MAXIMISING THE EFFECTIVENESS OF MEDITATION IN THE TREATMENT OF HYPERTENSION IN PRIMARY CARE SETTINGS:

The Comparison of an Attitudinal Promoting Technique With One That Only Utilises Pre-existing Beliefs

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August 2000

SUBMITTED IN PART FULFILMENT OF THE DEGREE OF DOCTORATE IN CLINICAL PSYCHOLOGY AT THE UNIVERSITY OF EDINBURGH

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ACKNOWLEDGEMENTS

I would like to thank my Clinical Supervisor, Dr Maurice Winton, for his enthusiasm, inspiration, advice, and encouragement, and for introducing me to meditation. Additionally, I wish to thank Dryden Badenoch for his patience, statistical help, and reassurance. Mick Power's and Ruth Thompson's suggestions were also appreciated. I am indebted to all the hypertensive patients who gave their time to participate in the study. Furthermore, the project would not have been possible without the support, humour, and dedicated hard work of Wilma Latham, Practise Nurse. My appreciation also goes to the doctors and receptionist staff, at Dunkeld Surgery, for their assistance and friendliness. Finally, thanks, as always, to my family for their unwavering support, and to my boyfriend, Neil, for being my rock, and still wanting to live with me at the end of it all.

DECLARATION

"I certify that this is a true and accurate account of the work carried out. This thesis has been composed by myself and the work herein is my own."

Signed .

Susan C.M. Olley

ABSTRACT

Hypertension is a widespread condition, associated with numerous bio-psycho-social risk factors and major health implications. Behavioural treatment has been shown to be equally effective as drug therapy, with fewer aversive side effects. Yet medication remains the standard treatment for hypertension in primary care settings. Reluctance may be due to the techniques being combined in statistical analysis (yielding small effect sizes) and in complex treatment programmes (expensive in effort and time for healthcare staff and patients). Meditation, by itself, has been found to be effective in the treatment of hypertension. Appreciation of meditation's therapeutic value has been comparatively recent and many studies have failed to realise its complexities. The investigation of different meditation techniques has highlighted a number of components, which, when combined in to one technique, could maximise meditation as a treatment for hypertension in primary care settings. These include effortlessness, flexibility, sensitivity, utilisation of existing beliefs and the cultivation of stress-reducing attitudes. The study aims to compare the effectiveness of two hybrid meditation techniques, in terms of blood pressure, hypertension risk factors, life satisfaction and adherence. Approximately 60 participants were randomly allocated to either of the two meditation groups or the control group and were assessed at pre- and post treatment and at 3 month follow-up. It is hypothesised that the meditation technique that actively cultivates beliefs will have greater efficacy than the one that only taps into pre-existing attitudes. The results are discussed with reference to current literature and suggestions made for future studies.

CHAPTER 1: INTRODUCTION

1.1 GENERAL INTRODUCTION

Hypertension, or high blood pressure, is a widespread and common condition, with serious health implications. It is usually treated in primary care settings with drug-therapy. This has been successful, but there are disadvantages to its use, including aversive side effects and poor compliance rates. The following review analyses the numerous risk factors associated with high blood pressure and the effectiveness of behavioural therapy in treating hypertension. Meditation, in particular, will be investigated, in an attempt to improve the clinical application of behavioural treatment in primary care settings. The development of meditation research and theory, spanning several millennia, will be discussed, before the efficacy of the meditative technique is scrutinised.

1.2 HYPERTENSION

1.2.1 What is Hypertension?

Hypertension refers to an often symptom-less disorder, where arterial blood pressure (BP), required to maintain blood flow round the body, is chronically too high (O'Brien *et al.*, 1995). Determining the level at which blood pressure is considered 'too high' has been an issue of continuing debate. Pickering (1968) argued that it is arbitrary to distinguish between normal and high blood pressure, as they are part of the same continuum, being defined purely in relation to normal distribution. It is important, however, that there is at least some classification of blood pressure – albeit arbitrary – as chronic blood pressure elevation can lead to damage of various organs and an increased risk of stroke, cardiovascular and kidney disease (MacMahon et al, 1990). For each BP increment above 100/60 mm Hg there is a corresponding increase in mortality risk (Eyer, 1975). Leishman (1959) found that patients with diastolic blood pressures between 130 and 150 mm Hg only have about a 40% chance of surviving more than two years. Thus, hypertension is a substantial problem, both in terms of health and financial cost to the NHS and society in general. Classification can highlight those at risk so that they can be treated accordingly.

The World Health Organisation (WHO, 1999) defined hypertension as:

'...systolic BP of 140 mm Hg or greater and/or a diastolic BP of 90 mm Hg or greater in people who are not taking anti-hypertensive medication'.

BP is usually reported in millimetres of mercury, with an oblique between the

systolic and diastolic levels (e.g. 140/90 mm Hg). Systolic BP occurs when the heart contracts and arterial blood pressure is highest, whereas diastolic BP is the lowest pressure, which transpires when the heart is resting between beats. The WHO (1999) has classified hypertension as shown in Table 1.

Table 1: Classification of Blood Pressure Levels

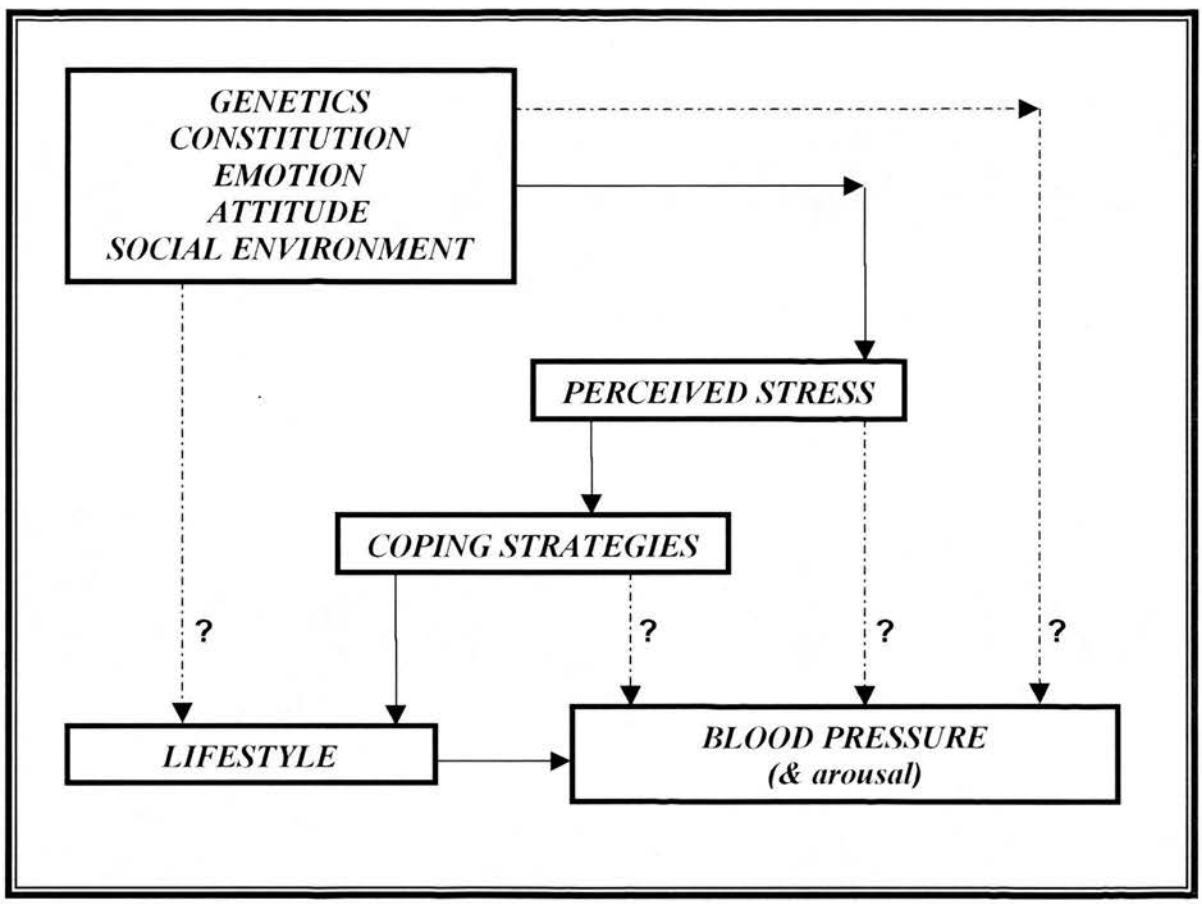
Category	**Systolic Blood Pressure** (mm Hg)	**Diastolic Blood Pressure** (mm Hg)
Mild Hypertension *Sub group: Borderline*	140 - 159 *140 - 149*	90 - 99 *90 - 94*
Moderate Hypertension	160-179	100-109
Severe Hypertension	≥180	≥110

Hypertension, according to the above definition, is a common condition, affecting approximately 10-20% of the population in the UK, predominately those in middle age (British Heart Foundation, 1999). The reduction of chronic elevated BP has been found to lower morbidity and mortality rates, and therefore health costs (MacMahon *et al.*, 1990). Thus, research to discover the cause of hypertension and its effective treatment is advantageous, both to individuals and society.

1.2.2 Aetiology of Hypertension

In the majority of cases of hypertension no unitary organic cause can be found (O'Brien *et al.*, 1995). Hypertension is thought to have a multi-factorial aetiology, composed of a complex inter-play of environmental factors and genetically set cardiovascular mechanisms (Beilin, 1988) that contribute in varying degrees among individuals (see Figure 1).

Figure 1: Bio-Psycho-Social Model of Hypertension (Modified from Beilin et al., 1997)



Although they have been difficult to isolate, and thereby ascertain their precise relationship to BP, numerous studies have pointed to the following risk factors for the development and maintenance of hypertension:

1.2.2 (a) Genes and Constitution

It has been found that if there is a family history of hypertension, the risk of hypertension developing in an individual increases (e.g.Tambs *et al.*, 1993).

However, whether individuals across the whole range of BP levels (low to high) inherit a predisposition is undetermined. In Western countries, hypertension has been demonstrated to more likely occur with age, and in women and obese individuals (Oparil, 1995; Schwartz *et al.*, 1996; Stamler *et al.*, 1978). The effect of the environment on these factors is still debated. For example, obesity's effect on BP could act through poor diet and lack of exercise, as well as genetic weakness. Age may act via the prolonged use of the cardiovascular system, but is more likely to operate through cumulative exposure to other risk factors (Timio *et al.*, 1988). This may explain why hypertension is not influenced by age in more traditional, less stressful societies, such as, the bushmen of the Kalahari dessert (Kaminer and Lutz, 1968).

1.2.2 (b) Social Environment and Culture

Urban populations have been found to have higher BP levels than those in rural areas (Stamler et al., 1967). Those with professional occupations, higher incomes, greater education, and better standards of living tend to have lower blood pressure levels. African-Americans demonstrate higher BP levels than Caucasians (Burt *et al.*, 1995). Racial susceptibility has been suggested (Barley *et al.*, 1991) but the effects of other factors have not been partialled out. Variation in levels of physical activity, diet, or stress levels may account for some of the differences in BP among these socio-economic and racial groups (Schwartz *et al.*, 1996). For example, blacks within 'high stress' neighbourhoods have higher BP levels than blacks in 'middle class' neighbourhoods (Calhoun, 1992).

1.2.2 (c) Lifestyle

Diet, including, high cholesterol and salt intake and/or low potassium intake; regular alcohol consumption; and physical inactivity are the factors that have received the most consistent support from the research literature, with regard to the aetiology of hypertension (Beilin, 1988). Tobacco and caffeine use have not been clearly associated with the development of fixed hypertension, but both increase BP and heart rate responses to laboratory stressors (MacDougall *et al.*, 1988). Type A behaviour, such as hostility, excessive drive, competitiveness and time urgency, has also been linked with hypertension (Scherwitz *et al.*, 1978). There is growing evidence, however, that anger and hostility indices are more important, in relation to health, than the other components of Type A (Brannon and Feist, 1997).

1.2.2 (d) Emotion and Attitude

Whitehead *et al.* (1977) found that hypertensive subjects experienced more feelings of anger than normotensives. There has been debate, however, over whether hypertension is associated with a tendency for anger expression or anger inhibition (e.g Alexander, 1939; Harburg *et al.*, 1973; Siegel, 1984). Brosschot and Thayer (1998) argue that extremes of both are probably linked to BP, anger-out due to cardiovascular hyper-reactivity and anger-in due to slower cardiovascular recovery. In social reality, however, they suggest anger inhibition occurs more frequently, independent of behaviour tendency, and therefore has a greater impact on BP.

A relationship between hypertension and anxiety has been documented (Linden and Feuerstein, 1981; Markowitz *et al.*, 1993). Hypertensives patients also have a

tendency to repress feelings of anxiety and depression (Boutelle *et al.*, 1987). Sainsbury (1960) reported that hypertensives have higher levels of neuroticism than normotensives. However, a number of other researchers have failed to find this correlation (Davis, 1970; Harrel, 1980), and thus the role of neuroticism in hypertension development remains unclear. If it is a causal factor it may predispose an individual to hypertension, or it may lead anxious hypertensives to seek treatment more readily (Kidson, 1973).

1.2.2 (e) Stress and Coping

Both experimental and animal models have shown that perceived acute stress can activate transient increases in BP (Frederikson *et al.*, 1990; Hallback, 1975). Individuals in relatively stress free, stable environments, such as monastic nuns, have been found to have lower BPs than controls (Timio *et al.*, 1988). Waldron *et al.* (1982) in their review of 84 societies, found that the more stress-provoking cultures, involving market economies, increased economic competition and decreased family ties, were correlated with greater BP levels, independent of salt intake and obesity (in men). Stress, however, is a complex concept and it's precise definition and measurement remains contentious (Bartlett, 1998). Although the research has on balance produced positive results supporting a link between chronic psycho-social stress and hypertension, their precise relationship is still unclear (Beilin, 1997). There are a number of hypotheses that have been put forward regarding this:

i) Hypotheses for a Direct Relationship between Stress and Hypertension

Response Stereotype: Hans Selye's later work did most to promote the view that stress was not an environmental stimulus, but a non-specific physiological response made by an organism, due to a variety of demanding stimuli, called 'stressors' (Seyle, 1956). This definition is in concordance with Cannon's (1914) 'fight or flight' response, which is thought to prepare the body for action in emergency situations by, for example, increasing heart and breathing rate; raising BP, blood sugar levels and stress hormone levels; and generating muscle tension.

It has been suggested that hypertensive-prone individuals may develop a response stereotype, where they repeatedly trigger elevations in blood pressure, as part of their stress response (Engel, 1983). Selye (1976) based on his model of the General Adaptation Syndrome, suggested that if stress-provoking situations occurred frequently enough, blood pressure levels would eventually fail to return to normal baseline resting levels and hypertension would develop. Engel and Bickford (1961) found that 15 of 20 hypertensives subjected to laboratory stressors showed the greatest physiological response, including BP, irrespective of the task, compared to 5 of 20 normotensives. However, Selye's model is said to concentrate too much on objective stressors, ignoring the role of psychological processes in determining physiological stress states (Bartlett, 1998).

Continual Appraisal: Wolff (1950) argued that stress is a dynamic process – an interaction between the person and their environment. The experience of it depends

on the person's appraisal of a situation as threatening, rather than on the event itself. He hypothesised that this type of appraisal is adaptive in situations of physical threat as it mobilises the body to fight or escape. It is, however, inappropriate for dealing with interpersonal or intra-psychic threats, which can not be managed through physical action. Hypertension would develop if situations were continuously and inappropriately appraised, as there would be no outlet for the elevated BP levels, activated as part of the redundant fight and flight response, to dissipate. Henry and Stephens (1977) designed rat cages to foster social hierarchies and found that the rats that were trying to achieve dominance had higher BP than unchallenged rats. This may be because the former animals were constantly activating their fight and flight response due to perceived threats to their control. Similar results were found with male prisoners, in that those incarcerated in dormitories in the company of other prisoners had great BP levels than prisoners held in single cells. (D'Atri *et al.*, 1981). The concept of perceived environmental threat, however, ignores the impact of mechanisms for coping with threat on the stress response.

ii) Hypotheses for an Indirect Relationship between Stress and Hypertension

Coping: Lazarus and Folkman (1984) suggested a more complex transactional model, where the experience of stress depends on an interaction between appraisal, reappraisal and coping processes, with coping referring to state or trait activities designed to manage or control stress. Lindquist *et al.* (1997) studying 654 government workers, found no direct relationship between stress and BP, but showed that coping mechanisms were independently related to both perceived work stress

and BP levels. Folkman and Lazaurus (1988) found that solution-orientated coping was associated with more positive changes in emotion and satisfactory outcomes than emotion-focused strategies, such as distancing. Perceived chronic stress may, therefore, only indirectly effect BP through unhealthy coping (such as, emotion-reducing strategies, involving avoidance of stressful situations and excessive alcohol, cigarette or food intake) or adaptive coping mechanisms (such as, problem solving and positive attitudes to life). These strategies influence eating, drinking, or exercise habits, which are known to directly influence BP (Lindquist *et al.*, 1997).

Weiner *et al.* (1962) compared hypertensive and normotensive subjects on coping processes, using clinical interviews that involved threatening topics. They found that hypertensives tended to be wary and 'insulate' or distance themselves from interaction with the interviewer. This suggests that sufferers of hypertension have insulating coping responses, with regard to stressful environmental events. Weiner and his colleagues proposed that they used this strategy, after being diagnosed with hypertension, in attempt to control their BP. Hypertensive-prone individuals, however, have been associated with high defensiveness traits, such as, a tendency to conform to convention and protect the self-esteem (Delmonte, 1984a). Thus, insulation and repression of emotion may be used in stressful situations to prevent emotional overreaction and the loss of perceived behavioural control, which could be considered socially undesirable. Although hypertensive individuals may appear to be coping with stress, it is at the expense of BP, which increases, and remains high, as insulation strategies provide no outlet for it to dissipate (Delmonte, 1984a).

The stress and coping model has been censured for minimising the role of physiology and not providing a specific mechanism in which stress impacts on health (Bartlett, 1998). Lazarus has suggested the implication of affective mechanisms in stress but has been criticised for confusing the two concepts (Eisdorfer, 1981). Researchers (e.g. Zajonc, 1980, Carver and Scheier, 1990) have argued that emotion has a more independent role in stress, rather than being solely a consequence of negative cognitive appraisal as Lazaurus (1984) suggested. This issue is still to be resolved.

1.2.3 The Effectiveness of Pharmacological Treatment for Hypertension

The standard treatment for high blood pressure is drug therapy. A collection of anti-hypertensive medication, targeting different biological mechanisms, have been shown to be effective in reducing blood pressure in men with moderate and severe hypertension (Veterans Administration Co-operative Study Group, 1970). The impact of these drugs on mild hypertension and preventing coronary heart disease, however, remains contentious (The Medical Research Council Working Party, 1985). Multiple drug cocktails are often required. This can be costly not only for the NHS, but also for the individual. Quality of life can be impaired due to the numerous adverse side effects shown in Table 2. Drugs do little to promote a healthy lifestyle or the belief that one's behaviour can impact upon health.

Table 2: Common Side Effects of Anti-hypertensive Drugs (Sever, 1993)

Side Effect (+ = common)	**Diuretic**	**Beta Blocker**	**Angiotensin Converting Enzyme Inhibitor**	**Calcium Antagonist**	**Alpha 1 Blocker**
Headache				+	
Flushing				+	
Dyspnoea (breathing probs.)		+			
Lethargy		+			
Impotence	+	+			
Cough			+		
Gout	+				
Oedema (swollen limbs)				+	
Postural Hypotension	+				+
Cold Extremities		+			

These factors, together with the asymptomatic nature of hypertension and poor health education, can lead to poor patient compliance with medication regimes. Forty percent neglect to take medication precisely as prescribed (Bone *et al.*, 1984) and eventually there is a 50% drop out rate (Haynes *et al.*, 1980). As a result, many GPs show reluctance in committing patients with borderline hypertension to life long medication.

1.2.4 The Effectiveness of Behavioural Treatment of Hypertension

The limitations of drug therapy and the increasing awareness of the psychosocial factors involved in hypertension have led to research into alternative treatments. Lifestyle modification programmes, such as, weight loss, diet changes and aerobic exercise are known to, at least moderately, reduce BP, if practiced regularly

(MacMahon *et al.*, 1987; Hypertension Prevention Trial Research Group, 1990; Kokkinos *et al.*, 1994). However, adherence tends to be low over the long term (Linden and Chambers, 1994). Relaxation techniques have also been applied due to the assumption that they combat the effects of stress and emotional arousal. They have received a great deal of research interest, but there has been controversy as to their efficacy in the treatment of hypertension.

1.2.4 (a) Methodological Problems with Relaxation Treatment Research

Inconsistent findings have possibly resulted from the heterogenity of the population (Patel and Marmot, 1987), but also from serious methodological problems, such as experimenter bias, flawed BP measurement and poorly matched experimental groups. This has led some investigators to conclude that any reduction in blood pressure found after relaxation therapy is spurious (Jacob *et al.*, 1991). Various studies with better experimental design, however, still found reductions in BP. For example, naïve observers (Seer and Raeburn, 1980) and special BP monitors (Benson, Rosner, *et al.*, 1974, Patel and North, 1975) were used to remove experimenter bias. Multiple baseline (Schneider *et al*, 1995) and self measurement (Garcia-Vera *et al.*, 1997) improved the accuracy of BP monitoring by reducing transient or 'white coat' effects. Also, controls that matched the treatment group in expectation, complexity of schedules, psycho-physiological assessment, medication and amount of home practice (Bali, 1979; Brauer *et al.*, 1979; Patel *et al.*, 1981; Southham *et al.*, 1982; Taylor *et al.*, 1977) have minimised confounding variables. Although none of these studies are completely flaw-free, they differ in their inadequacies, so that when consolidated, allow relatively convincing conclusions to

be made (Johnston, 1982). Linden and Chambers (1994) stated that psychological treatment is as effective as drug therapy for mild hypertension.

1.2.4 (b) The Patel Studies

Further clarification of the effect of behaviour therapy on hypertension can be obtained by focusing on Chandra Patel's work, which is impressive in its design, scale, and duration of follow up. She developed a behavioural programme involving a combination of techniques, including progressive muscular relaxation, meditation, yogic breathing exercises, biofeedback and simple stress management. The relaxation was regularly practiced at home and applied in brief form to a broad range of daily situations. One criticism of Patel's work is that she does not control for non-specific effects, such as expectancy (the pros and cons for controlling these effects will be discussed in section 1.3). Commentators have calculated that this programme has been taught to more than 150 hypertensive patients, resulting in mean reductions in BP of 21.7/13.2 mm Hg (Johnston, 1982). The following results highlight its efficacy and suggest that these changes in BP are treatment-related:

i) Long-term Effects: Patel and North (1975) studied two groups of hypertensive patients (initial mean BP 168/100 mm Hg) on stable anti-hypertensive medication recruited from a medical surgery. Significantly greater mean BP reductions were found in those given the behavioural programme, twice weekly over 6 weeks (28/15 mm Hg) compared to the control group (9/4 mm Hg). The latter received the same amount of therapist attention and BP measurement, but were only instructed to lie down and try and relax. These results were maintained at 3-month follow-up,

allowing some of the patient's medication to be reduced. This suggests that behavioural therapy's effect on BP is not just a result of therapist contact but lasts long after treatment has finished.

In further studies, Patel *et al.* (1981, 1985) through screening, recruited 192 unmedicated factory employees, with two or more of the following coronary risk factors: BP greater or equal to 140/90 mm Hg; high cholesterol; and frequent tobacco use. Fifty percent of participants met the BP criteria and their mean BP was 168/100 mm Hg. All participants received educational leaflets about how to reduce these risk factors. However, the treatment group received the behavioural programme, weekly, over an eight-week period. Again, the treatment group demonstrated greater mean reductions in BP (15/7 mm Hg) compared to the control (4/1 mm Hg), which was maintained after a four year period. Since subjects were unmedicated, the programme is likely to not achieve its primary effect by increasing medication compliance.

ii) Reduction of Coronary Risk: In the same study, greater reductions in cholesterol and smoking were found at the end of treatment, for the treatment group, but were not maintained. Despite this, the treatment group showed significantly lower incidence of heart-related disease than control at follow-up, suggesting that behavioural therapy can also reduce coronary risk (Patel *et al.*, 1985).

iii) Compliance: After four years, 14 of 81 subjects (17%) admitted regular practice in relaxation and of these only three had practiced at least once a day in the previous week (Patel *et al.*, 1985). This may be related to the complexity of Patel's

programme (Johnston, 1982). However, 81% said they sometimes or often applied brief relaxation and 90% said they often or sometimes used cognitive reappraisal in stressful situations. The more regularly relaxation was practiced the lower the BP found. Nonetheless, there was only a significant difference in diastolic pressure in those who relaxed regularly compare with those who stopped practising more than 18 months previously. A large percentage of the latter group reported that although they did not formally practice, they still applied brief relaxation or cognitive reappraisal to stressful situations. This suggests that regular relaxation practice is required to maintain BP reduction but it is not the only factor. Other components of behavioural programmes, more easily incorporated into lifestyle, may promote subtle stress-reducing behaviour and attitudes, and thus have a maintaining effect (Patel *et al.*, 1985).

iv) Improved Quality of Life: The efficacy of treatment should be determined not only by evaluating its effects on BP, but also on a wide range of other functions that may be adversely affected by traditional drug therapy. Four years after receiving the programme, more subjects in the treatment group reported improved quality of life and a greater control over their health than in the control group (Patel and Marmot, 1987). This was especially true for personal, family and work relationships, general health and enjoyment of life; and for those still practising after 4 years, they experienced better concentration at work and mental well being.

The assessment of psychological indices are also significant because they often correlate with compliance (Patel and Marmot, 1987) and can measure the uptake of

healthy lifestyle behaviours and coping strategies known to influence stress and blood pressure. Thus, they could be used to predict patient response to treatment. In fact, psychological change may precede physical change and therefore be an earlier forecaster of long-term effectiveness.

v) Application to Primary Care Settings: Previous studies recruited subjects through adverts, organisations that teach a particular technique, such as the Transcendental Meditation organisation, or through cardiovascular clinics (for example, Benson, Rosner, *et al.*, 1974). Hypertension, however, is generally diagnosed and treated in general practice and therefore it is salient for ecological validity that techniques are researched in this setting. Patel and Marmot (1988) successfully taught GPs and practice nurses the stress management programme so that it could be effectively applied to patients in a primary care setting.

The practice nurse may be particularly useful in the teaching of behavioural techniques for hypertension, since her role has been expanded, due to new emphasis on primary care and disease prevention within the NHS (Bowling and Stillwell, 1998). The practice nurse may improve engagement and compliance for a number of reasons. They are likely to have already established a therapeutic relationship with the patients and are familiar to them. They can teach the technique at the GP practice, which may make instruction more accessible for patients. Practice nurses regularly monitor BP and can combine this with regular monitoring of the patient's compliance with the technique and quickly respond to any problems patients may have with it. Finally, knowledge of both pharmacological and behavioural treatment

of hypertension may increase their credibility as a teacher compared to an unknown researcher or teacher trained only in the relaxation technique. This may also normalise techniques, which are often seen as 'alternative'.

1.2.4 (c) Lack of Application in Clinical Practice

Despite Patel and her colleagues demonstrating the success of behavioural intervention for hypertension and its application in GP settings, there has been ambivalence and caution about its general suitability for regular clinical practice. This may be due to a number of reasons. Firstly, policy makers, such as the Joint National Committee (JNC) on Detection, Evaluation and Treatment of High Blood Pressure (1993; 1997), while acknowledging that behavioural intervention is an 'appealing concept', have been reluctant to advocate its effectiveness, based on a collection of outcome reviews that have yielded relatively small effect sizes (e.g. Eisenberg *et al.*, 1993; Wadden *et al.*, 1984). However, these reviews have statistically assumed that all relaxation techniques are homogeneous, averaging out any superior anti-hypertensive effect an individual technique may possess.

Secondly, there may be reluctance on the part of patients and clinicians to devote the amount of time and effort required to carry out complex behavioural programmes. It is unclear from Patel's research which techniques are most relevant for BP control – whether they have additive effects or if only one of the components is necessary. Thus, to discover ways of increasing the application of behavioural intervention in clinical practice, it is important that the effects of different relaxation methods on hypertension are compared.

1.2.4 (e) The Comparison of Different Relaxation Techniques

A large number of relaxation techniques have been used to treat hypertensive patients. These include yoga (Patel and North, 1975); Qigong (Mayer, 1999); biofeedback (Balnchard *et al.*, 1975); progressive muscular relaxation (Kallinke *et al.*, 1982); meditation (Benson, Rosner, *et al.*, 1974); autogenic training (Klumbies *et al.*, 1966); and hypnosis (Deabler *et al.*, 1973). Many reviews comparing techniques have been limited due to the methodological flaws mentioned in section 1.2.4 (a) (e.g. Lehrer *et al.*, 1994).

Recently, however, Schneider *et al.* (1995), carried out a prospective randomised controlled trial on 127 inner-city, older African Americans (a high risk group) with mild hypertension (mean initial BP 147/92 mm Hg). Fifty percent were on anti-hypertensive medication and all were paid volunteers. They compared the efficacy of Transcendental Meditation with Progressive Muscular Relaxation (PMR) and used a lifestyle modification education programme for the control group. Meditation was found to be significantly more effective with 10.7/6.4 mm Hg mean reduction in BP compared to 4.7/3.3 mm Hg decrease in BP for PMR, at 3 month follow-up. Meditation also produced higher adherence rates (97% compared to PMR's 81%). Alexander *et al.* (1996) found that these BP reductions generalised across a wide range of risk conditions, even those with multiple risk factors benefited from the treatment as much as the low risk groups. Meditation has also been found to be comparable in efficacy to anti-hypertensive medication for mild hypertension, but is more cost-effective (Herron *et al.*, 1996a) and had less aversive side effects

(Schneider *et al.*, 1995.)

These studies suggest that meditation is sufficient to substantially reduce BP. It may be more effective than other interventions because it has the ability to act on other hypertension and CHD risk factors, as well as stress and emotional arousal (Johnston, 1987). Thus, meditation, in isolation from the rest of Patel's programme, can be used to treat hypertension, and by involving less effort and time to teach and learn could maintain healthcare staff enthusiasm and patient compliance.

1.3 MEDITATION

1.3.1 What is Meditation?

Numerous attempts have been made to define meditation. To try to encompass its many variations, Smith (1976) gave a generic, but vague, description of meditation as 'a family of mental exercises that generally involve calmly limiting thought and exercise'. Benson, Beary, *et al.* (1974) explained it as a means of obtaining the 'relaxation response' in order to reduce physiological arousal. Others have defined it in terms of meditative experience, for example, as 'a state of complete concentration with no extraneous thoughts, a state of complete mindfulness, living in the here and now, a choice-less awareness, without analysis and intellectual constructs' (Shapiro, 1980). Alternatively, Tart (1970) called meditation 'the Void', where the person's 'identity is potentiality, he's aware of everything and nothing, his mind is absolutely quiet, he's out of time, out of space...'. These definitions, however, tell us only of the meditative effect and nothing of its process. Shapiro provides a more lucid explanation, describing meditation as:

'a conscious attempt to focus attention in a non-analytical way and an attempt not to dwell on discursive, ruminating thought' (1982).

This last definition will be applied when meditation is referred to in this thesis. It implies that meditation is non-cultic and independent of religious belief. It involves goal-less intention, with emphasis on the thought process (i.e. the context in which thoughts are registered in) rather than their content. This distinguishes it from similar

techniques, such as, guided imagery, hypnosis, prayer and autogenic training, which all promote specific cognitive aims.

Meditation techniques vary in the object of their focus, whether it is on the whole field, as in mindfulness meditation; on a specific object within the field, such as yogic movement; or shifting between the two, as in Transcendental or Zen meditation. Methods also vary in the effort required, and in how they are taught. For example, Transcendental Meditation teachers advocate that distracting thoughts during meditation should be disregarded; Zen suggests they are to be noticed, observed and let go of only when meditators tire of them; while in Satipatthana meditation students are advised to hold back these thoughts with extreme force (Goleman, 1988). Some methods are taught within a religious context, some within a scientific one. With many there is a high degree of teacher involvement, while with others there is little or none, the technique being learned from audio-tape.

1.3.2 The Development of Meditation Theory and Research

1.3.2 (a) Eastern Links with Meditation

Meditation has been practiced for more than 2,500 years (West, 1979) within most of the major religions, including sects of Christianity, Islam and Judaism, but it predominates in Buddhism, Taoism, and Hinduism. These Eastern religions have developed doctrines which advocate meditation as a means of achieving altered states of consciousness, personal growth, and ultimately, spiritual salvation or 'enlightenment' (Goleman, 1988). Their doctrines can be viewed as a systematic and detailed set of psychologies for understanding mental activity and obtaining well

being, which is markedly different from the relatively new psychologies developed by Western countries.

Western psychology has been heavily influenced by European and American culture, which, until recently, has had little concept of consciousness transformation or an ideal for mental health. Instead, the West has focused on psychopathology and therapy, dualism, and objective scientific research. It has also provoked "...a belief that physical reality exists independently of our perception of it, and is the ultimate reality" (Tart, 1975). There is, thus, a tendency to study only 'quantifiable' psychological phenomenon, leading to a trend for spiritual experience and altered states of consciousness to be either, disregarded, or judged pathological. Eastern psychologies and meditation, therefore, have been largely ignored by psychotherapy (Goleman, 1988).

1.3.2 (b) Early Psychotherapeutic Links With Meditation

As Contemporary Psychology has developed, certain influential thinkers have become aware of, and interested in, Eastern perspectives. As far back as the turn of the twentieth century, the eminent American psychologist, William James (1910) recognised the psychological nature of Eastern doctrines. For example, he introduced the Eastern concept that ordinary waking consciousness is just one of many states of consciousness for organising experience and dealing with reality. James (1961) also maintained that redirecting attention and changing states would provide a different understanding of reality, although he was unaware of many Eastern technologies, including, meditation.

The advent of Behaviourism, which denied consciousness altogether (Watson, 1913) and then Freud's view of consciousness, where thought content, rather than its context, was analysed (1930) caused Eastern concepts to be sidelined for a considerable time. Some interest, however, was regenerated after Carl Jung's break with Freud. Jung was more open to Eastern teachings and attempted to address them from a psychoanalytical perspective – proposing 'a collective unconsciousness' (1958). He did not, however, advocate the use of meditation for Westerners, prematurely concluding that it would inevitably control or repress the self even further, rather than freeing the unconscious mind (1936).

Eastern philosophies also impacted upon other psychotherapists. For example, the Humanist, Eric Fromm (1959) had frequent discourse with Buddhist teachers and suggested that psychoanalysis could be extended to achieve enlightenment. Assagioli (1971) was heavily influenced by yoga and the transpersonal self, developing Psycho-synthesis, a therapy aimed at relieving physical and psychological suffering, and ultimately enhancing spiritual experience; and Maura Sills in the 1970's evolved Core Process Psychotherapy inspired by Buddhism and her own Buddhist practice (described by Donnington, 1989).

Psychotherapy, with increasing sophistication, has become more congruent with Eastern doctrines, shifting its paradigms to focus on human potential, rather than exclusively pathology. For example, Wilhelm Reich's (1948) concept of dismantling defensive 'character armour' to intensify awareness and empathy; Neo-Reichians Lowen's (1975) and Pierrakos' (1990) Bio- and Core Energetics; Erikson's (1963)

final stage of the life cycle, where a resent-less, fearless acceptance is achieved; Maslow's (1971) theory of self actualisation; and Kolberg's (1981) stage seven, which Wilber et al (1986) extended to create their Spectrum of Development, all resemble the Eastern goal of enlightenment. Transpersonal Psychology was established (Tart, 1975) to tackle human potential and purpose, spirituality, and different states of consciousness from an Eastern perspective, but in a scientific way. The development of biofeedback training in the 1950's damaged the concept of dualism by demonstrating that the mind could control bodily autonomic processes. Additionally, the advent of the 1960's 'psychedelic drug culture' engendered public and scientific experimentation with pharmacologically induced altered states of consciousness, and latterly with meditation (Ram Dass, 1978; Leary 1968; Stanulav Grof, 1975).

1.3.2 (c) Studies of Eastern Meditators

Initially, the scarcity of meditators in the West meant that researchers had to transport cumbersome testing equipment, to barely accessible Asian locations, in order to study expert yogis and Zen monks, who had devoted their lives to meditation. Bagchi and Wenger (1958) found dramatic reductions in heart rate (between 6-9%) and respiration rates (as much as 50-60%), increases in electrical resistance of the skin, and changes in brain waves occurring in these religious subjects during meditation. Anand *et al.* (1961a) placed a meditating yogi in a sealed metabolic chamber. They found that he consumed only 30% of the oxygen hitherto assumed necessary for life, without detriment to his health. They also discovered that these experts did not respond to distracting sensations such as heat, cold and pain

during deep states of meditation (Anand *et al.*, 1961b). Although these results were impressive, the experiments were scientifically inadequate, in terms of control and sample size.

1.3.2 (d) Studies of Western Meditators

A significant number of expert meditators moved to the West during the 1950's and 60's, partly to escape religious persecution, and partly to serve recent Western converts and immigrants from the East. In view of the increasing non-religious interest in meditation, Maharishi Mahesh Yogi developed a non-cultic form of Hindu meditation – Transcendental Meditation (TM) for Western use (Mahesh, 1963). This initiative helped to make meditation more acceptable and available to a Western audience. Cultural icons of the 1960's, such as the Beatles and the Beach Boys, actively promoted Eastern perspectives, encouraging the uptake of the practice even further, particularly within the student community (Carrington, 1998).

Such an ample and captive population of meditators allowed, for the first time, systematic large scale research to be carried out, principally, on TM and its effects. Herbert Benson and Robert Keith Wallace were at the forefront of these investigations (Benson, 1984; 1996; Benson *et al.*, 1974; 1975; Wallace, 1970; Wallace *et al.*, 1971). Unfortunately, studies have been plagued with methodological flaws, such as, small sample sizes; lack of control and long-term follow-up; and numerous confounding variables, such as, mixed pre-treatment basal metabolic levels, fasting conditions, and experience of meditators (Delmonte, 1984b; Dillbeck and Orme-Johnson, 1987). This has produced a number of inconsistent findings and

positive results have been less dramatic than those demonstrated with expert Eastern meditators. Generally, however, meditation has been found to have a widespread impact on individuals, including, physiological changes (such as, state and long-term decrements in arousal, shown in Table 3) and psychological effects (such as, improvements in emotion, self-perception, cognitive, and behavioural indices, shown in Table 4). It is interesting to note that, unlike the Eastern experts, meditators using western approaches did respond to aversive stimuli (although their recovery rate was faster than controls).

Table 3: The Physiological Impact of Meditation

Physiological Factor	**Impact**	**Study**
Metabolic Activity	↓ Blood pressure	Cooper & Aygen (1978)
	↓ Red cell metabolism	Jevning *et al.* (1983)
	↓ Oxygen consumption	Wallace (1970)
	↓ Heart rate	Wallace *et al.* (1971)
	↓ Respiration rate	Wolkove *et al.* (1984)
Stress Indices	↑ Rate of recovery from aversive stimuli	Goleman & Schwartz, (1976)
	↓ Muscle tension	Wallace (1970)
	↓ Arterial blood lactate	Dillbeck & Orme-Johnson (1987)
	↓ Plasma cortisol	Bevan (1980)
	↑ Galvanic skin resistance	Dillbeck & Orme-Johnson (1987)
	↑ Alpha brain waves amplitude and regularity	Jevning & O'Halloran, (1984)
Brain Functioning	↑ Cerebral blood flow	Jevning *et al.* (1996)
Neuroendocrine Activity	Various hormonal changes	Bevan (1980)

Table 4: The Psychological Impact of Meditation

Psychological Factor	Impact	Study
Emotional & Interpersonal	↓ Anxiety	Eppley *et al.* (1989)
	↓ Depression	Davis (1986)
	↓ Hostility	Abrams & Siegel (1978)
	↑ Expressed emotion	Carrington & Ephron (1975)
	↑ Capacity for intimate contact	Seeman *et al.* (1972)
	↑ Quality of relationships	Aron (1982)
	↑ Spirituality	O'Murchu (1994)
	↑ General life satisfaction	Alexander *et al.* (1991)
Perception of Self & Others	↑ Internal locus of control	Hjelle (1974)
	↑ Self-regard & actualisation	Alexander *et al.* (1991)
	↑ Acceptance of self & others	Seeman *et al.* (1972)
Cognitive	↑ Memory	Abrams (1978)
	↑ Problem-solving	McCallum (1978)
	↑ Creativity	Travis (1979)
	↑ Perceptual acuity	Dillbeck (1982)
	↑ Productivity	Frew (1974)
	↑ Academic performance	Kember (1985)
Behavioural	↓ Illicit drug, tobacco & alcohol use	Alexander *et al.* (1994)
	↑ Health behaviour e.g. exercise and balanced diet	Haratani & Henmi (1990)
	↓ Coronary prone behaviour	Muskatel *et al.* (1984)

1.3.2 (e) Studies of Clinical Populations

Meditation has been applied to numerous clinical populations and consequently described as a meta-therapy (Goleman, 1971). It has been effectively used as a self-help and self-regulation technique, to treat anxiety disorders, mild depression (Gloeck and Stroebel, 1975; Carrington and Efron, 1975), occupational stress (Carrington *et al.*, 1980) chronic anger (Woolfolk, 1984) and addictions (Murphy *et al.*, 1986; Shafii *et al.*, 1974). Meditation has also been successfully applied to a great number of health problems, including: hypertension (Schneider *et al.*, 1995)

heart disease (Benson *et al.*, 1975; Zammarra *et al.*, 1996) epilepsy (Deepak *et al.*, 1994) psoriasis (Gaston, 1988) asthma (Honsberger and Wilson; 1973) insomnia (Woolfolk *et al.*, 1976) fibromyalgia (Kaplan *et al.*, 1993) and tension headaches (Kumaraiha *et al.*, 1990). As a result meditation has been found to reduce costs for medication and requirements for health care (Orme-Johnson and Herron, 1997; Herron *et al.*, 1996b). It must, however, be used regularly for long-term gains to be achieved.

Carrington (1998), however, warned that meditation does not cure everything or everyone. It has its limitations. For some individuals it may induce anxiety because they are afraid of letting go, or giving themselves pleasure. Others find meditation incompatible with their lifestyle or social role, or see the changes in self-image that it produces as threatening. It is not advised, as the sole treatment for individuals with severe depression, borderline psychotic symptoms or those lacking in social skills (Shapiro, 1982). It can be mis-used as a cognitive avoidance strategy, and can induce inactivity, withdrawal, and adverse feelings associated with the release of sensations and previously unconscious material (Shapiro, 1982). Psychotherapy, in conjunction with meditation, can be helpful in addressing individual's resistance to meditation practice and it is important that training is gradual and involves careful monitoring (Carrington, 1998; Shapiro, 1982).

Meditation can also be used to aid psychotherapy. After learning meditation, patients have been found to be less anxious, and more optimistic and willing to engage fully in therapy (Carrington and Ephron, 1975). The psychological impact of meditation detailed in Table 4, especially improved sense of self and emotional awareness,

allows the patient to be more receptive to and productive in therapy (Carrington and Ephron, 1975). Therapeutic outcome can also benefit if the therapist meditates regularly also. Trainee clinical psychologists that meditated were shown to have more empathy compared to controls (Lesh, 1970). Carrington and Ephron (1975) argue that meditation can also help a therapist's spontaneity and physical stamina.

1.3.2 (f) How Meditation Works

There are various theories about how meditation produces such wide-ranging effects. For example, Goleman (1971) suggested that meditation acts like systematic desensitisation, except in a more comprehensive way, and without the need of a therapist. He hypothesised that distressing thoughts during meditation may become naturally linked with the relaxed meditative state, removing their negative emotional charge. Deikman (1969) proposed that meditation de-automatisatises mental processes and provides alternative ways of processing experience. This disrupts constraining habitual thought and behaviour patterns, and may enable greater creativity and energy. Meditation may work by balancing the two sides of the brain by reducing the dominance of logical and verbal thought, processed by the left hemisphere, and increasing non-verbal, intuitive, and holistic right-hemisphere thinking (Earle, 1981). The meditative attentional processes may also reduce sensory overload and prevent exhaustion by reducing distraction and arousal associated with it (Tecce and Cole, 1976). Finally, meditation may help individuals to become more in-tune with natural body rhythms and needs, and also to create calming rhythms when required (Carrington, 1998). All these explanations seem viable, however, none reflect the complete meditative experience and the precise mechanisms

involved are still unknown.

1.3.2 (g) The Integration of East and West

Despite a proliferation of research studies, the development of an effective integration of Eastern and Western perspectives has been hampered. Eastern psychologies advocate that human nature can not be fully understood by intellectual analysis, as it were 'from the outside'. It can be likened to attempting to comprehend the taste of food by reading a menu. Clarity can only be achieved through experience. Tart (1976) contended that Western researchers had failed to comprehend this point of view. For example, James and Assagioli only investigated the philosophy of the East, without experiencing their technologies. Although Jung investigated both, he misinterpreted the philosophy behind meditation, and therefore did not practice it. Wallace and Benson, although regular meditators, in their early studies due to their scientific backgrounds, focused solely on the physiological effects, ignoring important psychological variables, and thus limiting their understanding of the meditation process.

Tart (1975) proposed a 'state-specific science' for investigating meditation, where psychotherapists use their western scientific skills to observe and test out their own meditative process while meditating. Their findings can then drive theory, using an 'inside-out' approach. As a result, there is now a small group of pioneering state-specific researchers, such as Ken Wilber (1979) Mark Epstein (1989) and Jack Kornfield (1977), who have provided sophisticated frameworks, in which Eastern and Western psychologies can be integrated. They argue that meditation and

psychotherapy are complementary, and that both are necessary for understanding human potential. This has promoted mutual respect and collaboration between East and West. It highlights the need for meditation research to be carried out by individuals who have extensive experience and understanding of both psychotherapy and eastern psychologies, especially if the clinical limitations and possible aversive effects of meditation are to be avoided. This may be more important, however, in the study of consciousness, human potential and psychotherapy, as previous studies on hypertensives individuals suggest it is less of a problem when simply focusing on the stress-reducing and health-promoting aspects of meditation (e.g. Benson, 1984).

1.3.3 The Effectiveness of Meditation in Comparison to Other Techniques

1.3.3 (a) The Relaxation Response model

Benson in collaboration with Wallace (Wallace *et al.*, 1971) and other colleagues (Benson, Beary *et al.*, 1974) suggested that the hypometabolic changes that occur during meditation are due to an integrated hypothalamic response, which reduces sympathetic nervous system activity. He named the elicitation of this response 'the relaxation response' and hypothesised that it was the antithesis of Cannon's (1914) 'fight or flight' response, which increases sympathetic arousal and mobilises the body's resources, to deal actively with stress and danger. Benson proposed that the relaxation response was a general response that was not unique to meditation. Equivalent physiological change could, in fact, be produced by any technique that involved a passive attitude, a mental device, low muscle tonus and a quiet environment (Benson, 1975).

1.3.3 (b) The Specific Effects Model

Davidson and Schwartz provided an opposing theory. Based on Lacey's (1967) multi-process model, they suggested that relaxation, in addition to a generalised reduction in multiple physiological systems, involved the elicitation of a number of specific responses within these systems. They argued that different relaxation techniques tap into different systems (e.g. cognitive, somatic or autonomic) and thus produce different relaxation effects. Meditation, they proposed, being cognitively-oriented, would produce greater cognitive than somatic effects on arousal. The opposite would be true for Progressive Muscular Relaxation (PMR), a somatic-oriented technique (Davidson and Schwartz, 1976).

1.3.3.(c) An Evaluation of Meditation Outcome Research

To test these two theories, a substantial amount of research comparing the physiological effects of meditation with different relaxation techniques was generated, and almost as many inconsistencies, due, in part, to the methodological flaws detailed in section 1.3.2 (d) (e.g. Holmes, 1984; Delmonte, 1984b).

Various authors have also identified non-specific factors, regarding belief and expectancy, which influence meditation outcome independently of the actual technique. For example, Cuthbert *et al.* (1981) found that meditation taught under conditions of high patient-therapist involvement showed superior reductions in heart rate compared to biofeedback training. When the therapist was formal or distant, however, this effect disappeared. In other studies, patients were randomly assigned to meditation or control conditions, which had rationales of equal credibility. It was

found that control conditions were just as effective as meditation, whether they were similar to meditation, such as sitting with closed eyes, or the near antithesis (Boswell, 1979; Smith *et al.*, 1975; 1976). Thus, the expectations of patients and therapists have been found to influence the regularity of meditation practice and its perceived benefits.

These findings are hardly surprising as placebo and relationship factors play important roles in all therapies, including response to drug and medical treatments. Hubble *et al.* (1999) found that hope and expectancy are just as influential as the type of model used - both accounting for 15% of the factors that make therapy successful - whereas 30% is due to patient-therapist relationship variables. It is therefore questionable whether these non-specific effects should be controlled for. Clinically, it actually makes sense to deliberately harness them.

Hence, conclusions about the relative effectiveness of meditation have been obscured by debates over the copious number of extraneous variables involved in its research. Neither the Relaxation Response, nor the Specific Effects models, however, can explain the dramatic and unique physiological effects that were found in the early studies of Eastern meditators. As noted above, the meditative experience also involves more than just physiological change and it is inaccurate to investigate meditation using just one variable. For example, many meditators report greater psychological integrity and well being (e.g. Alexander *et al.*, 1991) which may involve more subtle psychological and physiological changes. Only 20-30% drop out of meditation studies before they finish, compared to reports of attrition rates as high

as 70-100% in progressive muscular relaxation or biofeedback training (Shakman, 1974; unpublished thesis cited in Carrington, 1998; Glueck and Stroebel, 1975). This suggests that there is something about meditation that is more self-motivating and rewarding compared to other techniques. It may be that meditation's superiority will become more apparent once measures increase in sensitivity and sophistication.

Additionally, the contrast in effect between Eastern and Western meditators may be due to differences in technique. The majority of reviews have assumed that all meditation techniques are equally effective (Johnston, 1987). This is as unproductive as assuming the efficacies of all drug treatments are the same. Therefore, different meditation techniques need to be distinguished in order to obtain a clearer understanding of the meditation process.

1.3.4 The Effectiveness of Different Meditation Techniques

1.3.4 (a) Benson's Respiratory One Method

Benson (1975) contended that any type of meditation could elicit the relaxation response, as they were different versions of the same basic mental procedure. In an attempt to test his theory, he stripped meditation down to its basic technique and devised, what he termed, the 'Respiratory One' method of meditation. This only required the silent repetition of the word 'one' on every out breath, and could be self-taught using a manual.

Benson's method, however, has been found to be not as effective as other forms of meditation. Ferguson (1981) in a meta-analysis of 51 studies, compared meditation

techniques for self-report psychological outcome measures. TM had the greatest effect size (.69) then Zen meditation (.49) and Benson's method (.29). In another review, Eppley *et al.* (1989) differentiated meditation techniques when comparing relaxation techniques for trait anxiety. They found that overall TM produced the greatest effect size (.74); then other relaxation techniques (.39); and biofeedback and other meditations, such as, Benson's method, concentration techniques and pseudo meditation (.26). Only the population, number of hours of treatment, and compliance significantly influenced effect size.

1.3.4 (b) Transcendental Meditation

In addition to the measures used in the above studies, TM has shown superiority on other indices, such as, reduction in alcohol consumption (Alexander *et al.*, 1994) physiological relaxation (Dillbeck and Orme-Johnson, 1987) mental and physical health (Alexander *et al.*, 1989) and perceptual motor performance (Holt *et al.*, 1978). Furthermore, TM has been demonstrated to achieve greater compliance than other meditation and relaxation techniques (Kuchera *et al.*, 1987; Schneider *et al.*, 1995).

TM's effectiveness has been related to its relative effortlessness and permissiveness (Morse *et al.*, 1977; Russel, 1976). For example, meditators are asked to silently repeat a specially chosen sanskrit word (a mantra) in a quiet room. They are not required to concentrate exclusively on this mantra or strenuously prevent attention wandering. Instead they are asked to disregard distractions when they occur and simply redirect their attention to the sound of the mantra. Learning TM only involves a few individual sessions from a designated teacher, in addition to a short initiation

group ceremony and preparatory talk. Twice daily practice is recommended. No lifestyle or attitude change is required, as the TM organisation claim that this will happen anyway, spontaneously (Russel, 1976). As a result of these advantages, Morse *et al.* (1977) argued that TM is subjectively more rewarding and individuals, as a result, may be more motivated to continue with its practice compared to other techniques, which may be relatively boring, unexciting or tiring. It is also less goal-directed and self-evaluative than other methods, which may also enhance compliance.

In view of the above results, Wallace has actively promoted the TM organisation's claim that TM possesses unique qualities and is the most effective relaxation and meditative technique. As a result, however, Benson reported that his collaboration with Wallace became increasingly under strain because he opposed this view (Benson, 1984).

There are a number of criticisms of TM research. Due to ideological reasons, the TM organisation does not sanction outside research comparing TM with other meditation techniques or the revelation of the mantras it uses (Russel, 1976). This has led to criticisms about the validity of their research (eg Carrington, 1998). The organisation's researchers have had lengthy training in TM and involvement within the organisation (for example Wallace, after his support of TM, became head of the TM movement in the US). This could lead to unintentional experimental bias. There have also been more studies carried out on TM compared to other techniques. For example, Eppley *et al.* (1989) used forty-one outcome measures for TM and only 36

for all other meditation techniques put together. This may skew results in meta-analyses.

TM training costs a substantial amount of money, on the part of the learner, and is partially group taught so there are social and financial pressures for meditators to experience benefits and to prevent cognitive dissonance. TM teachers are often more systematically trained for at least a year (Russel, 1976) compared to teachers of other techniques, and therefore, may come across as more convincing, confident, credible and knowledgeable. During the teaching of TM, positive rationale for the technique is presented in a scientific way, with a discussion of the research that has found meditation beneficial. Although it does not involve the Hindu philosophy that it was derived from, there is an introductory ceremony and the emphasis of a certain belief system, such as maintaining the secrecy of mantra. High expectancy is, therefore, encouraged, and these factors may forge a stronger teacher-client therapeutic alliance. Consequently, a large part of TM's success may be due to factors needed for any technique to be effective, rather than factors unique to the method itself (Hubble *et al.*, 1999).

1.3.4 (c) Benson's Faith Factor

Benson realised that he was not comparing like with like when contrasting his Respiratory One method with TM. TM is more effective, he argued, because it is more than just a basic behavioural relaxation device (Benson, 1984). It also exploits the scientific-orientated belief systems of Westerners, linking them to meditation, and enabling individuals to take personal meaning and significance from their

practice. Benson and his colleagues had studied meditation purely as behavioural relaxation technique. By stripping the number of variables down to just the 'nuts and bolts', the meditative experience had actually been restricted, and its complexities disregarded.

Consequently, Benson modified his Relaxation Response model to deliberately include, what he called, the 'faith factor' (Benson, 1984). This placed the meditative process in an individual context. He proposed that the elicitation of the relaxation response would be enhanced if basic mental techniques tapped into a person's religious and non-religious belief systems. Hence, relaxation techniques, which could incorporate cultural contexts into their teaching and practice, would be more effective than those that did not. In support of this theory, Kass *et al.* (1991) demonstrated that meditators who chose a mantra consistent with their faith, such as, "Jesus Christ help me, protect me and cure me", were more compliant with meditation practice and enjoyed it more than those who did not.

This theory may go some way to explaining why the early studies on monks and yogis yielded more dramatic physiological changes than TM. The type of meditation these religious leaders were carrying out was more strongly linked with their philosophy of life. Other relaxation techniques that have been taken out of their traditional philosophical and cultural context have also been found to be less effective, for example, Jacobsen's (1929) yoga-derived Progressive Muscular Relaxation. This suggests that these techniques have less significance for individuals who are therefore less likely to find practice beneficial.

Benson (1996) also found that those who reported greater spirituality from mediation suffered from fewer medical symptoms. He explained this by proposing that evolutionarily we are 'wired for God'. He argued that faith in an external force, life philosophy, or the effectiveness of a health method, whether valid or not, gives life meaning and provides distraction from unhealthy worries and pessimism about the vulnerability of life. This is advantageous as these beliefs are 'soothing' and healing as they elicit the relaxation response. A naturally restorative effect on the body is activated, which Benson (1996) called 'remembered wellness'. Benson's work highlights the importance of beliefs and attitudes in meditation and healing.

1.3.4 (d) Clinically Standardised Meditation

Carrington (1978) devised a modified version of TM, incorporating Benson's faith factor. Clinically Standardised Meditation (CSM) involves similar preparatory information and effortlessness to TM, but it is more open to scrutiny, has greater flexibility, and deliberately utilises the individual's existing belief systems. CSM has been shown to be effective on a wide range of physiological and psychological measures (e.g. Carrington *et al.*, 1980).

CSM uses a list of 16 mantras, based not on their spiritual meaning, but on research, which indicated the words that most people found had the greatest calming effect. This enables individuals to freely choose a suitable mantra from the list or even make up their own, according to a number of rules. The instruction of CSM has been standardised. It is taught during one session and learned within a week, usually via a manual and audio-tapes, which have been found to be equally as effective as live

teaching (Carrington, 1998). No special ceremony is involved, apart from practising in a quiet room, with the option of incense, plants, and a burning candle. CSM advocates twice daily practice for 20minutes, but also frequent mini-meditations throughout the day to help manage stress 'on the spot'. Mini-meditations last no longer than three minutes and can be practiced anywhere, at any time, and in any position. This has been found to be particularly advantageous for those with hypertension to combat regular transient increases in BP throughout the day (Carrington 1998). These factors enable CSM to be more tailored to fit individual lifestyle and need.

One problem with CSM is that individuals are instructed to "flow with the thoughts that turn up during meditation and allow them full play [...] When the mantra comes to mind, let the thoughts drift slowly away" (Carrington, 1978). The author of the present project, in pilot studies using CSM, found that trainees complained that their meditation sessions would often turn into 'worry time' and actually increase their anxiety. This suggests that the technique may be too permissive and that individuals need more structured advice to deal with distractions.

1.3.4 (e) Kabat-Zinn's Attitude-Promoting Programme

Kabat-Zinn goes one step further than Carrington and uses meditation as a vehicle for attitudinal and lifestyle change, rather than just a management technique. Based on his experience as a Buddhist meditator, using an 'inside-out' approach, he developed an intensive stress reduction programme, including mindfulness meditation (Kabat-Zinn, 1982). Kabat-Zinn teaches the meditation by making

explicit the attitudes that are implicit within it's context, such as, non-judgement, patience, a beginner's mind, trust, non-striving, acceptance and letting go (Kabat-Zinn, 1990). While the TM organisation argues that attitudinal change will occur spontaneously, Kabat-Zinn suggests that the emphasis and development of the above attitudes are important for the long-term significance of meditation. He proposes that they create the optimum conditions for meditation to be most effective, making it easier to attend to the object of focus than be distracted. Consequently, the attitudes will facilitate in the learning of meditation and its integration into lifestyle, and may enhance motivation and compliance. Applying them outside of meditation will also remind the individual to practice and generate conducive, stress-reducing, behavioural changes, maximising the potential benefits of meditation even further. For example, individuals who lead exceedingly pressurised and ambitious lifestyles will not be able to comply with practice and obtain benefits from meditation unless they undergo some cognitive change, and develop attitudes and behaviour more consistent with meditation, such as, becoming less striving and more patient. This method is consistent with cognitive approaches to stress, and with Kornfield (1977) and Wilber (1979) allowing Buddhist psychology to be integrated with Western psychotherapy.

Kabat-Zinn's programme has been successfully applied to the treatment anxiety and a variety of health problems (Kabat-Zinn *et al.* 1992, 1982) with high treatment attendance and compliance rates (Kabat-Zinn *et al.*, 1986; 1988). Practice compliance rates have not been documented. They may be, however, lower than other methods, as the programme requires more effort, discipline and training. It is

also difficult to evaluate since, as with Patel's model, it has a large number of independent variables.

1.4 SUMMARY AND CONCLUSIONS

Hypertension is a common condition, with major health implications and numerous bio-psycho-social risk factors. Behavioural treatment has been shown to be equally effective as drug therapy for mild hypertension, with fewer aversive side effects. Yet medication remains the standard treatment for high blood pressure in primary care settings. Reluctance to apply relaxation techniques in this field may be due to the techniques being combined in statistical analysis (yielding small effect sizes) and in complex treatment programmes (which are expensive, in time and effort, for healthcare staff and patients). Meditation, by itself, has been found to be effective in treating hypertension. It is, in itself, however, exceedingly complex. To obtain a greater understanding of meditation, employing a state-specific approach and distinguishing between different techniques has been advised. Possibly due to the high degree of knowledge and experience required by the former, researchers have more frequently followed the latter recommendation. They have highlighted that there are advantages and disadvantages with most techniques, depending on the individual and the purpose it is being applied to. To enhance meditation's effectiveness and applicability to the primary care treatment of hypertension, the following components, spanning meditative method and training, have been indicated by meditative theory and research:

a) An Efficient and Effective Method

Mantra meditation requires less effort and discipline to learn and practice than other methods, such as, mindfulness meditation. In the form of TM, it has shown efficacy and high compliance rates, with regard to the treatment of hypertension.

b) An Appropriate Teacher

Practice nurses are ideally placed to provide efficient behavioural hypertension treatment, within a primary-care setting, due to their health promotion, disease prevention and BP monitoring roles. However, teachers expert in meditation instruction and practice, using inside-out approaches, have been shown to enhance expectancy and therefore compliance. The NHS may be unable, or unprepared, to fund training as intensive as that found in TM. Thus, experienced teachers may not be immediately practical in a primary care setting and were not possible in the present study.

c) An Efficient Teaching Structure

Live, group instruction, over a five-week period is advantageous for a primary care setting. Although taped instruction, as in CSM, is less time consuming for the teacher, live teaching fosters therapeutic alliances, which can improve patient compliance. CSM, however, has an ideal teaching structure of four, one-hour sessions, over five weeks, for each patient, with the meditation technique taught in the first session. The quicker reward is gained the more motivating the technique is likely to be. The teaching time, for the instructor, can be minimised by group instruction, as in TM and Kabat Zinn's programme. The instructor can use group

members to enhance explanations and provide peer pressure to further enhance compliance.

d) Effective Teaching Elements

i. Flexibility and Sensitivity: The more flexible and sensitive to need meditation is the more it can be integrated into individuals lifestyles, which is vital for long-term compliance. Thus, choice of mantra, body position and setting for practising meditation, as found in CSM, may be more beneficial than those designated by the teacher, as in TM. Trainees, however, need to be given more structured advice than in CSM, to enable them to return to the mantra when they notice that they have been distracted. The use of mini-meditations is also relevant for hypertensive patients to enable them to combat transient increases in BP and adapt meditation according to need and opportunity.

ii. Utilisation of Pre-existing Beliefs: The supplement of preparatory information about the benefits of meditation in a Western scientific way, as in TM and CSM, can increase expectancy and therefore compliance. The provision of a mantra consistent with an individual's faith can also improve efficacy, as in Benson's technique.

iii. Cultivation of Attitudes: If the stress-reducing attitudes implicit in meditation are made explicit, as in Kabat-Zinn's programme, then this may change beliefs, increase compliance and have a positive effect on lifestyle behaviours, making meditation more than just a palliative technique to manage physiological arousal. It would be consistent with cognitive models of stress, such as Lazuras and Folkman's (1984)

and Cognitive Behaviour Therapy. Attitudinal change may alter appraisal of threat and coping, and discourage hypertensive patients from insulating themselves from stress.

To conclude, the effectiveness of meditation, combining these all these methodological and training components, has not been investigated, with some of the individual components, themselves, requiring further examination. Specifically, although Benson has shown that the utilisation of pre-existing beliefs to be beneficial, it is unknown if promoting attitudinal change adds to the efficacy of meditation.

1.5 PRESENT STUDY: AIMS AND HYPOTHESES

1.5.1 Aims

The study aims to optimise the effectiveness, and applicability, of meditation in the treatment of hypertension in primary care settings. It will compare the efficacy of two hybrid techniques, a 'basic' and an 'attitude-promoting' meditation, that both incorporate components attempting to improve meditation's methodological and teaching efficiency and effectiveness (see 1.4 a-dii). The basic technique only utilises pre-existing beliefs whereas the attitude-promoting technique, in addition, explicitly promotes, and endeavours to cultivate, stress-reducing attitudes (see 1.4 diii).

1.5.2 Hypotheses

For medicated hypertensive patients, between the start and end of treatment, and at 3 month follow-up, the following hypotheses are predicted:

Hypothesis 1: Both the basic and attitude-promoting hybrid meditation techniques will be, independently, more effective than standard drug therapy alone, in terms of:

a) reducing blood pressure

b) reducing anxiety

c) increasing problem focused coping

d) reducing emotional control

e) increasing health behaviour

f) increasing internal health locus of control

g) increasing life satisfaction

Hypothesis 2: The attitude-promoting meditation technique will be more effective than the basic meditation technique, in terms of:

a) reducing blood pressure

b) reducing anxiety

c) increasing problem focused coping

d) reducing emotional control

e) increasing health behaviour

f) increasing internal health locus of control

g) increasing life satisfaction

h) compliance with meditation

CHAPTER 2: METHOD

2.1 DESIGN

A combined design was used. Participants were randomly allocated to, either, an attitude-promoting meditation group; a basic meditation group; or a standard drug therapy control group. Eight measures were performed on each group, at pre-treatment, post-treatment, and three-month follow-up.

2.2 PARTICIPANTS

The participants were all current patients of a rural, medium-sized (approx. 1000 patients) GP practice. From medical records, and in consultation with the GPs, 305 patients were identified with hypertension. Of these, 181 patients fulfilled the research criteria and were given the option of opting into the study.

The criteria for inclusion in the study were patients:

- diagnosed with mild, moderate, or severe hypertension
- prescribed stable levels of medication for more than 6 months

The criteria for exclusion were patients:

- diagnosed with borderline hypertension
- over 75 years old
- involved in secondary care services related to coronary disease
- with moderate to severe depression

2.3 MEASURES

In addition to a physiological measure of blood pressure, seven psychological self-report measures were employed, as it was thought they would be more sensitive to change (Curtis and Wessberg, 1976) and therefore be an earlier forecaster of meditation effectiveness. Stress was not measured directly, as disagreement over its definition has made its comprehensive assessment problematic (Mason, 1975). Also, it is unknown if stress has an immediate effect on blood pressure, or, acts indirectly through its influence on coping and lifestyle. Consequently, it was decided to assess anxiety, an associate of acute stress (Speilberger *et al.*, 1970), and coping.

2.3.1 The Measurement of Blood Pressure

The practice nurse measured blood pressure, at one sitting, using a mercury sphygmomanometer. This was done in accordance with O'Brien *et al.* (1995) using the Kortokov sounds to indicate the systolic pressure and their disappearance to signal the diastolic pressure.

2.3.2 The Measurement of Anxiety

The State-Trait Anxiety Inventory, Form Y (Spielberger et al., 1970, 1983) was used to measure anxiety (see Appendix 1). It is composed of two separate scales of 20 items, for measuring state and trait anxiety, where state anxiety is considered a transitory emotion, and trait anxiety, a relatively stable disposition. Each item is rated using a four-point scale, with possible scores varying from 20-80. The greater the

score, the greater the anxiety. The reliability and validity of these scales are well established (Spielberger *et al.*, 1970) and they are commonly used (Walker, 1990).

2.3.3 The Measurement of General Coping Style

The Revised Ways of Coping Checklist (Vitaliano *et al.*, 1985) was employed to measure overall coping style based on Lazuras and Folkman's (1984) popular cognitive transactional model of stress (see Appendix 2). It is composed on a 57-itemed questionnaire, involving eight sub-scales related to a particular stressful encounter. Each item is rated on a four-point scale, with the highest scores indicating greater frequency of use of the coping style. Items were categorised by the researcher into Problem-Focused coping, (including problem-solving and seeking social support sub-scales) with scores ranging from 0-63, and Emotion-Focused coping, (including wishful thinking, avoidance, self blame, blame of others, counting of one's blessings and religiosity sub-scales) with scores ranging from 0-78. Reliability and validity have been demonstrated (Vitaliano *et al.*, 1985).

2.3.4 The Measurement of Emotional Control

The Courtald Emotional Control Scale (Watson and Greer, 1983) was employed to measure the reported control of emotion (see Appendix 3). It involves three sub-scales of seven items, each relating to responses to anger, anxiety and depression. Each item is rated using a four-point frequency scale, with total scores varying from 28-74. Higher scores indicate a greater degree of emotional control. The measure was developed originally for use with breast cancer patients, where it was found to

be valid and reliable. It has, however, been successfully applied to other groups, including coronary heart disease patients (Watson and Greer, 1983).

2.3.5 The Measurement of Health Behaviour

A non-standardised questionnaire was developed to assess the frequency of health behaviour regarding alcohol intake, tobacco use, exercise, and diet using six-point frequency scales. Sub-scale scores were added together to obtain a total health behaviour score, ranging from 0-72. The higher the score the more frequent the health behaviour (see Appendix 4).

2.3.6 The Measurement of Health Locus of Control

The Multidimensional Health Locus of Control Scale, Form A (Wallston et al., 1978) was used to assess three dimensions of health locus of control: Internality (the belief that health is determined by internal factors); Chance (the belief that health is determined by chance or external factors) and Powerful Others (the belief that powerful others control health outcome) (see Appendix 5). Each sub-scale has six items, which are rated according to strength of belief, with scores ranging from 6 to 36. The higher the score, the stronger the belief. The measures reliability and validity have been well-established (Wallston et al., 1978) and it is commonly used within the field of health behaviour (e.g. MacDonald *et al.*, 1994).

2.3.7 The Measurement of Life Satisfaction

A modified version of the Social Problem Scale based on Corney and Clare's (1985) original 33 itemed questionnaire (see Appendix 6). It assesses satisfaction regarding

housing, finance, work, relationships and leisure activities using a four-point scale. The greater the score, the greater the level of satisfaction. The validity and reliability have only been assessed for the long-version (Corney and Clare, 1985).

2.3.8 The Measurement of Compliance

A non-standardised measure was designed (based on Wenneberg *et al.*, 1997) to assess frequency of 20 minute meditation practice (on a seven-point scale – scores ranging from 0-6) and mini-meditation use (on a six-point scale – scores varying from 0-5). The higher the score the more frequent the practice (see Appendix 7).

2.4 PROCEDURE

Following fulfilment of the research criteria, informed consenting participants (see Appendix 8 for patient information sheets) were randomly allocated to the three experimental conditions and were treated across time according to Table 5.

Table 5: Intervention Points over an 18 Week Period

PRE-TREATMENT ASSESSMENT	TREATMENT (excluding controls)	POST-TREATMENT ASSESSMENT	3-MONTH FOLLOW-UP ASSESSMENT
Week 1	Week 2-6	Week 6	Week 18

Baseline measures were taken for all participants. The two treatment groups were each sub-divided randomly into teaching sub-groups of between seven and ten

participants. The researcher and practice nurse provided joint instruction to each group, over a five-week period, comprising of four one-hour sessions (see Appendix 9 for the differences in course content for the basic and attitude-promoting meditation groups). The teaching was supplemented with written handouts, a tape of the first class and a guided meditation session (see Appendices 10 & 11). Immediately following the treatment phase and again three months after, the BP and psychological measures were repeated on all the participants. The control group was then invited for meditation training. All participants were asked to attend for monthly BP monitoring after treatment for a six-month period. If their diastolic BP rose to over 100mm hg, or was raised consecutively on three occasions, they were referred to their GP and given the opportunity to withdraw from the project.

2.5 ANALYSIS OF DATA

2.5.1 Data Analysis

All statistical analyses were carried out using the Statistical Package for Social Sciences (SPSS) for Windows 95, Version 9. Variables were compared using MANCOVA, ANOVA, t-tests, and chi-square tests. A Reliability Analysis was carried out on the Health Behaviour measure to assess internal reliability.

2.5.2 Statistical Power

Based on Patel and North (1975) findings, the sample size was expected to be at least 21 in each group. Consequently a large effect size was anticipated. This satisfies Cohen's (1992) criteria on statistical power.

CHAPTER 3: RESULTS

3.1 DEMOGRAPHIC DATA

3.1.1 Exploration of data

Prior to statistical analysis, the data was explored. Where applicable, the data was investigated for skewness and kurtosis. Significance was set at the < 0.05 level. A reliability analysis showed that the Health Behaviour measure had adequate internal reliability (cronbach $\alpha = 0.79$).

3.1.2 Participants

One hundred and eighty-one primary care patients, who fitted the study's criteria, were approached and 91 (51%) opted into the study. Table 6 shows the mean age and frequency of males and females, of the patients who opted in and out of the study.

Table 6: Mean Age & Frequency of Females and Males of Patients who Opted In and Out of the Study.

Patients Surveyed	N	Age		Gender	
		Mean	S.D.	Female	Male
Opt-in	91	62	8.6	54	37
Opt-out	90	62	9.9	50	40
Total	**181**	**62**	**9.3**	**104 (57%)**	**77 (43%)**

The T-test and chi-square were used to compare the opt-ins and opt-outs. There was no significant difference found between the two groups, in terms of age (T-test: $t = 0.123$; $df = 178$; n.s.) and gender (Chi-square: $\chi_2 = 0.347$; $df = 1$; n.s.).

Of the patients who opted in to the study, 30 were randomly assigned to the control and basic meditation groups, and 31 to the attitude-promoting meditation group. The response rate for the three sets of assessments given to these patients is shown in Table 7. For the patients assigned to the meditation groups, the treatment response rate is displayed in Table 8.

Table 7: Assessment Response Rate for Each Experimental Group

Assessment Response	Total (n = 91)	Control (n = 30)	Basic Meditation (n = 30)	Attitude-Promoting Meditation (n = 31)
Baseline	78 (86%)	25	26	27
Post-treatment	69 (76%)	20	24	25
Follow-up	69 (76%)	20	24	25

Table 8: Treatment Response Rate for Each Meditation Group

Treatment Response	Total (n = 61)	Basic Meditation (n = 30)	Attitude-Promoting Meditation (n = 31)
Full Attendance	49 (80%)	24	25
Never Attended	8 (13%)	4	4
Dropped out	4 (6%)	2	2

Of those who opted-in, 22 (24%) failed to complete more than the baseline set of assessments and/or treatment. Their data, together with the information from one participant who required medication changes, and one referred to secondary care services, were excluded from the statistical analysis. Thus, overall, 67 data sets were analysed, as shown in Table 9.

Table 9: The Data Sets Included and Excluded from Analysis

Data Sets	Total	Control	Basic Meditation	Attitude-Promoting Meditation
Excluded	24 (26%)	10	7	7
Included	67 (74%)	20	23	24

Of the 67 data sets, however, there was incomplete data for two questionnaires (see Appendix 6 - c & h). Nine participants (13%) failed to correctly or completely fill in the Revised Ways of Coping Checklist. Of the 47 data sets from the treatment groups, eight subjects (17%) omitted the Practice Checklist. The incomplete individual questionnaires were excluded from the analysis, but it was considered unnecessary to exclude the rest of the participant's data set.

3.1.3 Baseline Characteristics

The mean age of the participants is demonstrated in Table 10; Table 11 shows the frequency of males and females; and Table 12 displays the frequency of beta-blocker medication, in each experimental condition.

Table 10: Mean Age of Participants for Each Experimental Group

Experimental Condition	N	Mean Age	Min.	Max.	S.D.
Attitude-Promoting Meditation	24	62	46	73	9.27
Basic Meditation	23	62	42	75	8.27
Control	20	63	44	73	8.0
Total	**67**	**62**	**42**	**75**	**8.70**

Table 11: Frequency of Males & Females for Each Experimental Group

Experimental Condition	N	GENDER	
		Male	**Female**
Attitude-Promoting Meditation	24	8	16
Basic Meditation	23	8	15
Control	20	7	13
Total	**67**	**23 (34%)**	**44 (66%)**

Table 12: Frequency of Beta-Blocker Medication for Each Experimental Group

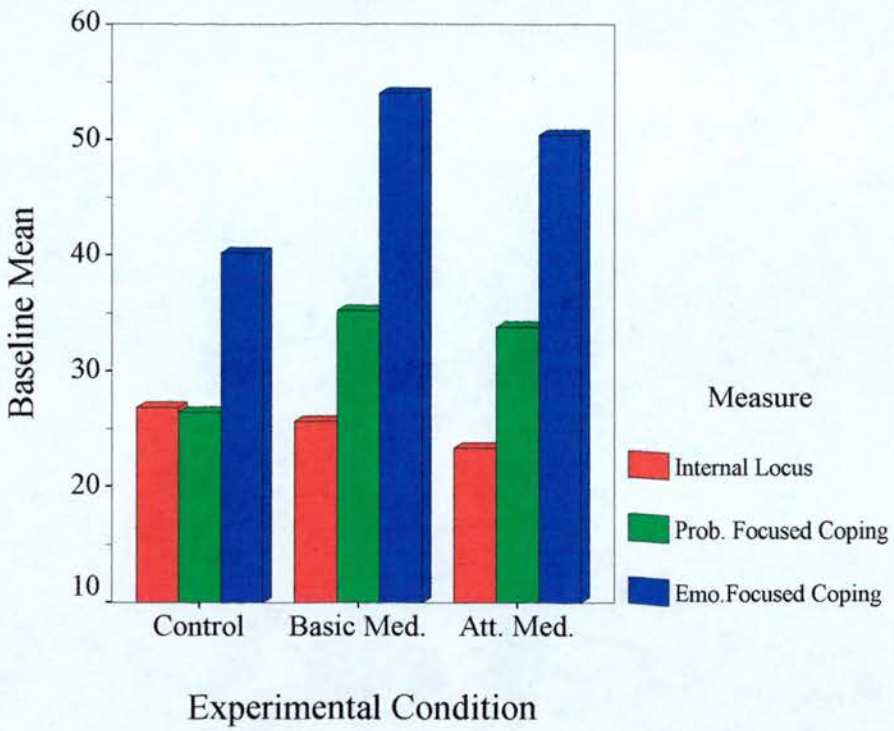
Experimental Condition	N	BETA-BLOCKERS	
		Yes	**No**
Attitude-Promoting Meditation	24	4	16
Basic Meditation	23	8	15
Control	20	3	21
Total	**67**	**15 (22%)**	**52 (78%)**

Age, gender, and type of medication can influence BP. Thus, one-way ANOVA and Chi-square tests were used to compare these baseline characteristics for the three experimental groups. No significant differences were found between the ages of the participants in each group (ANOVA: $F = 0.49$; $df = 2$; n.s.) their gender (Chi-square: $\chi_2 = 0.16$; $df = 2$; n.s.) or the number on beta-block medication (Chi-square: $\chi_2 = 3.398$; $df = 2$; n.s.).

One-way ANOVA's were also used to test differences between the experimental groups on baseline measures. A significant difference was found for Problem-focused coping ($F = 3.67$; $df = 2$; $\mathbf{p < 0.05}$) Emotion-focused coping ($F = 3.81$; $df = 2$; $\mathbf{p < 0.05}$) and Internality ($F = 4.12$; $df = 2$; $\mathbf{p < 0.05}$) measures (see Graph 1). These variables are likely to be related to BP and thus, the possible biasing effects of their initial differences were co-varied out from all relevant comparisons. This,

consequently, reduced the data that was analysed for each measure (see Appendix 12 for sample sizes and pre-treatment means).

Graph 1: Baseline Means of the Measures Co-varied Out For Each Experimental Group



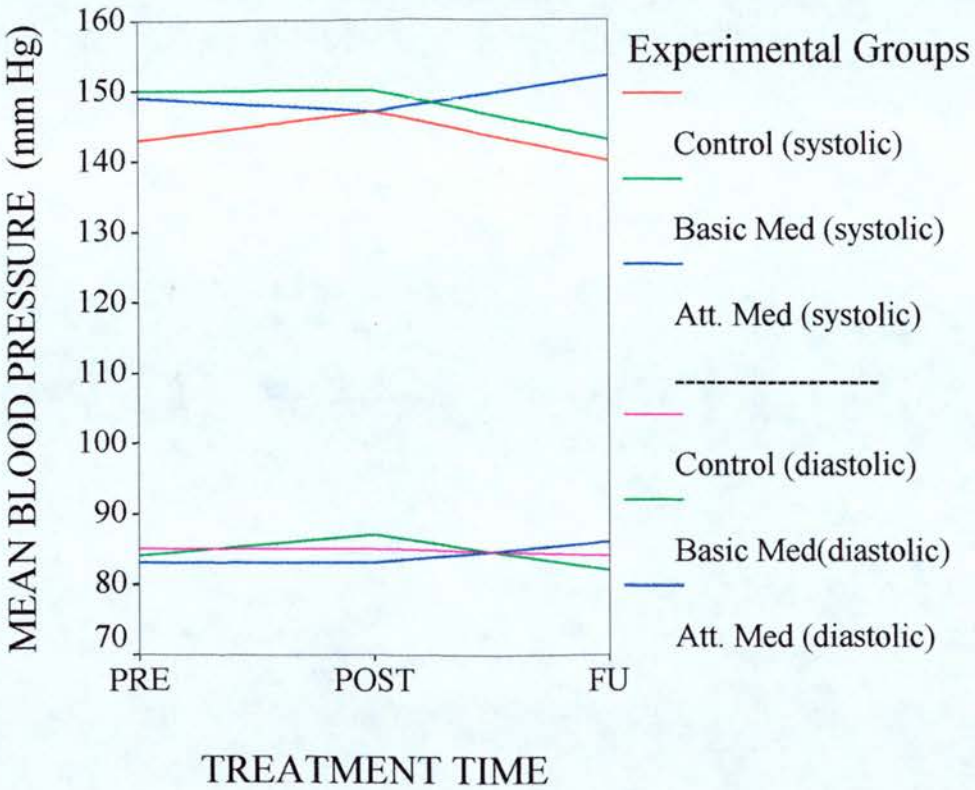
3.2 HYPOTHESES-RELATED DATA

MANCOVA was employed to test the hypotheses-related data and the Pillai's Trace test results were reported. ANCOVA was used to investigate in more detail any significant findings. A summary of the descriptive statistics can be found in Appendix 12.

3.2.1 Hypotheses 1 & 2 (a)

For medicated hypertensive patients, between the start and end of treatment, and at three-month follow-up, the attitude-promoting meditation technique will be more effective than the basic technique, and both, independently, will be more effective than standard drug therapy alone at reducing blood pressure. No significant difference between the three experimental groups, over time, for both systolic blood pressure ($F = 0.461$; $df = 2$; n.s.) and diastolic blood pressure ($F = 1.69$; $df = 2$; n.s.) was found (see Graph 2).

Graph 2: Mean Systolic and Diastolic Blood Pressure over Time for Each Experimental Group

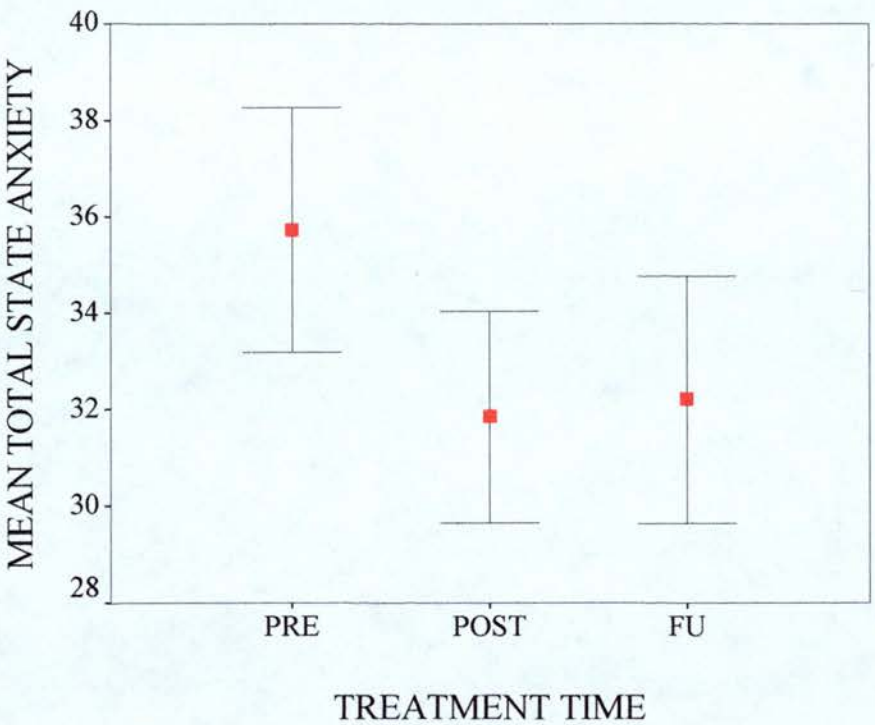


3.2.2 Hypotheses 1 & 2 (b)

For medicated hypertensive patients, between the start and end of treatment, and at three-month follow-up, the attitude-promoting meditation technique will be more effective than the basic technique, and both, independently, will be more effective than standard drug therapy alone at reducing anxiety. No significant difference between the three experimental groups, over time, for both state anxiety ($F = 0.509$; $df = 2$; n.s.) and trait anxiety ($F = 0.753$; $df = 2$; n.s) was found.

There was a significant difference in state anxiety, over the three time periods, for the whole population ($F = 4.582$; $df = 2$; $\mathbf{p < 0.05}$) which is shown in Graph 3. A significant reduction was found between pre-treatment and follow-up ($F = 6.296$; $df = 1$; $\mathbf{p < 0.05}$) and a significant increase was found between post-treatment and follow-up periods ($F = 5.526$; $df = 1$; $\mathbf{p < 0.05}$).

Graph 3: Mean State Anxiety & Standard Error over Time



3.2.3 Hypotheses 1 & 2 (c)

For medicated hypertensive patients, between the start and end of treatment, and at three-month follow-up, the attitude-promoting meditation technique will be more effective than the basic technique, and both, independently, will be more effective than standard drug therapy, alone, at increasing problem focused coping. No significant differences were found between the three experimental groups, over time, for both problem focused coping ($F = 0.740$; $df = 2$; n.s.) and emotion focused coping ($F = 0.637$; $df = 2$; n.s.).

3.2.4 Hypotheses 1 & 2 (d)

For medicated hypertensive patients, between the start and end of treatment, and at three-month follow-up, the attitude-promoting meditation technique will be more effective than the basic technique, and both, independently, will be more effective than standard drug therapy, alone, at reducing emotional control. No significant difference was found between the three experimental groups, over time, for total emotional control ($F = 1.366$; $df = 2$; n.s.).

3.2.5 Hypotheses 1 & 2 (e)

For medicated hypertensive patients, between the start and end of treatment, and at three-month follow-up, the attitude-promoting meditation technique will be more effective than the basic technique, and both, independently, will be more effective than standard drug therapy, alone, at increasing health behaviour. No significant difference was found between the three experimental groups, over time, for total health behaviour ($F = 1.746$; $df = 2$; n.s.).

3.2.6 Hypotheses 1 & 2 (f)

For medicated hypertensive patients, between the start and end of treatment, and at three-month follow-up, the attitude-promoting meditation technique will be more effective than the basic technique, and both, independently, will be more effective than standard drug therapy alone at increasing internal health locus of control. No significant differences were found between the three experimental groups, over time, for Internality ($F = 0.801$; $df = 2$; n.s.) Chance ($F = 1.140$; $df = 2$; n.s.) and Powerful Others ($F = 0.425$; $df = 2$; n.s.).

3.2.7 Hypotheses 1 & 2 (g)

For medicated hypertensive patients, between the start and end of treatment, and at three month follow-up, the attitude-promoting meditation technique will be more effective than the basic technique, and both, independently, will be more effective than standard drug therapy alone at increasing life satisfaction. No significant difference was found between the three experimental groups, over time, for life satifaction ($F = 1.610$; $df = 2$; n.s.).

3.2.8 Hypothesis 2 (h)

For medicated hypertensive patients, at the end of treatment and at three-month follow-up, the attitude-promoting meditation technique will be more effective than the basic technique at producing compliance. No significant differences were found between the two treatment groups, for 20 minute meditation compliance ($F = 0.580$; $df = 1$; n.s.) and mini-meditation compliance ($F = 0.014$; $df = 1$; n.s.). The mean compliance, for both groups over time, for the 20 minute meditation was between

'once' and 'once every other day' (score = 4.24), and between 'once' and 'twice' daily (score = 1.6) for the mini-meditations (see Appendix 12-h).

Table 13 shows the number of participants that reported practising 20-minute meditation and mini-meditation, on average, once or more a day. There was no difference found between these participants and those who did not carry out daily practice of 20-minute meditation (F= 0.29; df = 1; n.s.) and mini-meditations (F = 2.715; df = 1; n.s.).

Table 13: Frequency of Daily Compliance in Experimental Groups

Time	**Experimental Condition**	**N**	≥ 1 DAILY PRACTICE	
			20 Minute Range: 0-2	**Mini** Range: 0-4
Post-treatment	Basic Meditation	16	9	14
	Attitude-Promoting Meditation	16	11	15
	Total	**32**	**20 (63%)**	**29 (91%)**
Follow-up	Basic Meditation	16	7	12
	Attitude-Promoting Meditation	16	10	14
	Total	**32**	**17 (53%)**	**26 (81%)**

3.3 SUMMARY OF RESULTS

There were no significant statistical difference found between the attitude-promoting meditation, basic meditation and the control groups, on measures of blood pressure, anxiety, coping strategies, emotional control, health locus of control, health behaviour and life satisfaction, immediately after treatment and three months later. For the two meditation groups, there was no significant difference in meditation compliance rates. Thus, the hypothesis, that both hybrid techniques would be more effective for medicated hypertensive patients than drug therapy alone, at reducing BP and the risk factors of hypertension, was not supported. Neither was the hypothesis upheld that the attitude-promoting method would be more efficacious than the basic technique. There are a number of possible reasons for these results that will now be considered.

CHAPTER 4: DISCUSSION

4.1 SUMMARY OF RESEARCH

There has been a reluctance to apply the behavioural treatment of hypertension to primary care settings (e.g. JNC, 1997). This may be related to the fact that individual relaxation techniques have been combined, resulting in their apparent ineffectiveness in outcome reviews (e.g. Eisenberg *et al.*, 1993), or their inefficiency as part of complex behavioural programmes (e.g.Patel *et al.*, 1985). Meditation, independently, has shown efficacy in the treatment of hypertension (e.g. Schneider *et al.*, 1995). The investigation of various meditative methods has highlighted a number of components, which, together, may optimise the effectiveness and efficiency of meditation, making it more clinically applicable to primary care. These components include: the effortlessness of mantra meditation, as in Transcendental Meditation (Mahesh, 1963); the teaching structure, sensitivity, and flexibility of Clinically Standardised Meditation (Carrington, 1978); the utilisation of pre-existing beliefs, as in Benson's Faith Factor (Benson, 1984); and the cultivation of stress-reducing attitudes, as found in Kabat Zinn's programme (Kabat-Zinn, 1982).

Two hybrid meditation techniques (a basic and an attitude-promoting method) were devised to incorporate these components, with only the latter making explicit the stress-reducing attitudes that are the essence of meditation. Data was analysed from sixty-seven primary-care, hypertensive patients, on anti-hypertensive medication, that had been randomly allocated to one of the two meditation groups, or a standard drug therapy control group. All participants were assessed at the start and end of treatment, and at three-month follow-up, for BP levels, various hypertension risk

factors, life satisfaction, and meditation compliance. It was hypothesised that both hybrid techniques would show greater anti-hypertensive and psychologically enhancing effects than the control, by the end of treatment, and at three-month follow-up. The attitude-promoting meditation was also predicted to be more efficacious than the basic technique. The former, by advocating the practice and use of stress-reducing attitudes during meditation, would encourage their employment in daily life, and enhance meditation compliance.

4.2 DISCUSSION OF THE RESEARCH FINDINGS

4.2.1 Hypotheses 1 & 2 (a) – Reducing Blood Pressure

Stress has been linked to the development and maintenance of hypertension, although its precise relationship is unclear (Beilin, 1997). Various behavioural techniques, including meditation, have been found to combat the stress response, and have shown long-term efficacy in the treatment of hypertension (Patel and North, 1975; Patel *et al.*, 1981; 1985; Schneider *et al.*, 1995). In the present study, there was no significant difference found between any of the experimental groups, over time, for blood pressure. Thus, the hypotheses were not supported.

4.2.2 Hypotheses 1 & 2 (b) – Reducing Anxiety

Anxiety has been associated with the development and maintenance of hypertension (Linden and Feuerstein, 1981) and has also been connected to stress and stress-related illness (e.g. Speilberger *et al.*, 1970). The effectiveness of behavioural techniques and, in particular meditation, at reducing anxiety has been demonstrated (Kabat-Zinn *et al.*, 1992; Carrington *et al.*, 1980; Eppley *et al.*, 1989). No significant difference was found between any of the experimental groups, over time, for state or trait anxiety. Thus, the hypotheses were not supported by these results, which are at variance with the research studies highlighted above. This may be one reason why blood pressure was not significantly altered by either of the techniques.

For the group of participants, as a whole, the mean initial State (36.4) and Trait (40.2) Anxiety scores were greater than the age-related norms (33.4 and 32.8

respectively) but not clinically abnormal (Speilberger *et al.*, 1983). This trait finding is consistent with Crane (1981) who found that hypertensive patients had significantly higher Trait Anxiety than normo-tensive patient controls.

For all three experimental groups, there was a significant reduction in state anxiety, between the start of treatment and each of the end of treatment measures (post and follow-up). A small, but significant, increase between post treatment and follow-up state anxiety was also found. There are a number of possible reasons for these findings. Placebo and attentional effects may have influenced state anxiety. Patients may have had greater expectancies during the treatment phase and received attention from either the treatment groups or the monthly assessments. By the follow-up phase, the patients had not received any attentional or reinforcing factors for three-months and, thus, these effects on anxiety may have consequently diminished. The tendency for hypertensive patients to display high social desirability may also have influenced anxiety reporting (see 4.5.6 for more detail). Finally, the majority of follow-up measurements took place immediately before Christmas, which can be a particularly busy and stressful period, and may explain the significantly higher state anxiety levels between post treatment and follow-up.

4.2.3 Hypotheses 1 & 2 (c) – Increasing Problem Focused Coping

'Insulating' and defensive ways of coping with stress have been linked to hypertension (Delmonte, 1984a; Weiner *et al.*, 1962). General problem-focused coping has been associated with more positive emotion and outcome (Folkman and Lazuras, 1988), where as maladaptive strategies, such as, increased alcohol and food

intake, can directly effect BP (Beilin, 1997). Meditation has been found to increase problem-solving ability (McCallum, 1978); acceptance of self and others (Seeman *et al.* 1972), expressed emotion (Carrington and Ephron, 1975) and healthy behaviours (Haratani and Henmi, 1990). The current study demonstrated no significant difference between any of the experimental groups, over time, for both problem and emotion-focused coping. Hence, the results did not lend support to the hypotheses or the research documented. In this study, meditation may have been ineffective in reducing blood pressure because, not only did it fail to change people's subjective and physiological experience of stress, but it also did not alter their ways of coping with it.

4.2.4 Hypotheses 1 & 2 (d) – Reducing Emotional Control

Emotional control is a specific coping strategy that has been linked to hypertension (Boutelle *et al.*, 1987). Meditation has been found to be effective at increasing emotional expression (Carrington and Ephron, 1975). No significant difference was found in the current study between any of the experimental groups, over time, for emotional control, and therefore, the hypotheses were not supported. For the whole population, the mean total emotional control (55) was greater than the norm (51). This is consistent with Boutelle *et al.*'s (1987) findings.

4.2.5 Hypotheses 1 & 2 (e) – Increasing Health Behaviour

Poor diet, alcohol intake, and physical inactivity have been linked to hypertension. Stress can encourage an increase in unhealthy behaviour and therefore may indirectly affect BP through lifestyle (Beilin, 1988). Meditation has been found to increase

health behaviour (Haratani and Henmi, 1990). No significant difference was found in the current study between any of the experimental groups, over time, for health behaviour. Thus, the hypotheses are not upheld, and the findings are at variance with the research quoted. However, it is unlikely that the follow-up period was long enough for lifestyle change to occur, as other studies have reported significant change using six month to two year follow-ups (Alexander et *al.*, 1994).

4.2.6 Hypothesis 1 & 2 (f) – Increasing Internality

The uptake and maintenance of health behaviour and meditation has been linked to health locus of control (Kerr, 1986). Chronic conditions can often make people develop feelings of helplessness and reduce their internal locus of control (Fife, 1994). Meditation has been shown to be successful at increasing internal health locus of control (Hjelle, 1974). No significant difference between any of the experimental groups, over time, was found for the Internality, Chance, or Powerful Others indices. Thus, the findings do not support the hypotheses and are inconsistent with the quoted research.

4.2.7 Hypothesis 1 & 2 (g) - Increasing Life Satisfaction

Life satisfaction is important when comparing the efficacy of hypertension treatment, especially since drug side effects can reduce quality of life. Behavioural techniques, and in particular, meditation have been demonstrated to improve life satisfaction. (Alexander *et al.*, 1991; Patel and Marmot, 1987). No significant difference was found between any of the experimental groups, over time, for life satisfaction. The hypotheses were not supported by the results, which were at variance with data from

other studies. This may be because there was no subjective improvement on the other psychological measures. However, baseline measures suggest that participants had reasonable satisfaction with their lives to begin with, providing little room for meditation to make further improvements.

4.2.8 Hypothesis 1(h) – Meditation Compliance

Compliance is held to be important, as the effectiveness of meditation has been found to be dependent on the frequency and duration of practice (Kuchera, 1986).

4.2.8 (a) Full Compliance

Schneider *et al.* (1995) demonstrated significant BP reductions with 97% of the participants stating that they practiced practised TM for twenty minutes, 'twice' or 'almost twice' a day. The present study found no significant difference between compliance with the attitude-promoting meditation and the basic technique. Of those whose data was analysed, 63% reported on average between 'once' and 'twice' daily twenty-minute meditation practice at the end of treatment, and the majority (53%) maintained this at three-month follow-up. This indicates that the overall compliance rate, for both meditation groups, was considerably less than that reported by Schnieder *et al.* (1995). However, a direct comparison is difficult as a different rating scale was used in the present study. A relatively low compliance rate may have caused both the current techniques to be ineffective in reducing BP and impacting on the other psychological measures. Nonetheless, the fact that over half the participants maintained daily practice suggests that, for them, the techniques have some intrinsic reward that had not been detected by the assessment tools.

4.2.8 (b) Mini-Meditation Compliance

It is not clear, however, that daily full (20 minute) compliance is the key factor that affects outcome, as in Patel *et al.*'s (1985) study the reduction in BP was maintained largely by mini-relaxation and cognitive techniques four years after treatment. The TM taught in Schneider's research did not advise mini-meditation, but the present study did, and the subjects, whose data was analysed, were found to use mini-meditations more frequently than the full version. At post-treatment 91% applied one or more mini-meditations daily to stressful situations,dropping to 81% at three-month follow-up.

Unfortunately, Patel *et al.* (1981) do not state whether full compliance took place during the first three months after treatment. It is therefore uncertain from these studies whether the frequent use of mini-meditations, without an initial period of full compliance, is sufficient for BP reduction. However, initial full compliance is probably necessary to induce a practice effect, and enable the mantra and the relaxation response to become associated with each other through conditioning. This would enhance the efficacy of mini-meditations, as less time would be needed for the relaxation response to be triggered.

Furthermore, it is likely that the mini-meditation use in the present study was too 'mini', independent of full compliance. The mean was between one and two mini-meditations a day, and would have been inadequate to deal with the frequency of transient BP elevations reported by Carrington (1998). To maximise their effectiveness in combating stress, perhaps mini-meditations should be used

approximately every hour, in concordance with the 90 to 100 minute activity/rest cycles associated with Ultradian Rhythms (Kleitman and Rossi, 1992).

4.2.8 (c) Drop Out Rate: There was a six-percent drop out rate during the treatment phase. Most studies show a 20-30% drop out rate using various types of meditation (Carrington, 1998). The therapeutic relationship that the practice nurse had already established with the patients may have helped the patients' engagement, and providing instruction by a known member of staff, at the local surgery, might have normalised the uptake of meditation and made it more accessible. The fact that so many patients continued with the instruction suggests that they were satisfied with the teaching and were finding learning meditation beneficial in some way.

4.3 POSSIBLE EXPLANATIONS FOR THE RESEARCH FINDINGS

4.3.1 The Method of Meditation is Ineffective

The support of the null hypothesis may be due to the possibility that the method of meditation, used in both the techniques, lacks efficacy in the treatment of hypertension and its risk factors. Mantra meditation may encourage disassociative states in some individuals. It could be used by hypertensive patients as another method of insulating themselves from stress, which would increase their BP further. Furthermore, from anecdotal reports, some individuals found the passive effortlessness of the technique anxiety provoking, fearing that they would lose control or even become 'possessed' and, thus adjustments were made to their instruction, such as teaching breathing meditation, or reducing meditation time. Anxiety and panic attacks often predate the development of hypertension (Kubzansky *et al.*, 1998) and therefore, relaxation-induced anxiety may be more common in the hypertensive population. Some individuals may be better suited to other types of meditation, such as, mindfulness meditation, as it allows a greater engagement in the here and now and may advance more healthy coping strategies.

This highlights the need for techniques to be matched to need. However, numerous studies have shown that, overall, mantra meditation competently reduces BP (e.g. Schneider *et al.*, 1995) and impacts upon other physiological and psychological factors (Carrington, 1998). It has also been practiced for hundreds of years and if it was not rewarding it is unlikely that it would have withstood the test of time.

4.3.2 The Teaching Method is Ineffective

Perhaps the teaching structure and content have been stripped down too much, reducing the competencies of the meditation techniques. For instance, the length of meditation instruction may have been too short. This reflects anecdotal reports of participants wanting extra sessions after completing treatment to consolidate their knowledge and obtain feedback. More time, in particular, may have been needed for the attitude-promoting group to gradually come to terms with the new attitudes that were highlighted, and to integrate them into their lifestyle more effectively.

Other techniques that have shown efficacy in the treatment of hypertension tend to have greater teaching duration. For example, Patel's programme lasts for eight to twelve, one hour sessions, over six to eight weeks (Patel and North, 1975; Patel *et al.*, 1985), where as TM provides six sessions, of one and a half hours, over three months (Russel, 1976). TM also supplies individual sessions, which may have attentional effects on learners. Four, one hour sessions, over five weeks, in the present study, might have been insufficient for patients to learn meditation properly. While this may be the case, it does not explain the fact that, of the participants who reported at least daily meditation compliance, the majority sustained this level of practice over the three-month follow-up period.

Vital elements, necessary for meditation effectiveness, may have been omitted, in the same way Benson failed to include the 'faith factor' in his Respiratory One technique (Benson 1984). Perhaps, Patel and Kabat-Zinn's multi-faceted programmes are effective because each component has a synergistic effect, adding to the

effectiveness of the other elements. Also, the more components that are taught, the greater likelihood that an individuals specific needs will be met.

Hypertensive patients are heterogeneous, and therefore, will not find the same components of treatment beneficial, whether they are pharmacological or behavioural (Patel and Marmot, 1988). For instance, hypertension may develop, and be maintained, to varying extents, by a multitude of risk factor combinations, in different people (O'Brien *et al.*, 1995). Thus, for some, hypertension may be associated more with frequent anger expression and an anger management package may be most effective. For others, where environmental stress is prevalent, they may be more amenable to a psycho-social programme, where as drug therapy may be best suited for hypertensives with a predominant biological component.

Hypertensive individuals also possess different beliefs, strengths, resources and lifestyles. For example, those who exhibit Type A behaviour, and have difficulty in sitting still for even a short time, may find it relatively hard to practice meditation, and require, initially, a more physical relaxation technique. Although the techniques in the present study tapped into beliefs relating to common religions and science, there was no option to utilise other life philosophies, such as, pre-destination or astrology. Biofeedback may also have motivated the more sceptic patients and improved their compliance.

Therefore, if more component options had been taught in the study, patients may have found the instruction more rewarding and complied with practice more

rigorously. This, however, would have been inconsistent with the aim of the project, which was to make meditation more efficient and applicable to primary care. Also, CSM has a similar teaching format to the current study, in terms of teaching duration and content, and despite being taught by audio-tape, has been shown to be effective without extra elements being required (Carrington, 1998).

Carrington (1978) did, however, highlight that the reinforcement of meditation practice is particularly critical for hypertensive patients, as they often do not find their hypertension distressing, or even believe that they suffer from it. Due to the relatively low compliance rates in the present study, it may be that the teaching method does not motivate patients sufficiently. Patel supplied monthly monitoring and encouragement for a year after learning, and TM offers not only follow-up sessions, but also advanced lectures, meditation-related events, and retreats. TM, by doing this, may draw learners into it's organisation, making them feel as if they belong to something special and motivating them even further. Thus, similar health benefits may be obtained as from being a member of a particular faith or church (Benson, 1984).

A longer formal teaching duration in the current study may have also been beneficial to maintain motivation. The participants, nonetheless, were encouraged to have individual follow-up meetings with the practice nurse, at their monthly BP check-ups, but the majority of them did not attend. This suggests that their low compliance may be more related to the specific characteristics of the group (see 4.3.4).

4.3.3 Teacher Inexperience

Another possible reason why no significant results were discovered is that the teachers of the meditation classes were relatively inexperienced. They had only taught one pilot group before the study commenced. This is very different from TM teachers who have a year's intensive training before they begin teaching meditation (Russel, 1976). Expectancy is influential in treatment outcome (Hubble *et al.*, 1999) and Delmonte (1984a) found that high meditation credibility was associated with a positive meditative response and high compliance. The teachers of the present study may have come across as less knowledgeable, confident and convincing, reducing the patients' expectation of success and therefore lowering the effectiveness of the meditation techniques.

Furthermore, one of the teachers (the author) had only been practising meditation regularly for 6 months herself and although the other (the practice nurse) had previously learned meditation, she had not maintained her practice. Their understanding of meditation was, therefore, limited. Consequently, the research was inconsistent with the State-Specific approach suggested by Tart (1970), where individuals have extensive experience and understanding of both psychotherapy and eastern psychologies. However, this approach may be more relevant for Humanist psychotherapies and Transpersonal psychologies than in stress reduction.

If the study had possessed a greater sample size, it would have been interesting to test if the increasing experience of the teachers would have eventually improved the outcome. The author, by the time the control group was taught, considered that she

was a more credible teacher than at the beginning of the study, as instructions flowed more easily, and she could give more convincing and confident responses to questions asked about meditation. The inexperience of the teachers, however, had considerable ecological validity, as if meditation was applied, as standard, in primary care settings, there would be an initial period where the instructors would be meditation novices. It is doubtful, also, if the NHS would fund yearlong training for every practice nurse, even if the techniques did become popular.

4.3.4 Population Differences

An alternative theory for explaining the non-significant results is that the population used in the present study differed from those used in Patel's and Schneider's investigations, and this affected the outcome.

4.3.4 (a) Compliance Rates

The participants in the project practiced relaxation less frequently than those in the other studies, and this may have been insufficient for a therapeutic impact. It is possible that the techniques may have been effective if they had been applied, as prescribed, by the participants. With a larger sample size, high and low compliance could have been distinguished in the analysis to discover if there was a practice effect. In the event, the techniques probably were not given a proper trial and can not be comparable with TM and Benson's method.

The differences in compliance rates may be due to other contrasts in the populations that influenced motivation, such as initial BP, medication rates and effects, and

anxiety levels, which will be discussed below.

4.3.4 (b) Initial BP

There is evidence to suggest that hypertension treatment efficacy depends, to a large extent, on the pre-treatment BP (Jacob *et al.*, 1991). Seer and Raeburn (1980) found that the higher the pre-treatment BP, the greater the BP reduction that meditation produced. This corresponds to Wilder's Law of Initial Values that suggests the greater the initial value, the greater the possible change (Wilder, 1956). Both Patel's studies (Patel and North, 1975 and Patel *et al.*, 1981) had hypertensive subjects with higher mean initial BP than in the current study (163/100 mm Hg and 162/99 respectively, compared to 146/84 mm Hg found in the current study). This could have made it more likely for Patel to achieve significant reductions in BP with her behavioural programme compared to the present study.

4.3.4 (c) Anti-Hypertensive Medication

In Patel *et al.* (1981) none of the participants were being treated pharmacologically for hypertension, and in Schneider *et al.* (1995) only 50% were, and they were not differentiated in their subsequent analysis. It would be expected that medication would create a floor effect if it provided adequate BP control, reducing the possibility of meditation demonstrating a significant effect. This may account for Patel *et al.*'s larger mean reductions in BP than Schneider *et al.* (19/11 mm Hg compared to 10/6 mm Hg) and the lack of differences between the three groups of participants, all on medication, in the present study.

All Patel and North's (1975) patients were on medication, but their higher initial blood pressure suggests a less satisfactory level of BP control than in the present study. This may be due to advances in anti-hypertensive medication since the 1970's. The relatively well controlled levels of BP, in the present project, leaves little room for meditation techniques to demonstrate any additional major effects. It may be that meditation techniques, per se, are ineffective in the treatment of hypertensive patients whose blood pressure is already relatively well controlled by medication. If the Health Belief Model is considered (Becker and Maiman, 1975) it is likely that this sub-group's commitment to meditation will be weakened, compared to a non-medicated, or less well controlled medicated sample. In the absence of unpleasant drug side effects, the benefits over costs of medication, alone, may be seen as superior to the additional use of behavioural treatment. Drug regimes are generally less time consuming, and, initially, less disruptive to lifestyles, though meditation may have more diverse benefits in the long-term, such as greater confidence and reduced anxiety in addition to possible anti-hypertensive effects.

It would be interesting to have obtained detailed information on the type, combination and degree of compliance of anti-hypertensive drugs. Certain medications may also have selective effect on other variables, such as anxiety and life satisfaction reduction. Those treated with poly-pharmacy may have a more complex or resistant type of hypertension. It is possible that meditation techniques might produce a greater effect on the sub-group of patients whose hypertension was poorly controlled compared to those well controlled, but this needs further investigation with a larger sample size.

Detailed drug information was not reported in any of the previously quoted studies but the populations may have differed on these variables. The present study's population may have been more drug compliant due to the good relationships that they had with their GPs, that tend to be fostered in small rural GP practices, where the doctor is known personally and has a key role in the local community. This would have lead to better BP control, providing less room for change by relaxation techniques compared to the other studies.

It was originally planned to use patients with non-medicated borderline hypertension in the study, to remove the variable of medication, but unfortunately the available numbers of borderline cases were too small to carry out a comparison study. Alternatively, greater change may have been seen if the patients had stopped taking their medication before learning meditation. However, it is considered unethical to withhold drugs from those with severe hypertension (O'Brien *et al.*, 1995). Some subjects with mild hypertension did discontinue their drug regime in Schneider *et al.*'s study, but the GP's in the current investigation were reluctant for this to happen until sufficient BP reduction had been maintained for at least 6 months.

4.3.4 (d) Recruitment and Demographics

Both Patel *et al.*'s (1981) and Schneider *et al.*'s (1995) population also differed from the current study in terms of recruitment of subjects and their demographic characteristics. Patel *et al.*'s (1981) participants were recruited from a factory through random screening for cardiovascular risk factors. Due to this method of recruitment, a larger proportion of the population was younger, in employment,

likely to be in a lower socio-economic group and male compared to the current study. Thus, the aetiology of their hypertension may be different due to differences in genetic, constitutional and psycho-social factors. For example, for many older women in the current study their hypertension may be related to hormonal and menopausal changes, whereas in Patel's study the fact that the hypertensives were not medicated suggests that their hypertension may have been at an earlier stage in its development. Differences in weight may have also effected outcome, as obesity influences BP (Stamler *et al.,* 1978), however, this was not reported.

Although not specifically assessed in the present study, from anecdotal evidence and a mean age of over 60, it is likely that a large number of the participants were retired. BP in Western society often increases with age, possibly due to the accumulation of risk factors (Timino *et al.*, 1988). However, this could be, to some extent, offset by a slower paced lifestyle of retired hypertensive subjects. They may have already developed stress-reducing attitudes and behaviour, and consequently meditation training would have made less impact on them than on Patel *et al.*'s subjects.

The participants in Schneider *et al.* (1995) despite being of a similar age, mean initial BP and sex ratio, were all were paid volunteers that had been recruited through a random screening procedure, and were not necessarily being treated for hypertension. Thus, they are likely to differ from the current project's population, who were recruited from primary care, already pharmacologically treated for hypertension, and opted-in to the study without financial reward. Motivations may differ, particularly for those involved with the TM technique. Usually TM meditators

are highly motivated because they have to pay substantial amounts to learn the method, though in Schneider's study they were actually paid to learn by the researchers. In the present investigation, despite lower drop out rates during instruction, practice compliance rates were lower compared to other meditation studies. There may be a number of motivational reasons for this.

From anecdotal reports, some individuals were coming to the lessons 'just to please the doctor'. This is likely to have had a more detrimental effect on their compliance than more internally motivated patients, and it would have been interesting to compare health locus of control measures between the populations. As attending instruction incurred no great cost, in terms of time, money or effort, in the present study, some patients may have participated out of curiosity, to spectate, with no intention of seriously taking up meditation. From anecdotal reports, some patients debated the role of stress in hypertension as they were uncomfortable with the implication that they were 'stressed'. This may have lowered their expectations.

Schneider *et al.*'s subjects were all inner city African Americans, compared to the current rural population who were British, Caucasian and mostly middle-class. These social factors have all been found to influence BP, possibly via differences in exposure to stressors (e.g. Calhoun, 1992; Stamler *et al.*, 1967;). Thus, meditation may have had greater scope for reducing stress and blood pressure in Schneider's group.

4.3.4 (e) Psychological Variables

Delmonte (1984a) found that high compliance and a favourable meditation response in novice meditators were related to self-reported good psychological health and low physiological arousal during rest. Although Schnieder *et al.* (1995) did not assess for any psychological variables, their deprived and disadvantaged inner-city population may well have had a relatively poor psychological profile. Patel and Marmot (1987) only measured quality of life indices and did not mention the tools they used, making comparison difficult. The current study's population in a stable, prosperous community may have lower levels of stress, resulting in better psychological health. They did have anxiety levels greater than the normal population, but it is unclear if this is different from Patel's and Schnieder's groups.

4.4 METHODOLOGICAL PROBLEMS

4.4.1 Lack of Statistical Power

The available sample size was insufficient to achieve adequate statistical power. Thus, significant differences between the groups may not have been obtained due to type II errors. Hence, the statistical findings should be viewed with caution. To achieve a large effect size, at Power = 0.8, p = 0.05, 21 participants would have been required for each group, on each measure, according to Cohen (1992).

Unfortunately, although the total population of hypertension sufferers in the surgery that met the study criteria, was asked to participate, more than half declined. Carrying out a multi-centre study was considered to obtain more participants, but this may have introduced confounding variables. Additionally, recruiting participants, organising and running the meditation groups, providing written reminders about blood pressure monitoring and the completion of questionnaires, and searching for information in patient files entailed a great number of hours. Thus, due to time and resource constraints, the study was restricted to one centre with the consequent limitations of sample size.

4.4.2 Biased Population

Of the 180 patients asked to participate, less than half opted into the study, and consequently, the subjects may not be a fully representative sample of the hypertensive population. They may have differed on personality variables from those who refused. Shafii *et al.* (1975) found that meditators, compared to non-meditators

took twice as many illegal drugs before they had learned meditation. This suggests that they were less conventional, more willing to experiment, or more anxious to begin with. Delmonte (1986) found that those who chose to take up meditation had greater psychological problems. He also found that they were older, had a more negative view of themselves, and had greater expectations about meditation. On the other hand those who opted out of the study may be more avoidant, or too stressed to have time to learn meditation. Unfortunately, there is no psychological or physiological data on those who opted out of the present study, though age and sex did not significantly differ from opt-in group. Thus, there is insufficient data available to determine sample representativeness.

The opt-outs may view meditation as unconventional or linked to hippie culture and instead adhere to a biological model of health. Anecdotal evidence supported this suggestion. So, although the techniques were designed to tap into pre-existing beliefs about science and reductionism, this did not help engage people in the first place. Uptake rates may change with future hypertensive generations, as Eastern and Western psychologies integrate, and the awareness of the interaction between body and mind becomes part of popular belief. As meditation appears less 'alternative' or alien, less effort may be required to develop a positive expectancy prior to meditation instruction. It will already exist in a similar fashion to the current faith in medical procedures.

4.4.3 Placebo Effects

Although the control group did not receive any meditation instruction in the

treatment or follow-up period, they had been told that it would be offered to them in the future. This may have created expectancy effects, and, together with the attentional consequences of the assessment phases, may have reduced the differences between the control and treatment groups.

4.4.4 Limited Follow-up Period

Attitudes and lifestyle can take at least two years to be altered by regular meditation practice and there may therefore have been insufficient time for differences between the three experimental groups to become manifest. This is especially true if, due to lack of exposure to major stressors, within the three-month follow-up period, new stress-reducing attitudes and skills could not be practiced and reinforced.

4.4.5 Difficulties with BP Measurement

It was not possible to measure all the participants' BP exactly at the same time period. Some participants, especially the controls, delayed in arranging their BP check ups. Also the practice nurse was unable to monitor some subjects follow-up BPs on time due to a period of sick leave.

Single BP readings are often unreliable, as BP is not fixed. It varies from minute to minute, depending on the activity, time of day and level of arousal. 'White coat' effects are common, where individuals react to the measurement of their blood pressure with anxiety and elevations in pressure (Pickering, 1968). Consequently, individual BP readings only represent a snapshot of what is going on, and not the overall picture.

Several studies have demonstrated that a truer estimate of BP can be obtained by averaging multiple readings taken on several different occasions (e.g. Garcia *et al.*, 1997; Seer and Raeburn, 1980). Digital monitors have also been found to be more reliable (O'Brien *et al.*, 1995). Thus, more accurate BP measurements could perhaps have been obtained, in the present study, if a digital BP machine had been used on successive occasions at the surgery, or if 24-hour ambulatory measures had been employed. The ambulatory monitoring would have been particularly useful, as it could have demonstrated the pattern of transient changes in BP throughout the day. This then could have been compared with the individuals own assessment of tension that they carried out during their first week of meditating. However, providing ambulatory or digital monitors for each of the 67 participants was outwith the scope of the research budget. Furthermore, although the use of single BP measures was methodologically inferior, it conformed to the reality of standard clinical practice to which the research was geared.

4.4.6 General Difficulties with Psychological Measurement

The fact that no significant differences were found between the meditation groups and the control, on any of the psychological measures was at variance with the anecdotal reports of change. Participants described a greater ability to cope with the minor stresses in their lives, less irritability, and more confidence. This could lead one to conclude that the psychological assessments in the present study were insufficiently sensitive to detect subtle changes occurring in the treatment groups. Tart (1969) commented that 'in [the] subject's own estimate of his behaviour, an internal state is a rich and promising source of data which some experimenters tend

to ignore in their passionate search for objectivity'. Thus, these anecdotal reports should not be totally discounted. A self-report measure of global improvement or semi-structured interviews may have been more productive.

High social desirability and lie scores have been found to be associated with high BP (Weinberger *et al.*, 1979), which is consistent with hypertensive patients' tendency to insulate themselves from stressful situations in order to maintain behavioural control (Weiner *et al.*, 1968). Thus, hypertensives may have a tendency to 'fake good' and this limits their reporting of psychological distress, which is seen as less culturally acceptable than somatic symptoms (Parkes, 1980). Thus, baseline measures might be falsely minimised, leading to a reduced possibility for a significant change with treatment to be recorded.

4.4.7 Specific Difficulties with Psychological Measurements

There are a number of problems with each of the assessments that will now be discussed.

4.4.7 (a) State-Trait Anxiety Inventory

The state-anxiety sub-scale does not comprehensively assess the somatic symptoms and behavioural aspects of anxiety (Walker, 1990). As somatic symptoms are seen as more socially acceptable than cognitive ones, the former are more likely to be reported by hypertensive patients, and therefore, are particularly relevant. Endler *et al.* (1976) also criticised the Trait Anxiety sub-scale for measuring only one aspect of the dimension, and suggested that a multi-situational assessment would be more

accurate. Thus, this measure may have failed to identify aspects of both state and trait anxiety within the experimental groups.

Furthermore, Gudjonsson (1981) recommends that defensiveness should be measured alongside trait anxiety. He found that subjects who reported low subjective disturbance to emotionally loaded questions, yet showed a large electrodermic response, had low trait anxiety, but high defensiveness scores. Thus, the self-report of trait anxiety may be inadequate because of conscious or unconscious insulating tendencies in hypertensive individuals. Thus, it would have been useful to distinguish the low and high defensive subjects that had low anxiety. This could have been achieved using the Marlow Crowne Social Desirability Scale (Crowne and Marlow, 1960).

4.4.7 (b) Revised-Ways of Coping Checklist

The subjects in the study reported that they found this measure the most difficult one of the battery to complete. Many did not fill in the questionnaire, as they had not experienced a recent major problem, or found few of the items applicable to their situation. The checklist has also been criticised for lacking completeness, in that there are some relevant coping strategies that are omitted, and that the problem versus emotion focused coping distinction is too simple (Carver *et al.*, 1989).

Some changes in reported coping may have been due to the type of stressor to which the questionnaire was applied, rather than any alteration in coping patterns due to meditation. For instance, when the situation is outwith the person's own control, such

as dealing with a terminal illness, emotion-focused coping, such as imagery, may be employed, even though problem-focused is habitually used for most problems.

It is also doubtful that individuals can recall the specific strategies they employed in a past situation. Tennen *et al.* (1985) found that individuals increasingly under-report aversive life events as the time between the event and recall extends. Recency effects, if strategies are used sequentially, may interfere with the memory of the earlier techniques (Rothbaum *et al.*, 1982).

Within a three-month period there are unlikely to have been many major life events for the study's subjects. A measure of coping with daily minor stresses may have been more useful for formally recording the changes that were reported anecdotally. Additionally, from the author's personal experience, changes in coping strategies may be easier to maintain for minor incidents than for major stressors, where there is a tendency to revert to old ways of coping, prior to learning meditation. Transient changes in BP may reflect daily hassles rather than responses to occasional major events. Thus, coping with infrequent major events may be less relevant than the experience of frequent minor stresses. Lazuras' (1984a) Daily Hassles Scale or Cohen *et al.*'s (1983) Perceived Stress Scale could have been used to assess this, but Brannon and Feist (1997) suggest that more research is required on their validity and reliability.

4.4.7 (c) Courtald Emotional Control Scale

Watson and Greer (1983) question whether this scale gives an accurate report of emotional control behaviour. They found that patients with heart disease, in particular, had a tendency to 'fake good' responses. Again, as for trait anxiety, insulating ways of coping could have interfered with results. A way to have confirmed this would have been to compare the hypertensive patients' responses with that of a significant other, completing the measure on their behalf. In the absence of such a check some doubts must be raised about the scale's validity.

4.4.7 (d) Health Behaviour Checklist

The Health Behaviour Checklist was non-standardised, and therefore its validity and external reliability is unknown. Thus, only limited conclusions can be drawn from it. Again, it is difficult to tell if subjects were 'faking' responses. Changes in weight, which can be more accurately measured, may have been more sensitive than the above checklist to changes in health behaviour, such as diet and exercise. More invasive measures, such as liver function and blood sugar levels, could also have been used, but this may have influenced compliance.

4.4.7 (e) Modified Social Problem Questionnaire

This questionnaire resulted in a ceiling effect occurring which suggests it was insensitive to change. The authors of the measure admit that it may be more useful when a large number of social problems are expected and therefore less applicable to a mostly middle-class rural population (Corney and Clare, 1985). Often the questions regarding employment and partners were not relevant to this older age group.

4.4.7 (f) Practice Checklist

Only limited conclusions can be drawn from this compliance measure, as it was non-standardised, its validity and reliability are unknown, and it is unclear if subjects were 'faking' responses. The need for social desirability may be why a number of participants did not complete it. To reduce preparation time for the researcher, the same set of assessments, including the Practice Checklist, were given to all experimental groups, at each of the three assessment periods, even though the Practice Checklist was not applicable for the control group or for baseline measurement. Thus, this design, and the instructions for the measure's completion may have been confusing. This, together with the Checklist's positioning, on the last page of the assessment set, may have also resulted in its lower completion rate (see Appendix 4).

4.4.8 Experimenter Bias

The practice nurse, who was involved in teaching the meditation, also measured the participants' BP levels. Irvine and Logan (1991) argued that to reduce experimental bias, readings should be taken by someone 'blind' to the treatment conditions. This was not possible within the constraints of the project, as this practice nurse was the only professional with the experience and time to take readings. It was also clinically advantageous that she was involved in BP monitoring, as she was regularly available to trouble-shoot any problems that patients had with their meditation practice. She was also the participants' usual BP monitor. Therefore the measurement setting had greater ecological validity, and was likely to have less of a 'white coat' effect than with an unknown experimenter.

Alternatively, a Random Zero sphygmomanometer could have been used, which varies the zero position of the mercury column in a random fashion and only reveals the true zero after the measurement has been taken (e.g. Patel and North, 1975). Unfortunately, financial constraints prevented one being used in the study.

The same teachers taught both types of meditation technique and their expectations about which technique was most effective may have influenced outcome. Additionally, although stress-reducing attitudes were not made explicit in the basic meditation group, it was difficult not to convey these implicitly, thus reducing the distinction between the techniques. There was no other professional available to teach the groups, but if another teacher had been introduced, it may have been hard to control for level of experience and other non-specific variables.

4.5 FURTHER RESEARCH

Future studies in this field should at least attempt to remedy the recognised defects of the present project, such as obtaining a larger sample size and improving BP measurement etc., for a similar population. A longer follow-up may also be more useful in determining the techniques' long term effects, as attitudinal change can take longer to develop than alterations in behaviour. A greater emphasis, however, on sustaining the subjects' motivation and compliance would also be desirable in a re-designed study. The attitude-promoting hybrid technique should be investigated in more detail. It could be compared again with standard drug treatment, but also with a group taught using a self-help package (tapes and manual), and with one taught more intensively by the therapist, for a longer period. Thus, the effect of teacher variables and duration of instruction on meditation outcome could be ascertained.

Additionally, a project employing a similar design to the above, but using different populations should be considered. For instance, a repetition of the study using unmedicated, borderline, hypertensive patients would be useful in exploring the feasibility of meditation techniques in general practice. Participants may be more motivated to learn meditation if it is sold to them as a prevention technique that may obviate the use of anti-hypertensive drugs. As BP increases with age, long-term follow-up of this group could determine whether meditation moderates this incline and whether anti-hypertensive medication is eventually required for BP control.

Perhaps, research should also look at matching meditation to the individual, rather than investigating which technique is most effective for the population as a whole.

This may have an implication on compliance also. Patient profiles could be developed so that on the basis of certain pre-test indicators meditation success or failure could be predicted. For example, Pagano and Warrenburg (1983) found that meditators who had greater absorbed attention were more likely to continue regular meditation and experience deeper relaxation.

Finally, measures more sensitive to the subtle psychological changes that many meditators report, such as greater well being and more confidence, require to be developed.

4.6 SUMMARY AND CONCLUSIONS

The design and implementation of this study was inevitably restricted by the realities of the primary care setting and unfunded student research. Resources, time, and the nature and number of the available subjects were significantly limited, resulting in an experimental design lacking adequate statistical power to detect moderate effects. The study failed to demonstrate any significant difference between the three experimental groups on blood pressure, or any of the psychological variables, over a four-month period. Thus, for a population of older, medicated, hypertensive patients from a rural, middle class community, with blood pressure controlled on average to the borderline level, there was no proven effect of either the attitude-promoting or the basic meditation techniques.

It may be that meditation, in general, was therapeutically ineffective for this particular group of hypertensives. Alternatively, the specific hybrid techniques, which had been constructed and modified from other meditative methods, might have been oversimplified, omitting essential therapeutic elements. A different assembly of components may be more successful, as was found with TM (Schnieder *et al.*, 1995). However, we should not conclude, at this point, that there is no role for meditation, and in particular these techniques, in the primary care treatment of hypertension. It is possible that if more experienced teachers were used and/or the level of meditation compliance was higher, that a greater anti-hypertensive effect could have been obtained, which might have proved significant.

Despite these improvements, these techniques may still have been ineffective, and therefore inappropriate, for the treatment well-controlled, medicated populations of hypertensive patients. They might be better reserved for unmedicated, borderline, or mildly hypertensive patients, prior to any decision being made about drug therapy. A successful outcome may avoid the use of anti-hypertensive medication and act prophylactically against further rises in BP. Specific research is needed to demonstrate the usefulness of meditative techniques in such groups.

CHAPTER 5: REFERENCES

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APPENDIX 1:
STATE-TRAIT ANXIETY INVENTORY

STA – INVENTORY Y-1

A number of statements which people have used to describe themselves are given below. Read each statement and then fill in the appropriate number to indicate how you **feel right now**, that is, at this moment. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

1 = not at all

2 = somewhat

3 = moderately so

4 = very much so

1. **I feel calm** ☐
2. **I feel secure** ☐
3. **I am tense** ☐
4. **I feel strained** ☐
5. **I feel at ease** ☐
6. **I feel upset** ☐
7. **I am presently worrying over possible misfortunes** ☐
8. **I feel satisfied** ☐
9. **I feel frightened** ☐
10. **I feel comfortable** ☐
11. **I feel self confident** ☐
12. **I feel nervous** ☐
13. **I am jittery** ☐
14. **I feel indecisive** ☐
15. **I am relaxed** ☐
16. **I feel content** ☐
17. **I feel worried** ☐
18. **I feel confused** ☐
19. **I feel steady** ☐
20. **I feel pleasant** ☐

STA – INVENTORY Y-2

A number of statements which people have used to describe themselves are given below. Read each statement and then fill in the appropriate number to indicate how you **generally feel**. There are no right or wrong answers. Do not spend too much time on any one statement, but give the answer which seems to describe your present feelings best.

1 = almost never

2 = sometimes

3 = often

4 = almost always

21. I feel pleasant ☐

22. I feel nervous and restless ☐

23. I feel satisfied with myself ☐

24. I wish I could be as happy as others seem to be ☐

25. I feel like a failure ☐

26. I feel rested ☐

27. I am 'calm, cool and collected' ☐

28. I feel that difficulties are piling up so that I can not overcome them ☐

29. I worry to much over something that really doesn't matter ☐

30. I am happy ☐

31. I have disturbing thoughts ☐

32. I lack self-confidence ☐

33. I feel secure ☐

34. I make decisions easily ☐

35. I feel inadequate ☐

36. I am content ☐

37. Some unimportant thoughts run through my mind and bother me ☐

38. I take disappointments so keenly that I can't put them out of my mind ☐

39. I am a steady person ☐

40. I get in a state of tension or turmoil as I think over my recent concerns and interests ☐

APPENDIX 2:
REVISED WAYS OF COPING CHECKLIST

REVISED WAYS OF COPING CHECKLIST

Please think of a **major problem** that you have had to cope with recently. The items below represent ways that you may have dealt with this problem. Please fill in the appropriate number to indicate the degree to which you used each of the following thoughts/behaviours to deal with your problem.

0 = Never used
1 = Rarely used
2 = Sometimes used
3 = Regularly used
N/A = Not Applicable

1. **Bargained or compromised to get something positive from the situation** ☐
2. **Counted my blessings** ☐
3. **Blamed myself** ☐
4. **Concentrated on something good that could come out of the whole thing** ☐
5. **Kept my feelings to myself** ☐
6. **Figured out who to blame** ☐
7. **Hoped a miracle would happen** ☐
8. **Asked someone I respected for advice and followed it** ☐
9. **Prayed about it** ☐
10. **Talked to someone about how I was feeling** ☐
11. **Stood my ground and fought for what I wanted** ☐
12. **Refused to believe that it had happened** ☐
13. **Criticised or lectured myself** ☐
14. **Took it out on others** ☐
15. **Came up with a couple of different solutions to my problem** ☐
16. **Wished I were a stronger person – more optimistic and forceful** ☐
17. **Accepted my strong feelings, but didn't let them interfere with other things too much** ☐
18. **Focused on the good things in my life** ☐
19. **Wished that I could change the way that I felt** ☐
20. **Changed something about myself so that I could deal with the situation better** ☐
21. **Accepted sympathy and understanding from someone** ☐

CONTINUED.../

Please continue to fill in the appropriate number to indicate the degree to which you used each of the following thoughts/behaviours to deal with your problem.	**0 = Never used** **1 = Rarely used** **2 = Sometimes used** **3 = Regularly used** **N/A = Not Applicable**

22. Got mad at the people or things that caused the problem ☐

23. Slept more than usual ☐

24. Spoke to my clergyman about it ☐

25. Realised that I brought the problem on myself ☐

26. Felt bad that I couldn't avoid the problem ☐

27. I knew what had to be done, so I doubled my efforts and tried harder to make things work ☐

28. Thought that others were unfair to me ☐

29. Daydreamed or imagined a better time or place than the one I was in ☐

30. Tried to forget the whole thing ☐

31. Got professional help and did what they recommended ☐

32. Changed or grew as a person in a good way ☐

33. Blamed others ☐

34. Went on as if nothing had happened ☐

35. Accepted the next best thing to what I wanted ☐

36. Told myself things could be worse ☐

37. Talked to someone who could do something concrete about the problem ☐

38. Tried to make myself feel better by eating, drinking, smoking, taking medications, etc. ☐

39. Tried not to act too hastily or follow my own hunch ☐

40. Changed something so things would turn out right ☐

41. Avoided being with people in general ☐

42. Thought how much better off I am than others ☐

43. Had fantasies or wishes about how things might turn out ☐

CONTINUED../

Please continue to fill in the appropriate number to indicate the degree to which you used each of the following thoughts/behaviours to deal with your problem.	**0 = Never used** **1 = Rarely used** **2 = Sometimes used** **3 = Regularly used** **N/A = Not Applicable**

44. Just took things one step at a time ☐

45. Wished the situation would go away or some how be finished ☐

46. Kept others from knowing how bad things were ☐

47. Found out what other person was responsible ☐

48. Thought about fantastic or unreal things (like the perfect revenge or finding a million pounds) ☐

49. Came out of the experience better than when I went in ☐

50. Told myself how much I have already accomplished ☐

51. Wished that I could change what had happened ☐

52. Made a plan of action and followed it ☐

53. Talked to someone to find out about the situation ☐

54. Avoided my problem ☐

55. Relied on faith to get me through ☐

56. Compared myself to others who are less fortunate ☐

57. Tried not to burn my bridges behind me, but left things open somewhat ☐

APPENDIX 3:
COURTALD EMOTIONAL CONTROL SCALE

COURTAULD EMOTIONAL CONTROL SCALE

Please circle the appropriate number to indicate how often you use <u>each</u> of the 7 coping strategies in the 3 sections.

Section 1 When I feel angry (very annoyed) ...	Almost never			Almost always
1. I keep quiet.	1	2	3	4
2. I refuse to argue or say anything.	1	2	3	4
3. I bottle it up.	1	2	3	4
4. I say what I feel.	1	2	3	4
5. I avoid making a scene.	1	2	3	4
6. I smother my feelings.	1	2	3	4
7. I hide my annoyance.	1	2	3	4

Section 2 When I feel unhappy (miserable) ...				
1. I refuse to do anything about it.	1	2	3	4
2. I hide my unhappiness.	1	2	3	4
3. I put on a bold face.	1	2	3	4
4. I keep quiet.	1	2	3	4
5. I let others see how I feel.	1	2	3	4
6. I smother my feelings.	1	2	3	4
7. I bottle it up.	1	2	3	4

Section 3 When I feel afraid (worried) ...				
1. I let others see how I feel.	1	2	3	4
2. I keep quiet.	1	2	3	4
3. I refuse to say anything about it.	1	2	3	4
4. I tell others all about it.	1	2	3	4
5. I say what I feel.	1	2	3	4
6. I bottle it up.	1	2	3	4
7. I smother my feelings.	1	2	3	4

APPENDIX 4:
HEALTH BEHAVIOUR CHECKLIST

HEALTH BEHAVIOUR CHECKLIST

Please tick an appropriate box for each of the numbered sections:

1. Roughly, how frequently do you exercise in a week?

☐ **Occasionally** (ie not regularly or less than 20 minutes a week)

Regular exercise for more than 20 minutes:

☐ **Once** a week, involving low or high level activity
☐ **Twice** a week, low or high level activity
☐ **Three** times a week, **low level** activity (eg walking, gardening)
☐ **Three** times a week, **high level** activity (eg jogging, aerobics, cycling)
☐ **More than three** times a week, low or high level activity.

2. Roughly, how much alcohol do you drink in a week?

☐ **0**
☐ **1 – 5** glasses of wine/spirits, or, half pints of beer
☐ **6 – 10** glasses of wine/spirits, or, half pints of beer
☐ **11 – 15** glasses of wine/spirits, or, half pints of beer
☐ **16 – 20** glasses of wine/spirits, or, half pints of beer
☐ **more than 20** glasses of wine/spirits, or, half pints of beer

3. Roughly, how many cigarettes do you smoke in a day?

☐ **None**
☐ **1 – 5**
☐ **6 – 10**
☐ **11 – 15**
☐ **16 – 20**
☐ **more than 20**

4. Roughly, how many times do you eat fruit, in a week?

☐ **0 – 3 times**
☐ **4 – 7 times**
☐ **8 – 11 times**
☐ **12 – 15 times**
☐ **16 – 20 times**
☐ **more than 20 times**

5. Roughly, how many times do you eat vegetables, in a <u>week</u>?

- ☐ 0 – 3 times
- ☐ 4 – 7 times
- ☐ 8 – 11 times
- ☐ 12 – 15 times
- ☐ 16 – 20 times
- ☐ more than 20 times

6. Roughly, how many times do you eat low-fat butter/cheese/yoghurt, in a <u>week</u>?

- ☐ 0 – 3 times
- ☐ 4 – 6 times
- ☐ 7 – 9 times
- ☐ 10 – 12 times
- ☐ 13 – 15 times
- ☐ more than 16 times

7. Roughly, how many times do you eat brown bread/pasta/rice, in a <u>week</u>?

- ☐ 0 – 3 times
- ☐ 4 – 6 times
- ☐ 7 – 9 times
- ☐ 10 – 12 times
- ☐ 13 – 15 times
- ☐ more than 16 times

8. Roughly, how many times do you add salt to your food/cooking, in a <u>week</u>?

- ☐ 0 – 3 times
- ☐ 4 – 6 times
- ☐ 7 – 9 times
- ☐ 10 – 12 times
- ☐ 13 – 15 times
- ☐ 16 or more times

9. Roughly, how many times do you eat red meat, in a <u>week</u>?

- ☐ 0 times
- ☐ 1 time
- ☐ 2 times
- ☐ 3 times
- ☐ 4 times
- ☐ 5 or more times

10. Roughly, how many times do you eat fish, in a <u>week</u>?

☐	**0 times**	☐	**3 times**
☐	**1 time**	☐	**4 times**
☐	**2 times**	☐	**5 or more times**

11. Roughly, how many times do you eat fried food, in a <u>week</u>?

☐	**0 times**	☐	**3 times**
☐	**1 time**	☐	**4 times**
☐	**2 times**	☐	**5 or more times**

12. Roughly, how many times do you eat cakes/biscuits/chocolate/sweets, in a <u>week</u>?

☐	**0 – 1 times**	☐	**6 – 7 times**
☐	**2 – 3 times**	☐	**8 – 9 times**
☐	**4 – 5 times**	☐	**10 or more times**

APPENDIX 5:
HEALTH LOCUS OF CONTROL

HEALTH LOCUS OF CONTROL SCALE

This questionnaire is designed to determine how different people view certain health related issues. It comprises a number of statements. You are asked to indicate the how much you agree or disagree with each statement on a scale of one to six. Do this by circling the appropriate number next to each statement. Please circle only one number per statement. There are no right or wrong answers

1 = strongly disagree
2 = moderately disagree
3 = slightly disagree
4 = slightly agree
5 = moderately agree
6 = strongly agree

If I get ill, it is my own behaviour which will determine how soon I will get well again	1	2	3	4	5	6
No matter what I do, if I am destined to get ill, I will get ill	1	2	3	4	5	6
Having regular contact with my doctor is the best way for me to avoid illness	1	2	3	4	5	6
Most things that affect my health happen to me by accident	1	2	3	4	5	6
Whenever I don't feel well, I should consult a medically trained professional	1	2	3	4	5	6
I am in control of my health	1	2	3	4	5	6
My family has a lot to do with my becoming ill or staying healthy	1	2	3	4	5	6
When I get ill, I am to blame	1	2	3	4	5	6
Luck plays a big part in determining how soon I will recover from an illness	1	2	3	4	5	6
Health professionals control my health	1	2	3	4	5	6
My good health is largely a matter of good luck	1	2	3	4	5	6
The main thing which affects my health is what I myself do	1	2	3	4	5	6
If I take care of myself I can avoid illness	1	2	3	4	5	6
When I recover from an illness, it is usually because other people (eg. doctors, nurses, family, friends) have been taking good care of me	1	2	3	4	5	6
No matter what I do I am likely to get ill	1	2	3	4	5	6
If it is meant to be, I will stay healthy	1	2	3	4	5	6
If I take the right actions I will stay healthy	1	2	3	4	5	6
Regarding my health, I can only do what my doctor tells me to do	1	2	3	4	5	6

APPENDIX 6:
MODIFIED SOCIAL PROBLEM SCALE

This questionnaire is designed to determine how satisfied you are with various aspects of your lifestyle. Please circle the most appropriate number.

	Very dissatisfied	Slightly dissatisfied	Slightly satisfied	Very satisfied
Housing How satisfied are you with your present accommodation.	1	2	3	4
Work How satisfied are you with your present employment situation	1	2	3	4
Financial Circumstances How satisfied are you with your current financial position	1	2	3	4
Social Contacts How satisfied are you with the quality of your relationships with friends/ relatives.	1	2	3	4
Marital/Partner Relationships How satisfied are you with your personal/ close relationships	1	2	3	4

APPENDIX 7:
PRACTICE CHECKLIST

PRACTICE CHECKLIST

Please only complete the following if you have been taught meditation.
Tick an appropriate box for each of the numbered sections:

1. Roughly, how often do you meditate for 20 minutes?

- ❑ 2 times a **day**
- ❑ **Once** a **day**
- ❑ 1 times **every other day**
- ❑ 2 times a **week**
- ❑ 1 times a **week**
- ❑ 1 times **every 2 weeks**
- ❑ **Once** a **month**

2. Roughly, how many times do you use mini-meditations, in a day?

- ❑ **0**
- ❑ **1**
- ❑ **2**
- ❑ **3**
- ❑ **4**
- ❑ **5**

APPENDIX 8:
PATIENT INFORMATION SHEETS

INFORMATION SHEET FOR PARTICIPANTS
The Effect of Meditation on Stress and Blood Pressure in Individuals with Hypertension

We invite you to participate in a research project. We believe it to be of potential importance. However, before you decide whether or not to participate, we need to be sure that you understand firstly why we are doing it, and secondly what would be involved if you agreed. We are therefore providing you with the following information. Read it carefully and be sure to ask any questions you have, and, if you want, discuss it with outsiders. We will do our best to explain and to provide any further information you may ask for now or later. You do not have to make an immediate decision.

1. The aim of this project is to discover how effective meditation is at reducing stress and blood pressure levels, in the hope it can be used to help individuals, like yourself, with hypertension.

2. If you agree to take part, you will be asked to participate in a meditation class composed of four, one hour sessions (see meditation handout below). About 90 people will be taught so you may have wait some months before starting the class.

3. You will also be asked initially to complete a few questionnaires, which will take around 15 minutes. You will be asked to complete them again one month and three months later. The questionnaires will be sent to your home, where you can return them in a pre-paid envelope provided.

4. Finally, you will be asked if the practice nurse can measure your blood pressure on 3 occasions, in the month after you complete each set of questionnaires. She will also continue to monitor your blood pressure, monthly, for 6 months after the class ends. If, for any reason, your blood pressure increases you will be referred to your GP for treatment and will be given the opportunity to withdraw from the project.

5. Anything you say will be treated in confidence and only the researchers will have access to the information you provide.

Participation in this study is entirely voluntary and you are free to refuse to take part or to withdraw from the study at any time without having to give a reason and without this affecting your medical care or your relationship with the medical staff looking after you.

The Tayside Committee on Medical Research Ethics that has responsibility for scrutinising all proposals for medical research on humans in Tayside has examined the proposal and has raised no objections from the point of view of medical ethics. (Research records may be examined by monitors from the Tayside Committee on Medical Research Ethics).

Further information can be obtained from Susan Olley Tel. (1738) 621151.

MEDITATION CLASS FOR HYPERTENSION

You have been offered the opportunity to participate in this class because you have been diagnosed as being hypertensive or suffering from high blood pressure. The diagnosis and treatment of hypertension is extremely important as it can represent a serious risk to health, often appearing without any noticeable symptoms being experienced.

Life Style and Hypertension

In 90% of patients with hypertension no underlying disease can be found, but there is evidence that lifestyle plays a significant part in its development and maintenance. Poor diet, obesity, excessive alcohol consumption, lack of exercise and cigarette smoking have been identified as risk factors. However, research suggests that these factors contribute to only 50% of the incidence of cardiovascular diseases, including hypertension.

Stress and Hypertension

Stress is also thought to be a contributory factor, especially if experienced for prolonged periods. The role of stress in the development of hypertension may be direct, for example by increasing adrenaline, or indirect by encouraging unhealthy lifestyle behaviour. While it may be impossible to remove the sources of stress from our lives, there is evidence that certain stress-reduction techniques may help to moderate or reduce the harmful effects of stress.

Learning Meditation

The Meditation class is run, over 4 sessions, by a Clinical Psychologist attached to the Surgery, and the Practice Nurse. You will be given instruction in a stress-reduction method, the benefits of which have been confirmed by almost 30 years of research. Each of the sessions will last approximately one hour. You are, therefore, being asked to commit yourself to a relatively short period of instruction. One commercial organisation charges individuals £500 to learn a similar approach. Your instruction will be free but you will be asked to complete some very short questionnaires to allow us to evaluate the effectiveness of the class. The meditation technique you will be taught is very easy to learn because it does not require conscious effort or concentration.

While some forms of stress-reduction may be effective in the treatment of hypertension, they do require commitment to regular daily practice. In the same way as giving up smoking and changing diet can have beneficial effects upon health only as long as they are adhered to, so stress-reduction methods are only effective if they become part of one's daily life.

Stress Reducing Effects of Meditation

A number of stress-reduction methods have been applied to hypertension. These include progressive muscular relaxation, autogenic training, yoga and yoga breathing exercises, and meditation. All of these methods share the common goal of eliciting what has been called the Relaxation Response. This contrasts with the "Fight or Flight" response which is activated at times of danger, threat, and stress. By

necessity, this arousal response is triggered very rapidly as action in the face of danger often has to be instinctive and immediate. The Relaxation Response, on the other hand, is not triggered as quickly and regular practice is required to become proficient in its elicitation. The differences between these two responses are indicated by changes in a range of physiological processes. Some of these are shown in the Table below.

Fight or Flight Response	Physiological Effects	Relaxation Response
Increases	**Heart Rate**	Decreases
Increases	**Blood Pressure**	Decreases
Increases	**Respiratory Rate**	Decreases
Increases	**Sweat Gland Activity**	Decreases
Increases	**Blood Coagulation Rate**	Decreases
Increases	**Blood Flow to Muscles**	Decreases
Increases	**Muscle Tension**	Decreases
Increases	**Blood Glucose**	Decreases
Increases	**Oxygen Consumption**	Decreases

The research indicates that the health benefits of regular relaxation are significant, including a reduction in anxiety levels, improvements in sleep patterns, and less severe and frequent tension headaches. Lowered blood sugar levels in type II diabetics, reduction in cholesterol levels in those with high cholesterol, and less frequent seizures in epileptic patients also can occur, along with decreased blood pressure in hypertensive individuals.

Additional Effects of Meditation

In addition to these health benefits, individuals who practice mediation regularly report greater levels of concentration, work performance, energy and productivity. Increased clarity of thought, an ability to handle problems more easily and a lessening of a sense of urgency in life can also occur. Furthermore, individuals report feeling less tense and irritable, more confident and experience more refreshing sleep.

What is Meditation?

While the benefits of regular meditation practice can be profound, meditation itself is a simple process. Typically, it is practiced sitting and in a quiet environment. The object of the meditator's attention can be either a mentally repeated sound, known as a "mantra", one's own breathing, or some other appropriate focus. There is no one "right" method of meditation. Ideally, meditation should be carefully adapted to the needs of specific individuals. There are hundreds of practices which can be called "meditation". They all share the ability to bring about a special kind of free-floating attention where rational thought is by-passed and words become less important. It is experienced as a state of absorption, being rather than doing, feeling rather than

thinking about feelings. The technique you will be taught can be adapted to individual's needs.

Course Content

Session 1:
You will be instructed in the meditation technique. You will have the opportunity to practice the method during the class so that any questions about the process can be answered immediately afterwards.

Session 2:
This will be the following day and you will be expected to have practiced the method twice on your own between sessions. It is important that you begin meditating gradually as some individuals can experience uncomfortable sensations of stress release. This is perfectly natural and not harmful as it is the bodies way of getting rid of built up tension. You will be taught how to respond to the experience if it should occur. Each period of meditation will last 10 minutes. During the second session your practice will be refined and reviewed. You will also be asked to begin keeping a daily tension record, rating your tension level on a scale of 1-100 hourly.This will form the basis of using mini-meditations during the day to help moderate transient increases in blood pressure due to stress. There is some evidence that this might maximise the benefits of meditation for hypertension.

Session 3:
This will be one week after the second and will focus upon the use of mini-meditations and recognising signs of tension in the body. As stated above, hypertension does not have any symptoms for most individuals. However, if stress plays a role in hypertension, learning to identify signs of tension and taking steps to reduce stress may be an indirect way of regulating blood pressure.

Session 4:
The final session will be approximately 4 weeks after the third. This will be a review session but you will be given a telephone number to contact if you have any questions you want answered during the period of the course.

You will be asked to complete some questionnaires and it is essential that your blood pressure is monitored regularly. This will allow us to monitor your progress and ensure that there are no paradoxical effects of the meditation. In a very few individuals, some relaxation methods can increase blood pressure, so the meditation may not be suitable for everyone. It is imperative that, for the duration of the course, you continue taking your medication, as prescribed by your doctor.

Having read this, if you wish to participate in the course, it is necessary for you to read an information sheet about the class being part of a research project and then sign a consent form.

APPENDIX 9:
MEDITATION COURSE CONTENT

COURSE CONTENT

Session 1, Day 1:

- Hypertension risk factors
- Effectiveness of Meditation
- What meditation involves
- Guided practice
- Provision of tape and guidelines for home practice

Extra for Attitude Promoting Group

- Attitudes for dealing with distractions provided in lecture, guided meditation practice and tape

Session 2, Day 2:

- Summary of session 1
- Feedback about practice
- Trouble shooting
- Stress release effects and management
- Body tension and how to monitor it
- Rationale for completing Daily Tension record cards
- How to gradually increase practice duration to 20 minutes

Extra for Attitude Promoting Group

- Trouble shooting related back to the stress-reducing attitudes

Session 3, Day 9:

- Summary of session 2
- Feedback and trouble shooting
- Discussion of tension diaries
- Mini-meditation

Extra for Attitude Promoting Group

- Trouble shooting related back to the stress-reducing attitudes

Session 4, Day 35:

- Summary of all sessions
- Feedback and trouble shooting
- Solutions to common meditation problems
- Meditation during illness and exercise
- Contact phone number for trouble shooting in the future

Extra for Attitude Promoting Group

- Trouble shooting related back to the stress-reducing attitudes

APPENDIX 10:
MEDITATION COURSE HANDOUTS

MEDITATION: 1

WHY USE A RELAXATION TECHNIQUE? [FOR BOTH MEDITATION GROUPS]

a) Improved Health

Over the last 30 years, many relaxation techniques have been tried with a number of health problems, including, Hypertension, Asthma, Diabetes, Chronic Pain, Tension Headaches, Migraines, Tinnitus and Chronic Insomnia. Researchers argue that all relaxation techniques share the same ability to produce what they have called the **'relaxation response'**. They state that regular activation of this relaxation response is beneficial to our health in many ways, potentially **preventing the development and/or exacerbation of various illness.**

b)Protection From Stress

We do not have to suffer from severe, chronic stress to benefit from relaxation techniques. **We all experience daily minor stresses**, such making appointments on time, arguing with a loved one, watching a thriller on TV, staying up too late, or queuing in traffic. All these situations can activate our **'stress response'** (i.e. increase our blood pressure and blood sugar level; generate muscle tension; increase our heart and breathing rate; raise stress hormone levels; and block brain wave activity associated with states of mental calm).

Learning to elicit the relaxation response in these situations can have the **opposite effect** on our bodies (**reducing blood pressure and muscle tension** etc.) and, is therefore considered a way of protecting ourselves from the harmful effects of minor and major stresses.

The Complexity of the Stress-Health Relationship

Supporters of relaxation techniques argue that frequent activation of the **stress response contributes to a significant degree in the development of health problems**, such as, Cardiovascular Disease, Adult On-set Diabetes, Migraines, Irritable Bowel Syndrome, Chronic Pain and Insomnia. Almost everyone would agree that stress plays some part in the development of many health problems and that **health problems themselves are stressful**. There is, however, disagreement about the relative importance of stress, compared to other factors. The issue is

complicated by the fact that people react in a different way to similar circumstances in their lives. Consequently, some individuals will experience significantly greater stress than others when exposed to an event, such as, moving house, being stuck in a traffic jam or a bereavement. As a result, **it is simplistic to state that stress causes ill health, as people experience stress differently.**

From this perspective, it seems inappropriate to offer all individuals the same form of stress reduction technique. We would argue that in order for stress reduction to be effective, the method used must be **flexible** enough to adapt to individual need.

WHY MEDITATE?

a) Wide ranging effects

Meditation is often considered a **relaxation technique,** similar to techniques such as, Progressive Muscular Relaxation or Breathing Exercises. Although Meditation can produce the relaxation response, there is evidence that it has a wider range of beneficial effects and that it can be used more flexibly.

Over, the last 30 years, the Meditation technique has been the focus of much research. Transcendental Meditation (TM) has been the most widely researched method. TM studies have found that regular meditators experience **improved work and academic performance, greater creativity, improved inter-personal relationships, and a reduction in the desire for and use of alcohol, tobacco, and illicit drugs.** In fact, some insurance companies in the U.S.A. have been so persuaded by the data that they charge regular TM meditators lower premiums on life insurance. Unfortunately, the TM organisation sets high fees for people to learn the TM Technique and it does not reveal its methods to allow objective scientific scrutiny. You will be given instruction in a similar method of Meditation which has been evaluated and found to be equally effective in producing these benefits.

b) Long-term Benefits

The potential for more further-reaching benefits, compared to other relaxation techniques, was one of the reasons we have chosen to teach you Meditation. However, there is also evidence that people are **less likely to discontinue** their meditation practice compared to other techniques. All the evidence on the benefits of triggering the relaxation response suggests that **regular practice of relaxation methods is essential for the benefits to be maintained**. Discontinuing meditation, or not practising it regularly, leads to a progressive loss of any benefits achieved. Consequently, if the drop-out rate from Meditation is less than other techniques, teaching Meditation is more likely to ensure that you sustain practice and achieve longer term benefits.

WHAT IS MEDITATION?

a) Awareness of the Present

Meditation is about **attending to the present**. It also makes us aware of the habitual processes of the mind which distract us from the present. Many Meditation teachers talk about Meditation as being '**a process of awakening**'. They argue that most of us sleepwalk through our lives, victims of our habitual thoughts, feelings and behaviour. To illustrate this we would like you to try an exercise:

Sit up comfortably. Close your eyes lightly and take a moment to relax. Then, **take your attention to your breathing** and continue for about three minutes. Either become aware of the sensations of the air passing in and out of your nostrils, with each breath in, and each breath out or, if you prefer, feel the sensations of your abdomen as it rises and falls with each breath in, and each breath out. Any time you become aware of having become **distracted** from being attentive to your breath, **just bring your attention back** to the point of focus.

This exercise may have taught you many things. First, you may have been surprised at the number of distractions you experienced and how often you had to bring your attention back to the breath. In the Far East, the untrained mind has often been compared to a monkey, constantly leaping from one branch of a tree to another. In a similar fashion, they argue that our minds are **constantly moving from one thought or experience to another**.

Your reactions to this **monkey mind** may be interesting. For example, you may have found yourself passing judgement on how well you were doing and viewed every distraction as evidence that you were doing the exercise incorrectly. You may also have found yourself criticising the exercise, considering it "silly" or "ridiculous". Attitudes like these are **extremely common**. They, however, are not beneficial for meditation as they agitate rather than calm our monkey minds and **prevent us from focusing on the present**.

FOR ATITUDE-PROMOTING GROUP ONLY

b) The Development of Meditative Attitudes

Thus, Meditation is about **cultivating and applying certain attitudes** that enhance the meditative state and experience. These attitudes act like camera lenses, in that they enable us to focus on and enjoy the present moment with clarity, while allowing our **distracting thoughts to become blurred and unfocused in the background.** They settle our monkey minds, but enable us to remain alert and consciousness at the same time.

Meditation is **not about technique** – there are no rules and no standards that you need to measure your meditative performance against. Neither is it about controlling your mind. It is about **learning not to control** it. It teaches you **to listen to yourself**, rather than talk incessantly to yourself, and thus **choose to respond, rather than simply automatically react** to not only your thoughts in meditation, but also other events in your life. This can take some practice since it is so different from what we do normally. The difficulties we experience in Meditation, however, often mirror the difficulties that cause us stress in our daily lives.

MEDITATIVE ATTITUDES

1. Being Non-Judgmental

The brief exercise that you have experienced, and the whole process of Meditation, make us increasingly aware of our tendency towards judging, categorising, and labelling. This **judgmental process is central to our habitual reactions** to our daily experience and to our experience of things as stressful. There is no 'correct' way of meditating. Everyone experiences meditation differently and no two meditation sessions are the same. Some feel consistently peaceful, while others alternate between states of calm and restlessness. Thus, **do not compare experiences** - maintain a non-judgmental attitude and be an **impartial witness** to what goes on during meditation and other events in our lives.

2. Being Patient with Yourself

Although the exercise only lasted 3 minutes, you may have experienced it as feeling significantly longer. You may have found yourself becoming impatient for the exercise to come to an end. You may also have found yourself becoming impatient with the difficulties you experienced in maintaining your focus on the breath. The **frustration and impatience** we feel at these difficulties **only serve to increase our tendency to pass judgement** on ourselves and make meditation more difficult. Thus it is beneficial to be patient with yourself when practising meditation and in other areas of life. **Go with the meditative flow.**

3. Non-Striving

Every time you find yourself becoming distracted you may have found yourself trying even harder to force your attention to stay on the breath. In a sense, it is a bit like shouting at yourself to relax. Paradoxically, the more you relax from your efforts to relax, the more successful you tend to be. **The more you strive** after some goal or imagined, desirable state of consciousness, during meditation, and in other areas of life**, the more you avoid being fully in the present**. Meditation, thus, requires, and cultivates, a sense of non striving. It is a process of being, rather than becoming. Do not try to achieve anything in a session - **just wait to see what happens**.

4. Acceptance

Being judgmental, impatient, and trying too hard often point to our refusal to accept things as they are, or accept ourselves as we are at this moment. Rather than trying to control our distractibility, judging, impatience, and striving**, accept them** as part of the process of Meditating. This can **take the pressure off** and allow us to go deeper.

Away from Meditation, we can see these same attitudes manifesting themselves in our daily life, and in the events we experience as stressful. We are often **chasing an imagined future** where we are better than we are now, and often self acceptance is something to be earned in the future, rather than something to be given to ourselves now. In Meditation, by cultivating the attitude of acceptance of present experience, whether it be feelings of calm or restlessness, we **move from becoming, to being**.

5. Letting Go

As you may have noticed, the tendency to constant judgement underpins the other attitudes we have been discussing. You may discover as you progress in your Meditation practice that you experience some moments of extreme mental calm and quiet. For many people, this experience can be blissful. However, like everything else, this **experience does not last,** and we often find ourselves disappointed at its passing. When we first experience this state, we may frantically try and hold on to it and, once it has gone, we may try even harder to recapture it. This illustrates how our mind's **tendency to cling to things we judge as desirable** and to push things away we feel are undesirable or unpleasant. Another example of this clinging is our tendency to hold extremely strong opinions about something or someone. Consequently, we commonly talk of someone **"holding a grievance".** Meditation is a process of encouraging us to **let go** of this clinging tendency of our mind, or, as someone once described it, **"opening the hand of mind".**

Apparently, in India, if they want to catch a monkey, they cut a coconut shell in half and tie it to a tree. They then cut a hole on the outside of the coconut big enough for the monkey to put its hand through. Inside the coconut shell they place a banana to tempt the monkey. The size of the hole is such that the monkey can bring its open hand out but it cannot bring a fist out. Consequently, when the monkey grabs the banana, it finds that its hand is stuck. Obviously, all that is required for the monkey

to escape is to let go its hold of the banana. Apparently, most monkeys refuse to do this, and are caught. In the same way, we are **frequently trapped by our own clinging tendencies, prejudices and strong opinions.** Let them go.

All of the above attitudes point to the later development of two other attitudes and qualities in ourselves.

6. Trust

What happens during meditation depends on what our bodies need at the time. As we learn to become less judging, more patient, let go, accept and try less hard, we find a trust developing in ourselves and in the practice. In a sense, we begin to listen to ourselves and **trust our intuition.** In the same way that we can trust our bodies to heal a cut without us knowing anything about physiology, so we begin to trust more in the **wisdom of our minds and bodies** to restore themselves through the Meditation. Our **efforts** to direct, control and evaluate **impede this intrinsic wisdom**. So just let whatever happens happen.

7. Beginners Mind

Finally, as we become more fully into contact with the present moment, we may experience what has been called **"beginner's mind".** Rather than assuming that we know everything about someone or something, we may begin to see things with a **freshness of vision and appreciate the uniqueness** of each moment.

FOR BASIC MEDITATION GROUP ONLY

b)Going with the Flow

Meditation is not about trying to learn a 'correct' technique to focus the mind. It is very individualised and we all experience it differently. Furthermore, no two meditations are the same. Some are consistently peaceful, while others alternate between states of calm and restlessness. Both types can be beneficial as the meditative experience **depends on what our bodies need at the time.** To meditate is to **let your self be**. Thus, there is not right or wrong way of doing it and there is no particular experience you are trying to achieve or repeat.

Meditation is **not** about controlling your mind. On the contrary, it is about **learning not to interfere with it,** and **allowing the meditative process to run its course**, what ever happens. This can take some practice since it is so different from what we normally do. There are no rules and no standards that we can measure our meditative performance against. Hence, compare your meditation to sailing in a rowing boat without any oars. You just drift down the stream, letting it take you where it wants to go. Similarly, **go with the meditative flow** and let the process occur by itself.

FOR BOTH GROUPS

MEDITATIVE FOCUS

After your experience with the 3 minute exercise, these attitudes and experiences may seem remote and even unattainable. What the 3 minute exercise illustrated was that it is extremely difficult to remain focused on the present for any length of time. Meditation techniques differ in the degree to which they require effort. If we go back to the idea of the untrained mind being like a monkey, leaping from one branch of the tree to another, some Meditation techniques can feel as if you are chasing the monkey in order to try and pin it down. In contrast, other Meditation techniques are more effortless and an image that is sometimes used is, that in order to catch the monkey, all we have to do is put a bunch of bananas on the ground to attract the monkey and let it come to them. Similarly, some forms of Meditation used have **a focus which is attractive to the mind**. It is one of these methods which you will be taught.

The Mantra

Our central nervous systems are **programmed to respond to sound**. Every mother knows the power of sound after humming a lullaby to a child to quieten and calm them. The method of Meditation you are being taught is called a Mantra Meditation. A Mantra is a sound which you learn to use in a particular way **to allow the mind to enter quieter states of awareness**. Whilst some schools of Meditation emphasise the importance of the Mantra, it is really the method of using the Mantra which is of greatest importance. The first step in learning this Mediation is for you to choose your own Mantra from the list below. All you have to do is to read through the list below and **choose the Mantra which appeals most to you**. Once you have chosen your Mantra, we will take you through a guided Meditation session and show you how to use it appropriately.

Mantra List

SHIRIM	**SHYAM**	**SHANTI**
SOHUM	**AHNAM**	**RAMA**
NAMAH	**SATYAM**	**AMEN**
SATNOM	**MANAH**	**SHALOM**
HUM	**HILLAH**	**SEETAH**
SHAHM	**OM**	**ATMAN**

Some researchers argue that there is an advantage in choosing a Mantra whose meaning we do not know. The argument is that this does not set off a train of associated thought and allows us to go deeper. Other researchers argue that choosing a Mantra, a word or phrase that is consistent with your beliefs, can result in greater benefit by tapping into the "faith factors". Some people feel uncomfortable with a strange sounding Mantra and prefer to use a meaningful word like

CALM	**RELAX**	**PEACE**
HUSH	**GENTLE**	**ONE**

It is important that you **choose a Mantra that you are comfortable with**. If, for any reason, you try a Mantra and feel uncomfortable with it, feel free to choose another.

PREPARATION FOR MEDITATION

As we get ready for Meditation, three images may help to make the process clearer for you.

1. The Mind is Like the Ocean

First, the mind is often compared to an ocean. Sometimes the surface of the ocean can be storm tossed and huge waves can be thrown up. At other times the surface of the ocean can be smooth and almost mirror like. These **states of the ocean correspond to our moods of agitation or calmness.** Normally, we are almost exclusively aware of these surface states of awareness. However, the purpose of Meditation is to allow us to **experience deeper levels of awareness**. This is like us going down deeper into the ocean, rather than skipping across the surface from wave to wave, carried by one thought to another. As we dive deeper into the ocean, we can experience increasing calm and quiet so that **no matter how agitated** or storm tossed the surface is, we are delightfully **detached from it and unaffected** by it.

2. The Mantra is Like a Stone

Staying with this image, the Mantra you have chosen is like a stone you are using to **take you effortlessly down** to the ocean bed. Meditation is not about willpower. Don't try and force the mantra to take you deeper. Simply by inviting the Mantra into your awareness, and allowing your attention to be drawn to it, you may find yourself becoming calmer and quieter and more focused. Allow the mantra take you wherever it wants. If you become distracted or restless, as with a diver, **you may have to "come up for air".** By inviting the Mantra in, in the way you will be shown, it is like using that stone to dive deep again.

3. Distractions Are Like Floating Leaves

Meditation **is not about making your mind go a blank.** You will remain aware of things going on around you, thoughts going through your mind, and sensations in your body. This can be distracting but they are a natural part of the process. Treat distractions as if they were leaves floating down a river – do not hold on to them, or push them away – **just watch them come and go**. If your mind drifts, just gently invite the mantra back to the foreground. If there are noises outside do not make an effort not to listen to them. Hear them and let the sounds become part of the meditation.

Remember, Meditation is not about learning the correct technique – its about applying the meditative attitudes to each session and waiting to see what happens

With this in mind, lets get ready for Meditation (please refer to tape) - Good Luck!

MEDITATION: 2

STRESS RELEASE SYMPTOMS [FOR BOTH GROUPS]

Regulation

Regular practice of Meditation releases stress from our minds and bodies that has built up over the years. At times, this can be confusing and cause some uncertainty. In Transcendental Meditation this process is called "normalising" and is seen as a **process of the body and mind regulating themselves.**

The Location of Tension in the Body Varies

We all **carry stress in our minds and bodies in individual ways.** For some people, chronic tension is stored in the lower back and they are prone to episodes of lower back pain. For others, significant tension may build up in the jaw, neck or shoulders and they may be prone to migraines, tension headaches, swallowing difficulties, or teeth grinding. Alternatively, stress can be experienced in the abdominal region resulting in a tendency to develop gastro-intestinal disturbances, irritable bowel syndrome and other digestive disorders.

Stress Release Symptoms Vary

By way of illustration, the most common types of stress release symptoms include changes in sense of body weight. For example, at times we may feel extremely heavy, as if we were sinking deeply into the chair. By contrast, on occasion we may feel extremely light and feel as if we are floating. During Meditation we may also experience different sensations such as itching, greater heat or cold, tingling or numbness in parts of our bodies, an awareness of pulsations in our bodies, changes in our breathing and heart rhythm, sensations of discomfort and yawning.

When we begin to release stress from our bodies we can experience this process of normalising as **uncomfortable**. In some ways, it is similar to blood flowing into our hands after we have been extremely cold. Other people have described the experience as being like a spring unwinding and essentially their Meditation encourages this unwinding process and an opening up of our minds and bodies. Anyone who has experienced massage will testify to the psychological changes which accompany the release of muscular tension in the body. Mostly, these symptoms are not unpleasant and, in fact, **can be pleasurable**. However, on occasion, we may experience the release of strong emotions or a powerful release of physical tension.

HOW TO DEAL WITH STRESS RELEASE SYMPTOMS

a) Trust in the Process

When stress release symptoms are experienced the golden rule is to trust in the process and **let our minds and bodies take care of things**. The **worst thing we can do is to try and control and reduce the symptoms** as this only serves to increase our discomfort and prolong the experience. All of the symptoms are considered to indicate the release of long held patterns of stress, as well as stress which has accumulated during our daily lives. From this perspective, therefore, **such experiences are not to be avoided or feared** but indicate that the Meditation is allowing our minds and bodies to regulate themselves.

b) Gradual Regular Practice

If you follow the recommendations given to you by your teacher **the process of stress release should be gradual** and intense experiences are only likely to occur through prolonged meditation. For that reason, you are recommended to **not exceed 20 minutes** in the average Meditation session. This time period can be extended in special circumstances, and under supervision. Consequently, **should you have any doubts about your practice, you should discuss them with your teacher.**

By reducing the stress we carry in our minds and bodies, we also increase our capacity to deal with the stresses in our daily lives. It is as if we are emptying out or discharging unnecessary stress and tension from our bodies, which then leaves us with a greater capacity to deal with current stresses we are experiencing. **Regular, daily practice** of the Meditation allows us to **discharge stress** and tension, rather than storing it and this is one of the reasons that Meditation is considered to **improve health**.

RECORDING TENSION

As you know, for most people diagnosed as Hypertensive, there are no obvious symptoms. It can, therefore, come as a surprise for someone to be diagnosed as Hypertensive. However, most individuals can become aware of how they experience tension in their minds and bodies. Given that the Meditation is an exercise in awareness, regular practice can make us **more attuned to the state of our bodies** and **help us deal with those tensions more effectively** at the time.

In order to help with this process we would like you, for the next week, to maintain a 'rough and ready' record of your tension levels. You will be given some record cards and we will ask you to **rate your tension level, on a scale from 1 to 100, hourly, throughout the day**. On that scale, 1 would indicate that you are totally relaxed, whereas as 100 would be the maximum tension you can tolerate. All you will be asked to do is to record a number on that scale to indicate your level of tension each hour. By using this scale, you will begin to be able **to differentiate more subtle levels of tension and relaxation**, using cues from your body and your mind. Hopefully, you will become more sensitised to the degree of tension you are experiencing and this awareness will allow you to develop more stress control in your daily life.

MEDITATION: 3

MINI-MEDITATIONS [FOR BOTH GROUPS]

What Are They?

Mini-meditations are shorter versions of full 20 minute meditation sessions that can be carried out at **any time, anywhere and for any duration**. Thus, you can mini-meditate during your coffee break, waiting for the traffic lights to turn green, or even on the toilet!

Mini-meditations are flexible and can be easily integrated into your own particular lifestyle. You can **adapt them** to whatever situation that you are in. For example, if you are in public you can meditate if you want with your eyes partially or fully open. If you are in a queue, you can do it standing. You may only have time to meditate for 30 seconds or you can do it for up to 3 minutes.

Why Use Them?

Meditation practiced twice daily for 20 minute sessions has been shown to reduce overall blood pressure as it allows individuals to generally cope better with stress and prevents it being stored for long periods of time.

Transient increases in blood pressure, however, still occur in individuals through out the day. Mini-meditations can be used to **tackle these transient increases**. If they are used **frequently throughout the day**, they have been found to produce even greater reductions in overall blood pressure.

When Should You Use Them?

Again, we are not aware of transient increases in our blood pressure, but you are now aware of increases in body tension. Thus, meditate **when you feel tense** or after a stressful situation. Additionally, if you know, in advance, the situations that make you tense (for example an interview, visiting the dentists, an operation, visiting difficult relatives, or a high-pressured meeting) then **meditating before hand** will help to reduce your tension.

Finally, we are all influenced, although we are not often aware of it, by **rest-activity cycles**. About **every 90-100 minutes** we are more likely to day-dream and feel drowsy, and less likely to be active and concentrate on tasks. This is a perfect time to meditate, as your body is ready to rest and you are more likely to go deeper during these occasions. Experiment to see when mini-meditations are most useful for you.

APPENDIX 11:
GUIDED MEDITATION SCRIPTS

GUIDED MEDITATION [FOR BOTH GROUPS]

Begin by just sitting comfortably...with your spine relaxed, but straight...Allow your hands, to rest comfortably on your lap...and close your eyes, lightly....Just take a moment or two, to experience the sense of your body, resting in the chair...Sometimes, the sense of a balanced body, encourages the sense of a balanced mind... So, you might want to take a moment or two, to see how balanced you feel, while you are sitting there...not leaning too far to one side or the other...

Now, when you're ready, Id like you to take a moment or two, to become aware of your breathing... But, don't try and change it... Just allow your breathing to take care of itself...Watch it without trying to control it...Then, allow your attention to turn inwards...Perhaps becoming aware of the flow of thoughts through your mind...Again, don't try and control them or stop them...Just let them come...

Now when you're ready, I'd like you to invite your chosen mantra into your mind...Say it inwardly, so no one else can hear it...By invite, I mean that I don't want you to try and concentrate hard, on the mantra...Adopt a playful attitude, where you are really letting your mind do what it wants, with the mantra...Not thinking it should be repeated in a certain way...with a certain frequency or duration...Not striving for any particular experience...Let your mind play with the mantra...So that sometimes it might be drawn out and seem to last a long time...and other times it may be repeated fairly quickly...Sometimes, there may be a gap between each repetition of the mantra...Sometimes it may be repeated almost seamlessly...There is no correct way to do it...There is only the way your mind wants to do it, right now, on this particular occasion...

[FOR ATTITUDE-PROMOTING GROUP ONLY]

Now, as you have anticipated, every now and then, you may find your attention wandering from the mantra...You may find yourself distracted by an experience outside your self, a sensation in your body, or a particular thought process...It is important that you don't get angry, or annoyed with yourself...Be Patient...As soon as you become aware of being distracted, accept it and simply invite the mantra back into your awareness again...Again, let your mind play with the mantra any way it wants...Sometimes fast, sometimes slow – trust in the process...Playing with it any way your mind wants...Now, as you proceed with this, remembering to be very easy-going, and accepting of any distractions, you may begin to experience different states...You may find, for example, that you begin to just touch on feelings of calmness and quietness...Almost, as if in a sense, you have settled deeper within your self...You may find such an experience very pleasing, and want it to last as long as possible...But you'll find, that every experience that you have, during the meditation session, will not last...

It is important that you do not cling to any experience, but let the experiences come and go...In the same way, that your allow your mantra to be played with by your

mind...In the same way, that there is not correct way to repeat the mantra...So, in the same way, you are allowing sensations, experiences to come and go...To be as they are... Not thinking they should be anything different, this way or that. Remembering, that the movement away from relaxation to maybe a greater awareness, of your surroundings or surface level of thought, is a bit like you bobbing up for air...Be kind to your self...This is a new skill that you are learning, and it is OK to take some time to trust the process...But, as you become more familiar with what you are doing, or rather, allowing to happen, you may find it easier to dive deeper and stay there longer...Remembering, that it is important that you don't expect your mind to go blank...to think exclusively of the mantra, and be oblivious to everything else...That's not meditation, and that's not what this is about...Remember, that meditation is about letting your attention become focused, more and more effortlessly,using the mantra as an aid...

In the way in which you deal with the distractions and in the way you deal with the frustration, the passing judgements of your mind, and the demands of your mind, the more you can disengage from them...and just bring your attention gently back to the mantra...the more you are learning the skills that will take you beyond the meditation session, and into your daily life...

Sitting there, not really aiming to achieve anything...not striving or demanding that your mind produces a particular state of consciousness...not requiring anything of yourself...simply allowing what ever wants to happen to happen...Letting your mind play with the mantra any way it wants...always bringing your attention back...gently, easily, very very permissively to the mantra...any time you become aware of being distracted...If you do become distracted, it is important that you do not analyse the thought process...no matter how interesting...Sometimes, during meditation people can experience solutions to problems, insights and ideas that are useful to them...It is important not to cling to these experiences...no matter how attractive...But, simply treat them as distractions...and invite the mantra back into your awareness, as soon as you are aware of having been distracted...gently reminding yourself, gently training the mind, to come back to the mantra...

Now, its not about one part of you trying to dominate another...Its not about mind trying to control body...Its not that you are using the mantra as some kind of jamming device...to drown out thoughts and feelings...Its more about allowing the mind to be attracted, enticed or charmed by the mantra...Almost in a sense, thinking of the mantra as a link between mind and body...Not one part against another,but allowing every part of you to work together.Now the process is very simple, and sometimes its simplicity is the problem...We like to make things complicated...All that is important is that you take the attitude of really being non judgemental...Accepting distractions as part of the meditation and taking this non judgemental accepting attitude each time you invite the mantra back in...Let what ever happens to happen.

[FOR BASIC MEDITATION ONLY]

Go with the meditative flow...Now, as you have anticipated...every now and then, you may find your attention wandering from the mantra...You may find yourself distracted by an experience outside your self,a sensation in your body, or a particular thought process...This is OK...As soon as you become aware of being distracted, simply invite the mantra back into your awareness again...Again, let your mind play with the mantra any way it wants...Sometimes fast, sometimes slow...Playing with it any way your mind wants...

Now, as you proceed with this...Remembering to let the meditative process to occur by itself...you may begin to experience different states...You may find, for example, that you begin to just touch on feelings of calmness and quietness...Almost, as if in a sense, you have settled deeper within your self...You may find such an experience very pleasing, and want it to last as long as possible...But you'll find...that every experience that you have...during the meditation session, will not last...It is important let the experiences come and go – what ever happens...In the same way, that your allow your mantra to be played with by your mind...In the same way, that there is not correct way to repeat the mantra...So, in the same way, you are allowing sensations, experiences to come and go...To be as they are...Not thinking they should be anything different...this way or that...

Remembering, that the movement away from relaxation to maybe a greater awareness, of your surroundings or surface level of thought...is a bit like you bobbing up for air...Be kind to your self...This is a new skill that you are learning, and it is OK to take to learn not to interfere with the process...But, as you become more familiar with what you are doing...or rather, allowing to happen...you may find it easier to dive deeper and stay there longer...

Remembering, that it is important that you don't expect your mind to go blank...to think exclusively of the mantra, and be oblivious to everything else...That's not meditation, and that's not what this is about...Remember, that meditation is about letting your attention become focused...more and more effortlessly, using the mantra as an aid.

The more you go with the flow, let meditation to run its course simply allowing what ever wants to happen to happen...the more you can disengage from distractions...and just bring your attention gently back to the mantra...Letting your mind play with the mantra any way it wantsalways bringing your attention back..gently, easily, very permissively to the mantra, any time you become aware of being distracted...If you do become distracted... it is important that you do not analyse the thought process ...no matter how interesting....Sometimes, during meditation people can experience solutions to problems...insights and ideas that are useful to them...

Now, its not about one part of you trying to dominate another...Its not about mind trying to control body...Its not that you are using the mantra as some kind of jamming device...to drown out thoughts and feelings...Its more about allowing the

mind to be attracted, enticed or charmed by the mantra...Almost in a sense, thinking of the mantra as a link between mind and body...Not one part against another...but allowing every part of you to work together...Now the process is very simple, and sometimes its simplicity is the problem...We like to make things complicated...Compare your meditation to sailing in a rowing boat without any oars...Just drift down the stream and let it take you where it wants to go...

[FOR BOTH MEDITATION GROUPS]

Now, in a moment, I am going to stop speaking to you...but for the purpose of this session...after I have finished speaking ...I would like you to continue meditating on your own...for another five minutes...I'll tell you when that 5 minutes is up...And then show you how to bring the meditation session to an end...comfortably and easily...

[5 minutes of silence]...

Now, I'd like you to let the mantra fade into the background of your mind...into the quietness and stillness of your mind...And just sit quietly for a moment or two...allowing yourself to be aware of whatever sensations you are experiencing, in your body...Allowing the same attitude of open, non-judgemental acceptance...Just experience what ever you are experiencing now.

Its always important, at the end of a meditation session...just to spend a moment or two sitting quietly...so the transition between meditating and activity is gradual...If you make sure that you do this...it makes it easier to carry this stillness of meditation, into your daily activity...Now, in a moment, when you are ready to bring this meditation session to an end...I want you to do so, by very very very slowly, beginning to open your eyes...Doing so slowly...That its just letting the light creep in...Not focusing your gaze on anything...Just allow your eyes to open bit by bit...And when your eyes are fully open...again just rest for a moment before you move and change position...Then you can stretch ...We have now come to the end of the session.

APPENDIX 12:
DESCRIPTIVE STATISTICS

Table 14: Sample Sizes, Means, and Standard Deviations for Each Experimental Group for Eight Measures over Time

Measure	Experimental Condition	N	PRE-TREATMENT		POST-TREATMENT		FOLLOW-UP	
			Mean	**S.D.**	**Mean**	**S.D.**	**Mean**	**S.D.**
(a) BLOOD PRESSURE (mm Hg)								
Systolic	Control	15	144.1	16.3	145.4	15.1	139.5	10.2
	Basic Meditation	20	148.8	20.9	150.1	15.4	145.6	19.3
	Attitude Meditation	20	145.4	7.0	146.9	13.8	147.9	15.5
	Total	**55**	**146.4**	**16.4**	**147.7**	**14.7**	**144.4**	**16.0**
Diastolic	Control	15	83.5	6.9	86.1	9.5	82.5	6.3
	Basic Meditation	20	84.5	7.5	86.9	7.1	83.0	8.7
	Attitude Meditation	20	82.9	11.7	83.1	8.8	86.9	10.2
	Total	**55**	**83.7**	**8.6**	**85.5**	**8.3**	**84.0**	**8.5**
(b) ANXIETY								
State	Control	15	34.1	11.2	30.3	6.2	32.9	11.0
	Basic Meditation	20	35.8	9.9	31.7	9.2	30.7	7.3
	Attitude Meditation	20	38.7	11.3	33.7	11.7	34.1	12.0
	Total	**55**	**36.4**	**10.7**	**32.0**	**11.7**	**32.5**	**10. 1**
Trait	Control	15	38.7	11.4	35.1	9.5	34.8	9.6
	Basic Meditation	20	41.0	11.2	36.4	10.0	34.9	8.1
	Attitude Meditation	20	40.5	12.1	41.0	14.4	37.5	13.6
	Total	**55**	**40.2**	**11.4**	**37.6**	**11.6**	**35.8**	**10.5**
(c) GENERAL COPING								
Problem Focused	Control	11	30.0	8.0	29.1	10.4	32.6	7.9
	Basic Meditation	17	35.4	9.7	37.4	8.3	36.7	11.4
	Attitude Meditation	18	33.2	10.0	31.7	9.7	36.4	9.7
	Total	**46**	**33.2**	**9.5**	**33.2**	**9.8**	**35.6**	**9.9**
Emotion Focused	Control	11	43.6	14.0	46.6	14.0	48.6	17.1
	Basic Meditation	17	54.8	11.7	53.4	10.3	51.7	13.7
	Attitude Meditation	18	49.9	17.0	48.9	17.8	48.9	15.9
	Total	**46**	**50.2**	**14.8**	**50.0**	**14.4**	**49.9**	**15.1**
(d) SPECIFIC COPING								
Emotion Control	Control	15	52.2	14.0	54.5	14.2	55.0	10.8
	Basic Meditation	20	53.8	13.8	52.3	13.5	52.3	10.3
	Attitude Meditation	20	59.0	14.9	54.8	11.6	57.2	11.0
	Total	**55**	**55.0**	**14.2**	**53.7**	**12.6**	**54.6**	**10.7**

Table 14 continued.

Measure	Experimental Condition	N	PRE-TREATMENT		POST-TREATMENT		FOLLOW-UP	
			Mean	**S.D.**	**Mean**	**S.D.**	**Mean**	**S.D.**
(e) HEALTH BEHAVIOUR								
Health Behav.	Control	11	33.6	5.9	34.8	5.3	35.1	6.2
	Basic Meditation	14	29.9	5.3	29.6	5.7	30.4	5.3
	Attitude Meditation	17	30.6	4.7	29.6	5.2	32.4	5.4
	Total	**42**	**31.1**	**5.3**	**31.0**	**5.8**	**32.5**	**5.8**
(f) HEALTH LOCUS OF CONTROL								
Internal	Control	15	26.8	3.8	26.6	3.9	25.2	3.2
	Basic Meditation	20	25.7	3.8	24.3	4.2	23.3	4.4
	Attitude Meditation	20	23.3	5.1	23.6	3.9	22.5	4.4
	Total	**55**	**25.2**	**4.4**	**24.7**	**4.1**	**23.6**	**4.2**
Chance	Control	15	19.0	5.3	19.5	7.7	20.1	5.4
	Basic Meditation	20	18.0	5.9	19.1	6.0	18.5	5.1
	Attitude Meditation	20	19.4	4.5	17.8	5.1	18.2	3.7
	Total	**55**	**18.8**	**5.2**	**18.7**	**6.2**	**18.8**	**4.8**
Power. Others	Control	15	19.2	7.5	21.8	6.2	20.5	5.4
	Basic Meditation	20	20.8	6.2	21.4	5.8	20.3	6.1
	Attitude Meditation	20	19.4	7.1	19.1	6.5	18.9	5.1
	Total	**55**	**19.9**	**6.8**	**20.7**	**6.1**	**19.9**	**5.5**
(g) LIFE SATISFACTION								
Life Satis.	Control	15	14.8	3.3	14.9	3.9	15.1	3.7
	Basic Meditation	20	16.4	2.9	17.3	2.7	17.2	2.6
	Attitude Meditation	20	15.6	3.3	15.4	3.7	16.2	3.1
	Total	**55**	**15.7**	**3.1**	**16.0**	**3.5**	**16.3**	**3.1**
(h) MEDITATION COMPLIANCE								
20 Minute	Control	-	-	-	-	-	-	-
	Basic Meditation	16	-	-	4.7	1.3	3.9	1.3
	Attitude Meditation	16	-	-	4.4	1.7	4.0	2.0
	Total	**32**	**-**	**-**	**4.5**	**1.5**	**3.9**	**1.6**
Mini	Control	-	-	-	-	-	-	-
	Basic Meditation	16	-	-	1.5	0.6	1.6	1.4
	Attitude Meditation	15	-	-	1.7	0.9	1.6	0.9
	Total	**31**	**-**	**-**	**1.6**	**0.8**	**1.6**	**1.2**