	60	60	62	63	68	63	61
	10	10	8	12	8	10	10	6	60	60	60	60	54	58	60
	10	10	8	7	7	8	8	7	60	60	56	58	56	60	60
	10	10	8	8	8	8	8	8	60	60	58	59	58	58	60
2	23	22	21	22	22	19	22	1	69	74	67	76	68	68	63
	21	23	22	21	23	22	22	2	62	66	66	89	67	67	67
	20	22	19	22	22	22	22	3	69	71	67	68	67	60	61
	17	18	16	18	17	17	16	4	62	66	64	66	62	60	61
	16	15	14	15	16	16	14	5	62	64	62	62	60	60	60
	14	12	10	10	10	16	12	6	60	60	58	58	60	54	60
	10	10	8	9	8	8	8	7	58	56	54	60	58	58	58
	8	8	8	8	8	8	8	8	56	56	54	54	54	54	54
3	24	23	24	24	22	23	24	1	100	77	89	80	96	80	84
	22	22	20	18	23	20	20	2	95	97	88	100	80	90	72
	18	20	22	17	19	18	18	3	82	76	72	89	70	84	60
	18	18	18	21	19	15	14	4	74	72	60	78	68	70	56
	20	14	14	16	16	13	12	5	68	64	56	64	66	60	56
	11	12	18	12	12	11	10	6	64	60	54	60	60	58	54
	10	10	9	10	13	9	8	7	68	66	54	54	65	56	60
	8	8	9	8	9	8	8	8	52	56	52	55	56	54	52

Subject	Breath							Week	Pulse						
4	18	18	17	17	17	17	15	1	100	80	80	80	84	78	84
	18	18	17	16	16	17	15	2	82	79	78	75	84	78	80
	11	13	10	10	9	13	9	3	69	72	72	63	66	78	68
	8	8	9	12	11	11	11	4	69	63	66	67	68	66	66
	9	9	8	10	9	11	10	5	60	66	63	65	65	64	63
	9	8	4	4	4	6	4	6	56	54	54	56	52	54	52
	4	4	4	4	4	4	4	7	52	52	54	52	52	52	52
	4	4	4	4	4	4	4	8	48	52	52	52	48	52	52
5	18	18	18	18	20	18	18	1	84	102	104	96	100	108	88
	20	16	20	14	16	16	16	2	108	80	96	82	84	87	95
	16	18	18	16	16	16	18	3	86	88	92	82	86	86	86
	15	16	16	14	16	16	14	4	86	88	80	82	86	80	76
	12	14	12	16	14	12	12	5	74	76	72	84	88	76	84
	10	10	8	8	8	8	8	6	76	70	68	68	74	66	68
	8	8	8	8	8	8	8	7	66	62	64	62	63	61	60
	8	8	8	8	8	8	8	8	60	58	60	60	60	58	60
6	23	22	21	22	22	22	22	1	88	88	80	76	80	88	80
	12	8	10	11	14	10	8	2	65	61	59	61	70	61	63
	10	14	10	12	11	12	10	3	60	63	59	62	68	58	55
	8	8	8	8	8	8	8	4	52	60	60	60	60	58	60
	9	8	9	8	8	8	8	5	60	60	60	60	60	60	60
	8	8	7	8	8	4	4	6	60	60	56	56	60	58	60
	7	7	4	4	4	7	4	7	56	54	58	54	54	56	54
	4	4	3	4	4	3	4	8	55	54	52	50	50	54	52
7	20	21	22	24	24	23	22	1	88	100	72	90	82	65	108
	18	16	18	19	20	19	16	2	85	70	90	80	85	86	80
	17	16	13	14	16	15	17	3	77	75	80	73	70	72	68
	15	15	16	15	15	15	15	4	66	60	68	65	69	60	60
	15	13	14	13	14	14	14	5	65	63	54	58	56	57	54
	14	14	10	10	10	10	10	6	60	54	56	56	68	60	56
	10	10	8	8	10	8	10	7	56	56	56	58	56	56	56
	8	8	8	8	8	8	8	8	54	56	52	54	56	54	54

Subject	Breath							Week	Pulse						
8	22	24	20	21	22	23	24	1	76	88	80	77	75	76	80
	23	22	21	22	23	18	20	2	68	56	68	60	60	60	60
	18	22	18	22	23	18	20	3	60	54	56	56	57	56	54
	18	22	15	14	18	13	15	4	58	58	54	56	54	54	52
	10	10	10	13	8	10	9	5	50	54	54	50	48	52	52
	8	10	5	8	4	3	5	6	50	54	50	54	54	48	52
	5	4	2	5	2	2	2	7	56	54	48	48	48	45	48
	2	2	2	2	2	2	2	8	48	48	48	48	48	48	46
9	22	22	23	23	24	22	21	1	76	81	77	74	78	84	80
	22	22	22	23	24	22	22	2	71	63	63	65	64	68	77
	23	23	22	22	23	25	23	3	67	63	60	68	66	66	62
	21	21	21	20	21	22	22	4	66	71	68	59	62	62	56
	18	22	20	22	14	20	18	5	69	67	62	61	61	69	65
	18	14	13	15	18	16	13	6	66	63	65	64	62	62	63
	15	13	16	14	14	15	3	7	63	61	62	59	61	63	61
	12	14	11	13	11	12	10	8	59	60	61	58	62	61	59
10	22	20	24	23	22	23	23	1	102	80	96	104	88	80	86
	22	22	20	18	24	18	20	2	83	85	70	80	88	87	86
	18	20	18	20	19	18	18	3	76	82	68	70	76	82	76
	18	18	14	15	18	13	14	4	70	77	66	68	86	66	62
	14	14	13	16	15	13	12	5	63	60	62	66	54	59	56
	11	12	10	10	8	6	4	6	59	62	58	60	62	58	54
	4	3	2	4	4	4	4	7	54	48	52	56	52	50	52
	4	4	4	4	4	4	4	8	52	52	48	48	50	52	52

Table 21

Pre- and Post Means - RR and PR

Case No	Respiration		Pulse	
	Pre RR	Post RR	Pre PR	Post PR
1	22	8	66	59
2	22	8	69	55
3	22	8	86	54
4	17	4	84	51
5	19	8	97	59
6	22	4	83	52
7	23	8	97	54
8	22	2	79	48
9	23	12	79	60
10	22	4	91	51
Total $\bar{X}$ 's	21.4	6.6	83.1	54.3
Std. Dev.	1.9	3.0	10.5	4.0

To further analyse these results Pearson correlation coefficients were computed for Breath (RR) and Pulse (HR) for a) Pre - (-0.2040) and b) Post - (0.8937). These indicated a less than zero pre-trial correlation and a high positive (0.8937) post-trial correlation between RR/HR.

Table 22

Correlations of POI/HR/RRPre-test Pearson Correlation Coefficients

	POI (Attitude)	Breath (RR)	Pulse (HR)
POI	1.0000	-0.3651	-0.1084
RR	-0.3651	1.0000	-0.2040
HR	-0.1084	-0.2040	1.0000

Post-test Pearson Correlation Coefficients

	POI (Attitude)	Breath (RR)	Pulse (HR)
POI	1.0000	0.1459	0.2714
RR	0.1459	1.0000	0.8937
HR	0.2714	0.8937	1.0000

## APPENDIX Q

Between Group Correlations - Pre-Test POI

Table 23

Between Group Correlations - Pre-Test POI

	Group $\bar{X}$ Scores			Correlations		
	Expt.1	Expt. 2	Placebo	Experimental 1 vs Placebo	Experimental 1 vs Experimental 2	Experimental 2 vs Placebo
Tc + I	87.4	91.6	123.6	0.117	0.607	0.159
POI	123.6	137.6	149.2	0.076	0.255	0.306
Tc	15.1	14.2	16.7	0.246	0.586	0.102
I	72.3	77.4	84.9	0.123	0.468	0.237
SAV	13.7	17.7	18.5	0.018**	0.05**	0.571
Ex	18	22.3	22.7	0.041**	0.05**	0.836
Fr	13.8	13.9	15.3	0.327	0.935	0.297
S	9.5	11.6	12.7	0.037**	0.155	0.394
Sr	8	9	10.9	0.10	0.565	0.182
Sa	14.5	14.8	16.8	0.294	0.888	0.322
Nc	10.7	10.4	11.3	0.554	0.795	0.319
Sy	5.4	6.5	6.9	0.034**	0.114	0.443
A	13.1	13.6	15.8	0.150	0.790	0.207
C	16.9	17.8	18.3	0.523	0.635	0.805

## APPENDIX R

Savasan (Patel, 1976)

Actual Instructions

THE THERAPIST'S VERBAL INSTRUCTIONS FOR BREATHING EXERCISE  
AND SYSTEMATIC DEEP RELAXATION

"Make sure that your head, neck and trunk lie in a straight line. Keep your legs slightly apart with the heels pointing inwards and your toes pointing outwards. You will find that this position of the legs removes tension from your knees and thighs. Bring your hands down by your side, a little away from the thighs, turn your palms upward and bend your fingers slightly. Close your eyes. Make sure your teeth are not clenched and let the shoulders drop to the floor.

Now you are going to learn a simple breathing exercise followed by deep relaxation of all the muscles in the body and then the relaxation of the mind. We will go step by step. Pay your total attention to the practice of each step. For example, when you are practising regular breathing, pay attention to the breathing movements, feel each inhalation and exhalation. Even listen to your breathing and feel the difference in the temperature of the air you are inhaling and exhaling. Very slowly fill your lungs starting at the diaphragm, right up to the top of the chest and then very slowly breathe out. Now let your breathing become normal and regular. Breathe in and out, very gently and rhythmically. Don't force your breathing. Don't try deliberately to make it slow. Just keep to your own rhythm. Breathe in and out gently and evenly.

Now you are consciously going to relax each part of the body as I name them. Relaxation means complete absence of activity or movement in that part of the body, since movement means that some muscles are contracting. It is also the opposite of holding any part rigid. Make mental contact with the part of the body you are relaxing. By doing this you can discover the interlinking of the body and the mind. How they are connected and how one can affect the other. By means of mental processes you can learn to control many things in the body, you do not normally think is possible.

Now take your mind to the right foot, relax the toes, instep, heel, ankle, knee, calf, thigh and the hip. Feel

all the muscles becoming relaxed and limp. Hold your attention to the feelings of relaxation in the muscles of your right leg and relax as deeply as you can. Become aware of every muscle, nerve, joint and tissue in your right leg relaxing.

Now take your mind to the left foot. Relax the toes, instep, ankle, knee, calf, thigh and the hip. Just relax. Let all the tension ease away and feel the sensation of relaxation in all the muscles of your left leg. Feel every muscle, nerve, joint and tissue in your left leg relaxing.

Now become aware of your right hand. Relax the fingers, thumb, palm wrist, forearm, elbow, upper arm and the shoulder. Feel every muscle in your right arm relaxing and becoming limp. Relax as deeply as you can. Hold your attention to the sensation of relaxation in your right arm. Become aware of every muscle, tissue, nerve and joint in your right arm relaxing.

Now become aware of your left hand. Relax fingers, thumb, palm, wrist, forearm, elbow, upper arm and the shoulder. Let all the tension drain away from the muscles. Feel the sensation of relaxation and limpness in every muscle of your left arm. Feel every muscle, tissue, nerve and joint in your left arm relaxing.

Now bring your concentration to the base of your spine. Work your way up the spine, vertebra by vertebra, relaxing each vertebra into the floor and the muscles on either side of the spine. Feel the back merging with the floor. Now relax the muscles of your upper back. Release all the tension from them. Relax your neck. Let all the muscles in your neck relax completely. First the front of the neck and then the back of the neck. Let your head rest gently and feel all the muscles in the back of your neck relaxing. Just let them go and carry on letting them go.

Now concentrate on your chin. Relax it. Now relax your jaw. Let it drop slightly so that your teeth are slightly apart, and the lips are just touching. Relax your tongue. Now your cheeks, feel them relaxing. Relax the muscles around your eyes and feel them becoming heavy and very relaxed. There are no tensions in the eyes, in the muscles around

your eyes. They are in the state of complete relaxation. Now relax your forehead. Just let all the tension release from the muscles of your forehead. Feel all the muscles in the face relaxing. There is no tension in your facial muscles at all. Now relax your scalp. Feel the relaxation in the muscles around your head.

Now relax your chest. And every time you breathe out relax a little more; let your body sink into the floor, a little more each time. Let all the muscles, nerves and organs in your chest relax completely. Now relax the muscles of your stomach. Let all the muscles, nerves and organs in your stomach relax completely.

Now your body is completely and totally relaxed. Keep your body relaxed and concentrate your mind to your breathing. Feel the air going in and out at the nostrils. Feel the cool air going in and warm air coming out."

For the first 2-3 sessions only breathing exercise and physical relaxation is carried out as above.

#### THE THERAPIST'S INSTRUCTIONS FOR MENTAL IMAGERY AND MEDITATION

This follows the relaxation instruction after 2-3 sessions.

"Now your body is completely and totally relaxed. There are no tensions anywhere in your body. Don't move your body at all. Just stay in the state of relaxation. Now in the same way you want to relax your mind. Release the tension in your mind. Just let the mind become very very still. Untie the knots of tension. Try not to concentrate on any particular thoughts. Let your thoughts just float by. Take a step back from your thoughts so as you become an onlooker of your thoughts. Let the thoughts come and then let them go. Don't concentrate or become attached to any particular thought. Let yourself become detached from the mind, so that you are still in the state of total relaxation. The thoughts come and go, but you don't concentrate or linger on any particular thought. Now picture in your mind, a very calm and beautiful lake. The sun is shining down on the lake. Your mind is like that lake. It must become very, very still. Feel an experience of spaciousness. The lake is so still that you can see through the lake. Through the lake into a large open space, with the sun beating down into that space.

So there is warmth, there is peace, there is calm and there is joy. These are the only feelings that you can experience. The feelings of peace, of calm, of joy, of warmth and of energy. A thought can cause a disturbance in the state of peace. You want to learn to control your thoughts at your will. You are the master. Right now you want to keep that feeling of openness, of spaciousness, of light and warmth and energy. Concentrate on those feelings, experience them; go into them; surrender yourself totally to these experiences and feelings. Feel wave after wave of relaxation pouring over you.

A...U...M....., A...U...M....., A...U...M....

Just repeat this word Om mentally. Try and keep your mind on it as passively as you can. If your mind wanders off, just bring it back easily and effortlessly as soon as you realise it. Continue to meditate until I speak again."

(10 minutes of meditation)

"Now take a long deep inhalation and exhalation. Feel the energy coming down your spine and into your legs. Very slowly move your feet. Now take another deep breath. Feel the energy going in your arms and into your hands. Very slowly move your hands and your arms. Become aware of every muscle in your body waking up. Open your eyes without reacting excessively to the light. Slowly sit up and continue the feeling of peace within you."

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